



**12<sup>th</sup> Warsaw International Medical Congress**

# **Abstract Book**

**12<sup>th</sup> – 15<sup>th</sup> May, 2016**  
**Warsaw, Poland**

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## General Information

### **Congress Dates**

May 12-15, 2016

### **Congress Venue**

Convention Centre, Medical University of Warsaw

2A Księcia Trojdena St., 02-109 Warsaw, Poland

GPS: N 52° 12' 21.19''; E 20° 59' 07.12''

Distance to airport: 3 km

Distance to the city centre: 1.5 km

### **Official Language**

English

### **Congress Internet Service**

Website: [www.wimc.wum.edu.pl](http://www.wimc.wum.edu.pl)

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### **Contact**

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# Contents

General Information .....	2
Invitation.....	4
Honorary Patronage .....	6
Media Patronage .....	8
Scientific Patronage .....	9
Partnerships.....	12
Main Sponsor.....	14
Congress Sponsors.....	14
Sponsors of Sessions and Book Prizes .....	14
Organizers.....	16
Basic & Preclinical Science .....	17
Cardiology & Cardiosurgery .....	32
Dentistry .....	48
Dentistry Case Report .....	64
Dermatology .....	70
Endocrinology & Diabetes .....	76
Gastrointestinal & Hepatic Surgery .....	90
General Surgery .....	100
Genetics & Molecular Biology .....	108
Infectious Diseases .....	120
Internal Case Report .....	128
Internal Medicine .....	144
Laryngology.....	154
Law & Medicine .....	162
Neurology .....	170
Neurosurgery.....	178
Obstetrics, Perinatology & Gynecology .....	188
Oncology & Hematology.....	198
Ophthalmology .....	208
Orthopedics .....	218
Pediatric Case Report .....	226
Pediatrics .....	240
Pharmacy .....	256
PhD Basic Science .....	266
PhD Clinical Science .....	278
Psychiatry & Clinical Psychology.....	288
Public & Global Health .....	296
Pulmonology & Alergology .....	312
Radiology .....	320
Surgical Case Report .....	326

# Invitation

Dear Colleagues,

It is my great pleasure and honor to invite to participate in 12th WIMC in Warsaw. I have come long way to become adviser of Student's Scientific Association of the Medical University of Warsaw and I will briefly review this way in order to provide you with the information what you may expect, what you may achieve and what challenges you will have to pass on your ways. I am "translational research" scientist, that is person whose goals aim in introducing achievements of basic research to the clinical practice. What competences such person should possess? Both: knowledge of methods of basic research and clinical skills. My area is stem cell research and bone marrow transplantation. Actually, I have started as practicing clinician in the area of



cancer chemotherapy, which in the early seventies was in its infancy and I was one of the first to use drugs as cyclophosphamide in high doses (which are now standard). I was soon accused of putting patients at very high risk of complications. In order to deal with this criticism I have elaborated techniques of hematological monitoring, control of infections and other adverse problems. But I did not know techniques of working with experimental models on which one can develop and test methods to be later introduced to the clinic. I was then lucky because U.S. National Research Council has selected my research proposal on biological effects of microwaves and awarded me Postdoctoral Research Fellowship in Bethesda, Maryland at the National Naval Medical Center. It was there, that I for the first time in my life have started to work with mice and have learnt many advanced techniques of experimental hematology and immunology. Actually, while pursuing research on microwaves I have used this opportunity to learn and to elaborate techniques of hematopoietic stem cell research. One year of my stay in the U.S. ended with publications in "Science", "Blood", "Journal of Immunology" and several others. But real challenge was after return to Poland where I had to organize research lab from the scratch. I have succeeded. But soon thereafter I had to apply the experimental results to the clinic. At this time, in Poland there was announced martial law and there was no possibility to learn anything abroad. We had to develop everything ourselves. But already I had a team of extremely talented collaborators (Cezary Szczylik, Mariusz Z. Ratajczak, Zygmunt Pojda – you can check these names in PubMed) and both necessary laboratory and clinical skills. In mice we have been performing bone marrow transplantation routinely and it was "only" necessary to upgrade the techniques from processing milliliters of cell suspension to processing hundreds of milliliters. In the clinic I had the skills to take care of immunocompromised patients developed while introducing cancer chemotherapy. Thirty years ago in 1984 we have selected two sisters: one with Diamond-Blackfan anemia (disease of absence of red cells surviving on transfusions) to be candidate recipient and the other: healthy to be candidate donor, and have proven in mixed lymphocyte reaction that they are histocompatible. None of us have ever seen bone marrow transplantation in man but all elements of this procedure that we were aware of were put together. We have given patient chemotherapy in deadly doses, collected marrow from her sister and transfused it to the patient. Twenty four days later we have noticed in patients blood first reticulocytes (young red cells) and soon she fully recovered. Patient was 6 years old at this time and now is a teacher. Clinical bone marrow transplantation in Poland has started. Later we have published to common use detailed description of the procedure. This has helped other teams to start and now in Poland we perform more 1200 such transplantations per year in 18 centers. Technique has been refined many times, is more safe and used in many indications that have not been even envisioned 30 years ago.

I wish you similar or greater adventures on your future scientific carrier. Welcome to Warsaw and I wish you fruitful and pleasant meeting.

*Prof. dr hab. med. Wiesław Wiktor Jędrzejczak  
Advisor to Students' Scientific Movement  
in the Medical University of Warsaw*

Dear Colleagues,

On behalf of the Organizing Committee we would like to give you a cordial welcome to the 12th Warsaw International Medical Congress for Young Scientists. Your decision to choose our Conference as a platform for sharing results of your research makes us really proud of our work and gives us the greatest satisfaction we could think of.

Warsaw International Medical Congress is an event that every year draws more and more enthusiasts of science. This year, almost 700 young researchers and distinguished speakers gather again in the capital of Poland. Willing to be a part of a scientific community, joy of discovering new solutions and desire to exchange ideas- these all and even more brought you here. It is you, dear participants, who fill this event with life and thought. We hope that taking part in a conference, beyond establishing a great tradition, will be for many of you a first step that will allow you to become a part of a scientific network and achieve great goals.

This year we decided to open a new chapter in congress' history- first plenary session, where the best participants will present their papers for the wide public and compete for the 12<sup>th</sup> WIMC Grand Prix. We have prepared for you a superb scientific programme which will be a perfect complement to the competition. Among keynote speakers you can find the greatest minds in biomedical field with the Nobel Prize Winner, prof. Bert Sakmann.

Together with our Academic Partner, World Health Summit, we would like to increase your awareness on problems of global health. Therefore, you can take part in new Public & Global Health Session and interdisciplinary panel- a discussion about current serious problems in the field of pharmacology.

The 12th WIMC is a result of one-year-long work of nearly 80 enthusiastic young people – members of the organizing committee, session coordinators, workshop organizers; students of the Medical University of Warsaw. We have done our best to make the Congress a top-notch event. We cannot forget about our ambassadors and partner conferences who helped us to spread the news about the congress to the furthest corners of the earth. Nonetheless, such an event would be pointless and impossible to hold if it had not been for your participation. Therefore, now it is your turn to start creating your professional network together with other young scientists from over 30 countries.

Together we can make this time a great festival of science!

We wish you all a great Congress and wonderful time in Warsaw!

On behalf of the 12th Warsaw International Medical Congress Organizing Committee,



*President of 12<sup>th</sup> Warsaw International Medical Congress*



*President of Students' Scientific Association of Medical University of Warsaw, Head of the Organizing Committee*

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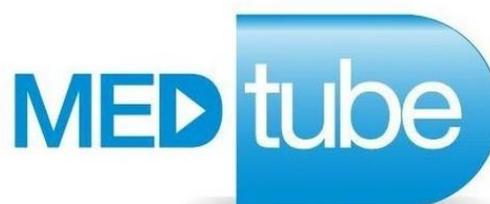
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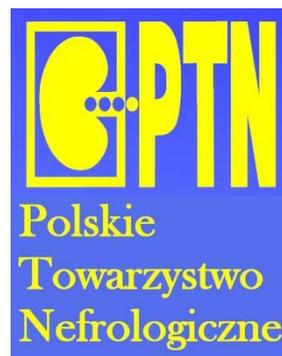
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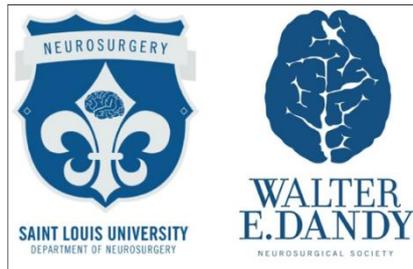


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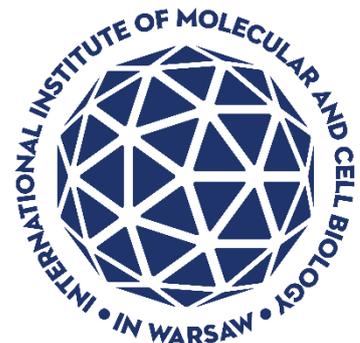


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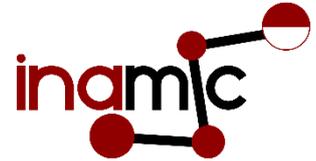
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**Regular:**

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Adrianna Spatek  
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Adam Berłowski

[1]

### **The Nogo-B/NgBR signaling axis and regeneration in the peripheral nervous system**

Christoph Eckharter, Nina Junker, Rüdiger Schweigreiter  
christoph.eckharter@gmail.com

Innsbruck Medical University / Division of Neurobiochemistry

**Trustee of the paper:** Rüdiger Schweigreiter

**Introduction:** Excessive sprouting of axons is a major problem during the regeneration of nerve fibers after trauma or surgical division. Axonal sprouting is induced by molecules expressed and secreted by Schwann cells and may lead to the innervation of antagonizing muscle groups by a single regenerating axon.

**Aim of the study:** In previous experiments we found that the genetic deletion of Schwann cell expressed Nogo-B significantly reduced the number of axonal branches of co-cultured sensory neurons compared to neurons cultured on wild-type Schwann cells. These experiments also showed that the long-distance growth of axons was unaffected by the genetic deletion of Schwann cell expressed Nogo-B. Our aim for this study was to find the neuronal receptor which is responsible for the observed effect.

**Material and methods:** We established cell cultures of Schwann cells either in the presence or absence of molecules blocking specific neuronally expressed candidate receptors and analyzed the morphology of co-cultured sensory neurons. The neurons were isolated from the dorsal root ganglia of the thoraco-lumbar spinal cord of adult wild-type mice. The Schwann cells were isolated from the sciatic nerves of early postnatal (p3-p4) wild-type mice.

**Results:** Blocking the neuronally expressed receptor NgBR resulted in the same effect (significantly reduced number of axonal branches, no difference in axonal long-distance growth) as observed after genetic deletion of Schwann cell expressed Nogo-B.

**Conclusions:** Schwann cell expressed Nogo-B interacts with the neuronally expressed receptor NgBR. The Nogo-B/NgBR signaling axis activates the pathway for axonal branching. By blocking the neuronally expressed receptor NgBR we may have found a mechanism to improve the problem of excessive axonal sprouting, while leaving the highly desirable axonal long-distance growth unaffected.

---

[2]

### **Osteogenic differentiation of human adipose-derived stem cells (hASCs) cultured on graphene derivative coated surfaces pre-conditioned with dexamethasone (DEX)**

Adam Zalewski, Rafał Staros, Sławomir Rumiński  
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Medical University of Warsaw, Department of Histology and Embryology

**Trustee of the paper:** Dr. Ilona Kalaszczyńska

**Introduction:** Graphene and its derivative compounds are a group of biomaterials, which through their unique chemical and physical properties have already established an important role in biomedical engineering. In particular, graphene oxide (GO), and reduced graphene oxide (rGO) are reported to both enhance osteodifferentiation of human adipose-derived stem cells (hASCs) and to serve as an efficient pre-concentration platform for DEX, a standard osteoinductive agent.

**Aim of the study:** We intended to determine if GO and rGO coated surfaces, having adsorbed DEX, provide effective stimulation for osteodifferentiation of hASCs, and to establish whether such a combination of factors proves superior to their separate application. To accomplish that, we studied cell viability and efficiency of osteogenic differentiation.

**Material and methods:** Cell culture surface: 6- and 24-well plates (tissue-culture treated polystyrene, TCPS) were coated with GO by sedimentation and subsequent drying cycles. rGO was obtained through the reduction of the GO coated surface, by a 48h long incubation with ascorbic acid (AA). Adsorption of DEX was achieved by treating the GO/rGO coated surfaces with a 10<sup>-8</sup> nM DEX solution for another 24h. Both TCPS and untreated GO/rGO surfaces were used as control.

Cell culture medium: standard DMEM supplemented with FGF-2, 10% FBS, 1% antibiotic-antimycotic, 1% sodium dihydrogen phosphate, and optionally 10<sup>-8</sup> nM DEX. Cells were cultured for up to 14 days under 5% CO<sub>2</sub> and 37°C.

Evaluation: We analyzed the adsorption of DEX by GO/rGO surfaces utilizing ELISA method for DEX (Neogen Corp.). Cell viability was measured using AlamarBlue and PicoGreen assays (Life Technologies). Osteodifferentiation was assessed by ALP activity, fluorescent staining of mineral deposits and gene expression (RT-PCR).

**Results:** Preliminary data have confirmed DEX adsorption to GO/rGO coated surfaces. Alamar Blue assay results confirmed enhanced adherence of hASCs in long-term culture to both GO/rGO surfaces compared to TCPS, regardless of the mode of DEX delivery. No significant difference in cell viability between modified and untreated GO/rGO was observed. Mineral deposits were detected in all samples.

**Conclusions:** Using GO/rGO coated surfaces might be an alternative mean of providing cultured cells with DEX to promote local osteoinduction. Such a method could eventually lead to off-the-shelf substrates and scaffolds, potentially paving the way for future implantable devices that would provide DEX for supporting bone regeneration in vivo.

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[3]

### **Dihydropyridines' metabolites-induced early apoptosis after myocardial infarction in rats; new outlook on preclinical study with M-2 and M-3**

Katarzyna Mitręga MD, PhD; Jerzy Nożyński MD, PhD; Maurycy Porc MD, PhD; Adrianna Spalek; Prof. Tadeusz F. Krzemiński MD, PhD  
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Medical University of Silesia / Chair and Department of Pharmacology in Zabrze

**Trustee of the paper:** Prof. Tadeusz F. Krzemiński MD, PhD

**Introduction:** The dihydropyridines derivatives currently used for therapeutic purposes are known to protect the heart from stunning, ischemia and ventricular arrhythmias. Despite their proved cardioprotective actions, their main therapeutic indications are still just hypertension and angina pectoris.

**Aim of the study:** The aim of research was to compare the effects of single oral pretreatment with two main furnidipine metabolites (M-2 and M-3) on: mortality, different forms of arrhythmias, blood pressures parameters and ST-segment changes in the model of myocardial infarction in rats. Histological evaluation of post-infarcted myocardium was also conducted.

**Material and methods:** Male Sprague-Dawley rats (n=54) served as experimental animals. The myocardial infarction was evoked by permanent left anterior descending coronary artery occlusion for 90 min and followed by 15 min of reperfusion. Furnidipines' metabolites were administrated orally in the dose of 20 mg/kg 1 hour before occlusion. The development of programmed cell death (TUNEL technique) and biochemical parameters in blood serum were studied at 4th day after infarction.

**Results:** Both metabolites effectively reduced mortality index while did not markedly influence on blood pressures parameters, arrhythmias, ST-segment changes as well as biochemical parameters. Intriguingly, programmed cell death study showed distinct increase in the amount of apoptotic nuclei in post-infarcted myocardium, granulation tissue and what is more in arteriolar walls after M-2 and M-3 application. Moreover, M-2 turned out to be more powerful in stimulation of apoptosis in granulation tissue surrounding infarcted area whereas M-3 presented balanced profile in this matter.

**Conclusions:** Taking into account that programmed cell death plays positive role in post-infarcted heart healing, M-2 presents itself as more attractive agent for oral pretreatment in early stages of ischemia by non-stable individuals due to its more specific action in stimulation repairing processes in granulation tissue and arteriolar walls. While M-2 and M-3 are common metabolites present in degradation pathways of many widely used dihydropyridines in clinic, this puts the new outlook on understanding additional mechanism and effects of this whole group of agents.

---

[4]

### **The role of CD200-CD200R inhibitory axis in the regulation of angiogenesis in the tumor microenvironment.**

Karolina Serwach, Zofia Pilch, Katarzyna Tonecka, Tomasz Rygiel  
k.serwach@o2.pl

Medical University of Warsaw, Department of Immunology

**Trustee of the paper:** Karolina Serwach

**Introduction:** Tumor angiogenesis plays an important role in the cancer development. Although tumor cells were first believed to fuel angiogenesis, numerous studies have shown that infiltrating immune cell subsets regulate this process. These infiltrates involve several types of lymphocytes as well as cells of the innate immunity such as macrophages, neutrophils, eosinophils, mast cells, dendritic cells and natural killer cells. According to recent studies CD200-CD200R inhibitory axis has a significant influence on inflammation and thus it may control angiogenesis.

**Aim of the study:** Our aim was to investigate the potential role of CD200R-signaling in the tumor-associated angiogenesis.

**Material and methods:** Murine melanoma cells (B78) were mixed with the matrigel solution. Subsequently, Cd200<sup>-/-</sup> and control mice (W.T.) were injected subcutaneously with the cell-matrigel mixture. Eight days after inoculation matrigel plugs were isolated and analysed by flow cytometry and immunohistochemistry.

**Results:** We found a macroscopical difference between the matrigel plugs derived from Cd200<sup>-/-</sup> and control mice. Cd200<sup>-/-</sup> plugs had signs of enhanced vascularization and contained more red blood cells. In addition, immunohistochemical analysis of such matrigel plugs revealed differences in the morphology, increased blood vessel size and aberrant shape. Immunophenotyping of tumor infiltrating immune cells revealed a substantial percentage of macrophages (CD11b+MHCII+Ly6C-Gr1<sup>-</sup>) and (CD11b+MHCII+Ly6C+Gr1<sup>-</sup>) immature macrophages. Importantly, CD200-deficient mice had an increased number of immature macrophages. Moreover, Cd200<sup>-/-</sup> mice tend to have more T lymphocytes infiltrating the tumors, in particular CD4+CD184<sup>+</sup> cells that were described to have an angiogenic potential.

**Conclusions:** We revealed increased size and aberrant shape of blood vessels in Cd200<sup>-/-</sup> mice. Knock-out mice have also more T lymphocytes and immature macrophages in the tumor microenvironment. Our results suggest that CD200-CD200R inhibitory axis could regulate angiogenesis by controlling inflammation. CD200R-signaling inhibits angiogenesis which in turn decreases cancer cells proliferation and metastasis.

---

[5]

### **Pentoxifylline inhibits angiogenesis via decreasing Dll4 expression in mouse proepicardial explants culture**

Krzysztof Bartkowiak and Eric Czajkowski  
krzysztof\_32@onet.eu

Medical University of Warsaw / Histology and Embryology Department

**Trustee of the paper:** dr Justyna Niderla-Bielińska

**Introduction:** Pentoxifylline (PTX) is a non-selective phosphodiesterase inhibitor with anti-metastatic and anti-angiogenic activities, commonly used for treatment of circulatory disorders. Mechanisms underlying PTX anti-angiogenic activity are still largely unknown. In this study, proepicardial (PE) explants were used for assessment of the influence of PTX on angiogenesis. Our previous results show that mouse PE contains its own population of undifferentiated endothelial cells (ECs), therefore, it can be used as a model in angiogenesis studies. Additionally ECs in the PE are embedded in the microenvironment that contains mesenchymal cells which plays crucial role in angiogenesis regulation, but is devoid of macrophages, fibroblasts and pericytes.

**Aim of the study:** In our study we used PE explant culture model for assessment of PTX influence on angiogenesis.

**Material and methods:** Isolated PE explants were cultured on collagen coated surface and treated with basic fibroblast growth factor (bFGF) and vascular endothelial growth factor A (VEGF-A) or bFGF/VEGF-A combined with PTX. After eight days of culture explants were examined under light microscope to assess the morphology of emerging tubules. Additionally mRNA level for various proangiogenic factors and molecules involved in angiogenesis regulation (VEGF-A, VEGF-B, VEGF-C, FGF, Dll4, Notch1) in the explants was measured with Real-Time RT PCR.

**Results:** We observed vascular sprouts growing from explants stimulated with bFGF/VEGF, however, cells emerging from bFGF/VEGF-A/PTX-stimulated explants were scattered and failed to form sprouts. Real-Time PCR analysis of mRNA levels for genes involved in angiogenesis in PE explants stimulated with bFGF/VEGF-A/PTX showed a significantly decreased level of bFGF. Surprisingly, expression of VEGF-A, VEGF-B and VEGF-C was only slightly affected in bFGF/VEGF-A/PTX versus the bFGF/VEGF-A group. After bFGF/VEGF-A/PTX treatment we observed a prominent decrease of Dll4 expression and unaffected Notch1 mRNA level.

**Conclusions:** Taken together, our results show that PTX directly decreases the expression of proangiogenic factors in the PE explants which impairs the Dll4/Notch1 signaling pathway and causes failure in sprout formation.

---

[6]

**Ethanol-dependent down regulation of collagen biosynthesis undergoes through decrease in expression of  $\beta$ 1-integrin receptor and prolidase activity in cultured human skin fibroblasts.**

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**Introduction:** Ethanol (ethyl alcohol) exposure can cause a variety of local and systematic abnormalities. It has been documented that ethanol intoxication in vivo contributes to tissue cirrhosis through activation of collagen biosynthesis. In vitro studies on human skin fibroblasts however provided contrary results. The mechanism of this process is not fully understood.

**Aim of the study:** This work was done to evaluate the mechanism of ethanol action on collagen biosynthesis in cultured human skin fibroblasts. Using the model of ethanol-treated fibroblasts we studied collagen biosynthesis, prolidase activity, metalloproteinase (MMPs) activity, expression of  $\beta$ 1 integrin receptor and Mitogen-Activated Protein Kinases (MAPKs), translocation of Focal Adhesion Kinase (FAK) to nucleus and process of apoptosis.

**Material and methods:** Collagen biosynthesis and activity of prolidase were measured in confluent human skin fibroblast that have been treated with 25, 50, and 100 mM of ethanol. Expression of  $\beta$ 1 integrin receptor, phospho-MAPK and caspase 9 were analyzed by Western blot and matrix metalloproteinases (MMP-9 and MMP-2) by zymography. Translocation of FAK to nucleus was shown by fluorescence microscopy.

**Results:** Ethanol in a dose-dependent manner lead to the impairment of collagen biosynthesis in fibroblast cultures through down-regulation of  $\beta$ 1 integrin receptor and prolidase activity. This was accompanied by increase in caspase 9 expression, decrease in expression of MAPK (ERK1/2) kinases and inhibition of translocation FAK to the nucleus. MMPs were not affected by ethanol. It suggests that ethanol-induced decrease in collagen production is due to the disturbances in  $\beta$ 1 integrin signaling but not degradation of collagen.

**Conclusions:** Ethanol impairs collagen metabolism in human skin fibroblasts through inhibition of collagen biosynthesis and prolidase activity. The mechanism of this process is due to decrease in expression of  $\beta$ 1 integrin receptor and MAPK.

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[7]

**The effect of Galectin-3 on oxidative stress in NIAAA model of alcoholic liver disease in mice**

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**Introduction:** Alcoholic liver disease (ALD) is caused by chronic ethanol consumption. Galectin-3 (Gal-3) is a proinflammatory biomarker that contributes to the pathogenesis of numerous conditions by inducing oxidative stress.

**Aim of the study:** The aim of the present study was to examine the effect of Gal-3 on liver oxidative stress in NIAAA model of ALD in mice.

**Material and methods:** Male C57BL/6 mice (n=28) were divided into the following groups: 1. control; 2. EtOH group; 3. Gal-3<sup>-/-</sup> group; 4. EtOH+Gal-3<sup>-/-</sup> group. EtOH and EtOH+Gal-3<sup>-/-</sup> group were fed with the Lieber-DeCarli liquid diet (5% ethanol) for 10 days and on day 11th they were treated with 31.5% ethanol solution (5 g/kg) by oral gavage. Control and Gal-3<sup>-/-</sup> group were fed with control liquid diet and afterwards treated with saline. Blood serum and liver tissue were sampled for determination of oxidative stress parameters and transaminase activity.

**Results:** Serum transaminase activity was increased in EtOH group vs. control (p<0.05), while in EtOH+Gal-3<sup>-/-</sup> group no significant difference was evident when compared with control (p>0.05). Malondialdehyde (MDA), nitrite and nitrate level in the liver were increased, while the activity of antioxidant enzymes (superoxide dismutase /SOD/, catalase, glutathione peroxidase) were significantly decreased in EtOH vs. control group (p<0.01). In EtOH+Gal-3<sup>-/-</sup> group nitrite and nitrate concentration was significantly reduced by comparison with EtOH group (p<0.01), while MDA level was not different between EtOH+Gal-3<sup>-/-</sup> and EtOH group. Catalase (p<0.01) and SOD activity (p<0.05) were significantly reduced in EtOH+Gal3<sup>-/-</sup> by comparison with EtOH group.

**Conclusions:** Gal-3 contributes to the hepatotoxic effects of ethanol, partly by increasing nitrosative stress in the liver, whereas it has no significant effect on ethanol-induced lipid peroxidation in NIAAA model in mice. Gal-3 alleviates an ethanol-induced decline in liver SOD and catalase activities. Inhibitors of Gal-3 could manifest the potential hepatoprotective effect in ALD.

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[8]

**Brain vasopressin V1a receptors and Cushing response to increased intracranial pressure.**

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**Introduction:** Increase in intracranial pressure (ICP) may result from cerebral hemorrhage, brain trauma, oedema or acute hydrocephalus and leads to compression of brain structures and decreased cerebral blood flow. The diminished cerebral perfusion is compensated by Cushing reflex which maintains cerebral blood flow under conditions of high ICP via elevation of blood pressure (BP). Vasopressin is a neurohypophysial hormone which causes V1 receptor-mediated constriction of arteries and sympathetic stimulation. Some studies suggest beneficial effect of vasopressin V1 antagonists (VRA) pharmacotherapy in Traumatic Brain Injury and post-stroke oedema.

**Aim of the study:** In the present study we investigate the role of brain vasopressin V1 receptors in Cushing reflex.

**Material and methods:** Male Sprague-Dawley rats, 14-18 weeks of age, were catheterised into the femoral artery for measurement of BP and the femoral vein for administration of V1 receptor antagonist (VRA), followed by implantation of two steel cannulae into the lateral cerebral ventricles (LCV). The cannula placed in the right LCV was used for manipulation and measurement of ICP, while the one in the left LCV was used for administration of investigated substances. The animals were divided into 2 groups: control group (n=6) - LCV infused with 0.9% NaCl; and experimental group (n=6) - LCV infused with V1 receptor antagonist. After baseline measurements, saline (10 µL/30sec) or vasopressin V1 antagonist (500 µg/10µl/30 sec) was infused into LCV and after 5 min ICP was gradually increased by intracerebroventricular infusion of 0.9% NaCl by syringe pump at the rate of 60 µl/min till obtaining ICP of 100 mm Hg. All procedures and measurements were performed under anaesthesia.

**Results:** Increase of ICP in the control group resulted in significant increase of blood pressure in comparison to baseline values (paired student t-test,  $p < 0.05$ ), which is typical for Cushing reflex. In the experimental group centrally pretreated with VRA there were no significant differences in response to elevated ICP in comparison to the control group (unpaired student t-test,  $p < 0.05$ ).

**Conclusions:** Our results show that that blockage of V1 receptors has got no influence on Cushing reflex in intracranial hypertension state. This new finding suggests that pharmacotherapy with V1 receptor antagonist should not disturb cerebral perfusion pressure.

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[9]

**Molecular analysis of the oral microbiota in tobacco smokers.**

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**Introduction:** One of the first ecosystems to come into contact with tobacco smoke, and to be affected by it, is the oral microbiome. It has been reported that substances present in cigarette smoke alter the properties of oral epithelial cell surfaces, allowing the growth of pathogenic bacteria.

**Aim of the study:** Our objectives were to characterize oral bacterial community and identify possible alterations depending on cigarette use.

**Material and methods:** Swabs were used to sample the oral biofilm of 65 subjects, including 38 non-smokers (51,5% women; mean age: 21,5) and 27 active smokers (47% women; mean age: 21,5). RNA was extracted and the chosen region of the 16S rRNA gene was PCR amplified. Separation of different bacteria 16S cDNA fragments was achieved using single strand conformation polymorphism. 147 differential bands were sequenced and 43

of them were identified using the NCBI BLAST 16S rRNA database. All subjects completed the evaluating questionnaire.

**Results:** Smokers demonstrated a significantly higher Shannon diversity index (2,16 versus 1,51) and Gini-Simpson index (0,82 versus 0,71), indicating that each smoker harbored more numbers of species than a non-smoker. The composition of flora consisted of 4 overlapping (occured in smokers and non-smokers) and 13 unique (for smokers) genera with numerous not-yet-cultivated species, for instance *Glaciimonas singularis*, *Tessaracoccus lubricantis*, *Vulgatibacter incomptus* and *Zobellella taiwanensis*. Furthermore tobacco users manifes ted higher abundances of anaerobes and increased representation the phylum Proteobacteria compared with controls (37 vs. 6.7 %). In both groups, the genera with the greatest prevalence were *Streptococcus* (70,4% and 56,7%) and *Thermobaculum* (40,7% and 36,7% ). Neither features evaluated in the survey, except orolabial herpes infection, had any impact on the heterogeneity of bacteria in study and control group.

**Conclusions:** The alteration of the oral microbiom in smokers was captured successfully. Detection of numerous bacteria considered as non-culturable in the oral cavity warrants the search for interferences between smoking and oral microbiota.

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[10]

#### **Takotsubo cardiomyopathy - female rat model.**

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**Introduction:** Takotsubo cardiomyopathy (TTC) is a disease induced by emotional and physical stress and affects mostly postmenopausal women. Recently a new male rat model of TTC induced by intraperitoneal injection of isoprenaline (ISO) at doses  $\geq 50$  mg/kg body weight (bwt) has been proposed.

**Aim of the study:** The aim of the study was to create the female rat model of ISO-induced TTC.

**Material and methods:** 39 Sprague Dawley adult female rats (12 weeks old  $>200$  g bwt) were injected intraperitoneally with a single dose of ISO; 50 mg (n=8) or 75 mg (n=6) or 150 mg (n=20) or 200 mg (n=5) /kg bwt. The control group (n=4) was injected with physiological saline. The echocardiographic assessment (ECHO) of wall motion abnormalities was performed at 6, 24, 48, 72 hours, 7 and 10 days following injection of ISO.

**Results:** Echocardiographic examination 24 hours after ISO administration showed features of TTC in 1/6 of the female rats in the group ISO 50 mg/kg bwt, 2/6 in the group ISO 75 mg/kg bwt and 0/5 in the group ISO 200 mg/kg bwt. The optimum dose of ISO to induce TTC was 150 mg/kg bwt since 14/20 (70%) rats showed apical akinesia in ECHO after 24 hours following the injection. The echocardiographic features of TTC were not observed 6 hours after ISO administration. The mortality of rats was equal 7,7% (2 in the ISO 50 group, 1 in the ISO 150 group). The features of TTC resolved in 2/4 rats after 10 days following injection of ISO.

**Conclusions:** The female rat model of TTC induced by ISO injection requires higher optimum dose of ISO and is associated with lower mortality in comparison with the male TTC model.

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[11]

#### **Interstitial cells and extracellular matrix interaction in human degenerative aortic and mitral valves**

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**Introduction:** Mitral valve (MV) and aortic valve (AV) degeneration causes severe valve dysfunction with important impact on the overall ventricle function over time. MV is usually affected by a myxomatous degeneration leading to severe regurgitation, while the process of calcification affects AV leaflets, causing different degrees of stenosis.

**Aim of the study:** The aim of this study was to analyze the evidence of extracellular matrix remodeling (ECM) and phenotypical changes occurring in the valvular interstitial cells (VIC) of AV and MV, and to describe its contribution to the pathogenesis of cardiac valve degeneration.

**Material and methods:** Twenty patients undergoing AV replacement were selected and compared with 12 samples from control group, whereas 20 patients having MV replacement were compared with 20 control samples. By immunohistochemistry we analyzed cell phenotypes, using antibodies to alpha smooth muscle actin ( $\alpha$ -SMA) and CD34, and the expression of matrix metalloproteinase-9 (MMP-9). Semiquantitative estimation of immunopositive cells was performed.

**Results:** In AV group the expression of  $\alpha$ -SMA by activated VIC was more prominent in stenotic valves ( $p < .001$ ). Furthermore, increased expression of  $\alpha$ -SMA was observed in ventricular layer both in stenotic ( $p = .07$ ) and control ( $p < .001$ ) valves. In MV group we did not find statistically significant difference in the expression of  $\alpha$ -SMA between degenerative and control valves ( $p = .34$ ). The activation of the VIC was more prominent in atrial layer of MV ( $p < .001$ ). CD34+ interstitial cells were found mainly in fibrous and spongy layers of both AV and MV. In AV group we observed progressive reduction of CD34 expression in patients. Contrastingly, in MV group the area of CD34 expression was similar between young controls and patients. The expression of MMP-9 in AV was more marked in stenotic valves ( $p < .001$ ). The MMP-9 expression was noticeably less prominent in MV. We found that the source of the MMP-9 were activated VIC, endothelium, mononuclear leukocytes and cardiomyocytes.

**Conclusions:** In degenerative cardiac valves quiescent CD34+ VIC transformed into active  $\alpha$ -SMA+ myofibroblasts and increased in number as respond to valve injury. The VIC in ventricular layer of AV and atrial layer of MV had the greatest myofibroblast differentiation potential. Increased expression of MMP-9 had an important role in the remodeling of ECM, both in aged and stenotic aortic valve. The role of the MMP-9 was not so prominent in regurgitant mitral valve.

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[12]

### **Epicatechin and its role in the prevention of hypertension**

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**Introduction:** According to the World Health Organization, most of adults suffer from hypertension and studies showed that up to two thirds of hypertensive patients would preferred non-pharmacological treatment. Epicatechine (EPI), a polyphenol present in cacao, could be complementary treatment, but so far its mechanism of action in lowering blood pressure was not exactly described.

**Aim of the study:** The goal of our work was to study the effect of administration of EPI in the time of development of hypertension on systolic blood pressure (SBP), markers of oxidative stress, the total antioxidant capacity (TAS) and nitric oxide (NO) in spontaneously hypertensive rats (SHR).

**Material and methods:** The experiment was conducted on 11 males of SHR divided into two groups, control one and the epicatechin group (EPI-SHR). Both were kept under the same conditions. Since the 5th week of life, EPI was administered in drinking water to EPI-SHR in dose of 100 mg / kg / day for 14 days. After 5th, 6th and 7th week of age SBP and heart rate were measured. 7 weeks old animals were killed and the concentrations of lipoperoxides, malondialdehyde, protein carbonyls, advanced oxidation protein's products, nitrites and nitrates, nitrotyrosine and TAS were estimated in the their blood plasma.

**Results:** In EPI-SHR, we observed a significantly higher total antioxidant capacity of plasma ( $p < 0.05$ ), lower concentration of nitrotyrosine ( $p < 0.05$ ) as well as tendency to higher concentration of nitrite and nitrate ( $p = 0.09$ ). Blood pressure was significantly lower in experimental group than in controls after first ( $p < 0.05$ ) and second ( $p < 0.05$ ) week of administration of EPI. There was no significant differences in other parameters.

**Conclusions:** We suggest, that EPI could slow the inactivation of NO by superoxide and support physiological activity of endothelial NO synthase (eNOS). That could lead to increased production of NO and by support of coupling of monomers of eNOS to decreased production of peroxynitrite that formate nitrotyrosines. These results are consistent with previously published results of studies, but further studies about its possible applications in clinical medicine, together with its potential adverse effects are needed. From the perspective of current research, EPI could be an effective adjunct in the prevention and treatment of hypertension. The work was supported by the grant VEGA 2/0084/14.

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[13]

### **Comparison of the effects of Chitosan–CuNPs composite on pathogenic bacteria**

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**Introduction:** Microbial infections is now a global health burden due to emerging resistant strains of viruses, bacteria, pathogenic fungi and protozoa resisting treatment.

**Aim of the study:** To evaluate the antibacterial properties of polymer nanoparticles combination and their influence on the virulence factors of bacteria

**Material and methods:** Nanoparticles were synthesized from Copper (II) sulfate • 5H<sub>2</sub>O, L-ascorbic acid, acetic acid and chitosan. The molecular weight of chitosan was 500 kDa, deacetylation degree 80.5 %. All stock solutions were prepared using distilled water, 50 mM copper sulfate, and 10% w/v ascorbic acid. Chitosan (3% w/v) solutions were prepared by dissolving chitosan in 1% (v/v) acetic acid (incubated 24 h at room temperature till complete dissolution of chitosan). To prepare Cu nanoparticles, ascorbic acid solution was added to the chitosan solution to reach the final concentration 0.1% (samples ChCuNp1, 3, 4) or 1% (sample ChCuNp2) first, and then the copper sulfate solution was added (final concentration of Cu 150 µg/ml (ChCuNp4), 300 µg/ml (ChCuNp3), and 600 µg/ml (ChCuNp1, 2). Resulting mixture was first incubated for 3 hours at 60 °C, and after that 24 hours at 37 °C for reduction reaction to be completed; and then used in the investigation.

CuSO<sub>4</sub> solution was used as a control. Antibacterial activity of these hydrogel nanocomposites was determined using strains isolated from patients with acute respiratory infections. There were ten strains of *S. aureus*, two strains of *E. coli* and two strains of *P. aeruginosa*.

**Results:** Drug resistant strains of *S. aureus*, *E. coli* and *P. aeruginosa* were tested against various concentration of Cu NPs by the agar dilution method to determine their antibacterial effect. All four composites of the chitosan with Cu NPs showed antibacterial activity with similar results. The minimal inhibitory concentration (MIC) of ChCuNp1, 3 and 4 against *S. aureus* was 32, 16, 8 µg/ml respectively. The MIC of ChCuNp1 and 2 against *E. coli* was 32 µg/ml and MIC of ChCuNp3 and 4 against *E. coli* was 30, 15 µg/ml respectively. The MIC for the *P. aeruginosa* was 60, 30.15 µg/ml respectively.

**Conclusions:** The results of this study suggest that chitosan–CuNPs composites possess high antibacterial activity and may reduce the virulence potential of bacteria.

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## [14]

### Expression of VEGF-A and VEGF-R2 in myocardium of chick embryos treated with acetylsalicylic acid

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**Introduction:** Angiogenesis is the formation of blood vessels from preexisting ones, and occurs physiologically and in conditions such as myocardial infarction. One of the main participating factors in this process is Vascular Endothelial Growth Factor (VEGF). Acetylsalicylic acid (ASA) -or aspirin-, is frequently used to prevent the incidence of acute myocardial infarction by inhibiting the platelet activity of cyclooxygenase (COX) enzymes, which catalyze the synthesis of prostaglandins. However, the inhibition of COX enzymes by ASA has antiangiogenic effects. Though there are investigations that have demonstrated the action of ASA on angiogenesis in tumor models, there is poor knowledge about its antiangiogenic effects on a healthy myocardium.

**Aim of the study:** To contribute to the knowledge of the oncogenic mechanisms modulated by aspirin, and to quantify the expression of VEGF-A and VEGF-R2 in the myocardium of chick embryos treated with AAS and salicylic acid (AS).

**Material and methods:** Thirty chick embryo eggs, divided in 3 groups, were incubated and instilled with 60 µL of AAS, SA and Dimethylsulfoxide (DMSO) (Control) on the chorioallantoic membrane (CAM). Histologic processing was performed to obtain cuts of 5 microns, which were incubated with anti-VEGF-A and anti-VEGF-R2 antibodies, and revealed with diaminobenzidine (DAB). This procedure was carried out according to the bioethics committee protocol. Samples were processed histologically and stained, and a counting of vessels was performed in them using an optical microscope at 400x. Immunoreactivity was quantified by software Image J.

**Results:** The cytoplasmic immunoreactivity indicated a lower expression of VEGF-A in the group treated with ASA compared to the control group. However, this difference is not significant. In the case of VEGF-R2, significant differences indicated reduced expression in both SA and ASA groups and by comparing these two substances, also a significant difference generating less immunoreactivity observed in the case of ASA was detected (p<0.05).

**Conclusions:** ASA at dose of 60 µL inhibited microvessel density on the CAM, possibly by inducing a decreased expression of VEGF-R2 in the myocardium of chick embryos. These results have potential practical application in the treatment of acute myocardial infarction, because the use of ASA has an antiangiogenic effect that is not conducive to adequate reperfusion of infarcted tissue, therefore, future studies with pro-angiogenic therapies that lessen the damage or replace the use of ASA must be performed.

[15]

### Relationship between fractal complexity and textural entropy of brain parietal cortex

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**Introduction:** Mathematical algorithms for quantification of structural changes, such as fractal and textural analyses, are today frequently applied in cellular physiology and histology. Certain parameters of these two methods in brain tissue are not yet sufficiently investigated.

**Aim of the study:** The aim of this study was to test the existence and strength of correlation between fractal dimension, and the degree of textural disorder in parietal cortex cytoarchitecture.

**Material and methods:** A total of 50 digital micrographs obtained from the thionine-stained brain tissue of 10 Wistar albino rats (5 micrographs per animal) were analyzed. Fractal dimension, as an indicator of complexity, was measured using a plugin of National Institutes of Health ImageJ software (NIH, Bethesda, MD). Entropy was calculated based on the Grey-level co-occurrence matrix algorithm.

**Results:** Average fractal dimension of brain parietal cortex was  $1.562 \pm 0.091$ . Mean entropy was  $6.452 \pm 0.071$ . There was a statistically significant correlation ( $p < 0.05$ ) between the two variables.

**Conclusions:** This is one of the first research efforts to test the correlation between fractal complexity and level of textural disorder in brain tissue. Fractal dimension is potentially valuable in prediction of parameters of grey-level co-occurrence matrix.

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[16]

### Experimental study of antihypoxic activity of new metal complex compounds

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**Introduction:** Hypoxia is known to play an important or in some cases a crucial role in development of most pathological processes. Despite the fact that a search of highly effective antihypoxants is constantly going on among the known drugs and newly synthesized substances, most of compounds recommended for clinical use are ineffective as protectors of exogenous forms of acute anoxia.

**Aim of the study:** was the assessment of antihypoxic properties of 8 new metal compounds Q262, Q1077A, Q1079A, πQ1987, πQ2007, πQ2083, πQ2078, πQ2170 containing copper and selenium. Studies were conducted on mice using the model of acute increasing exogenous hypoxia.

**Material and methods:** Our studies were conducted with male mice of CBF1 line with an average weight 20-25g. Acute exogenous hypoxia (AH+Hc) was simulated by putting mice into sealed glass containers with a capacity of 250ml. Substances were injected per os in doses of 25mg/kg and 50mg/kg. The efficiency was assessed by the parameters of electrocardiography (ECG), frequency of breath (FB), rectal temperature (RT) and life expectancy of the animals (LE).

**Results:** It was established that the compounds Q262, Q1077A, Q1079A and πQ1987 increase the resistance of mice in the experimental group (n=10) to AH+Hc. The strongest protective effect showed the Q1077A compound. 60 minutes later after injecting it the frequency of ECG cycles decreased from  $651 \pm 23$ /min to  $347 \pm 18$ /min, FB slowed from  $362 \pm 17$ /min to  $156 \pm 11$ /min, RT decreased from  $37,0^{\circ}\text{C}$  to  $29,1^{\circ}\text{C}$  and LE tripled comparing to control group (n=10).

**Conclusions:** Thus, the compounds Q262, Q1077A, Q1079A and πQ1987 significantly increase life expectancy of the animals. Our experimental study data allow attributing the compounds Q262, Q1077A and Q1079A to the antihypoxants of metabolic action type.

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[17]

### **Correlation between apoptosis and embryonic cardiac tissue macrophages**

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**Introduction:** Prenatal murine cardiac tissue macrophages (cTMs) consist of subpopulations with different phenotypes and location in the heart. Although several studies have characterized embryonic macrophages of various organs or tissues, the phenotypes and a role of cTMs subpopulations during heart embryonic development remains poorly explored. In areas of massive apoptosis, cTM may express specific markers.

**Aim of the study:** The aim of this project was to characterize phenotypes of prenatal murine cTM located in the area of massive apoptosis. We verified the hypothesis that this subpopulation expresses partially different markers compared to macrophages scattered in the subepicardium, myocardium, and localized adjacent to blood or lymphatic vessels.

**Material and methods:** Immunohistochemical staining with multiple-marker antibodies specific for macrophages and for apoptosis (anti-caspase-3) was conducted on cryosections of murine prenatal hearts (stage 13.5 dpc). Images were analyzed in a confocal microscope.

**Results:** During embryonic development of murine heart, programmed cell death occurred most intensively in the outflow tract between 12 and 14 dpc. Several subpopulations of cTM in locations of abundant apoptosis were observed. Cardiac TM located in apoptosis-rich areas expressed CD68, F4/84, and GSI lectin markers. All markers are characteristic for "classic" macrophages. Our in situ studies showed also numerous of F4/80+ cells scattered predominantly in the subepicardial area and accompanying blood and lymphatic vessels. Confocal microscope analysis revealed expression of CD45 and CD206 located in the myocardium, but we did not observe these populations overlapping the apoptotic areas. Interestingly, Lyve-1 – the marker characteristic for the subepicardial macrophages and macrophages located close to vessel walls (either blood and lymphatic) was absent in proximity of apoptotic areas.

**Conclusions:** These results indicated that phenotypic markers cannot be a criterion for specification of apoptotic-related cTM since the studied markers are also expressed in cTM located in other areas, such as adjacent to blood and/or lymphatic vessels and within the subepicardium. However, we can state that Lyve-1-positive macrophages are never found to be located in apoptotic-rich areas; so this population is presumably not involved in engulfing of apoptotic bodies. We also presume that CD68+ macrophages, bearing a scavenger receptor that belongs to LAMP family proteins, might be involved in phagocytosis of apoptotic bodies.

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[18]

### **Tumour necrosis factor $\alpha$ in cardiovascular centres of the brain in normotensive and hypertensive rats**

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**Introduction:** Increasing evidence suggests a critical role of neuroinflammation in the development of hypertension. Tumour necrosis factor  $\alpha$  (TNF- $\alpha$ ) is a cytokine involved in systemic inflammation. Its increased level has been implicated in cardiovascular diseases and sympathoexcitation. An important role of TNF- $\alpha$  in hypertension has been described, but its influence on neurogenic hypertension has not been determined.

**Aim of the study:** In the present study we wanted to determine if concentration of TNF $\alpha$  in the key cardiovascular centres of the brain differ between spontaneously hypertensive (SHR) and normotensive (WKY) rats.

**Material and methods:** We carried out the study on adult male SHR (n=6) and WKY (n=6) rats. Systolic blood pressure was noninvasively measured with tail-cuff method in all animals. Subsequently, rats were deeply anesthetized with urethane (1.5g/b.w.) and blood was collected. Immediately after euthanasia, brains were snap-frozen in liquid nitrogen. Blood was centrifuged and serum was aliquoted into cryotubes. Brains and serum were stored at -80°C until further analysis. Using a rat brain matrix, brains were coronally sectioned and the hypothalamus (HTS), the rostral ventrolateral medulla (RVLM) and the nucleus of the solitary tract (NTS) were isolated based on coordinates from the rat brain atlas. Tissues were homogenized and centrifuged. Obtained supernatants were used to determine concentration of TNF- $\alpha$  with ELISA kit.

**Results:** SHR rats had significantly higher systolic blood pressure than WKY rats, 186±14 vs 144±18 mmHg respectively (p<0.001, Student's t-test). Protein expression of TNF-α in RVLM and NTS of SHR rats was significantly higher than in WKY rats, 2243±193 vs 1523±154 pg/mg of tissue (p=0.001, Student's t-test) and 2290±219 vs 1643±105 pg/mg of tissue (p=0.002, Student's t-test), respectively. Concentration of the cytokine in HTS and serum did not differ significantly between normotensive and hypertensive rats.

**Conclusions:** Higher protein expression of TNF-α in key regions of the brain involved in the regulation of cardiovascular system is associated with high arterial blood pressure. These results suggest that proinflammatory cytokines in the central nervous system and neuroinflammation are involved in the pathogenesis of hypertension.

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[19]

### Emergency prevention of acute hypoxia with antihypoxants

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**Introduction:** In extreme situations the oxygen saturation on air, available to breathe, can decrease in a high speed. Oxygen deficiency demands carrying out urgent actions for protecting the people. Lack of the data for antihypoxants' efficiency in case of using them as hypoxemic states' stabilizers formed the basis for carrying out a research.

**Aim of the study:** was to investigate antihypoxic activity of metal-containing compound πQ901

**Material and methods:** The experiments are done on mice weighing 50 g.

We used the derivatives of aminothiols to find out their protective effects at various speeds of hypoxia development.

"Rapidly increasing" sharp exogenous hypoxia was received when using capacity of 0,25 l, "average" – 0,5 l, "slow" – 1,0 l.

ECG, pneumobarogram and the oxygen saturation on air, available to the animals, were registered.

All the studied derivatives of aminothiols were injected intraperitoneally (0.9% NaCl solution) 60 min before the experiment

The statistical analysis of the obtained data was carried out by means of variation statistics methods

**Results:** Life expectancy of mice at a "high" rate of hypoxia with hypercapnia increase is 37,04 min. At an "average" rate the result increased till 127,06 min. At "slow" - till 185,09 min (499%). The rate of hypoxia increase slowed down. It promotes the life expectancy increase.

The accompanying hypercapnia leads to the activation of the compensatory mechanisms maintaining the tonic activity of the respiratory and vasomotor centers. At the initial stages of a hypoxemic state hypercapnia provides blood mobilization from depot, raises the hemoglobin saturation and increases its affinity to O<sub>2</sub>.

The activity of πQ901 substance found itself in a dose of 25 mg/kg. In a dose of 50 mg/kg it led to the increase of the hypoxic-resistance of the mice. As far as hypoxia increased, the efficiency of πQ901 decreased by 124, 47, 56%.

**Conclusions:** The analysis of the effect that πQ901 had on the life expectancy, ECG and pneumobarogram characteristics demonstrated that preventive injection of antihypoxants provided the maximal protective effect at the "high" rate of increase of acute hypoxia.

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[20]

### The effect of butyric acid on T regulatory cells

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**Introduction:** Regulatory T cells (Tregs) are the fraction of conventional T helper (CD4+) cells responsible for inhibition of immunoreactivity against environmental antigens and for maintenance of self-tolerance. Their malfunction is crucial in developing such diseases as allergies, autoimmune diseases and graft-versus-host disease. That is why, many clinical trials are conducted to improve the functionality of T regulatory cells. One of such method is using immunomodulators in adoptive therapy.

**Aim of the study:** The aim of the study was investigation if butyric acid could improve the functionality of human T regulatory cells in vitro.

**Material and methods:** Blood samples

Peripheral blood mononuclear cells (PBMCs) were prepared from buffy coats obtained from the Regional Centre of Blood Donation and Blood Therapy, Warsaw, Poland. The cells were isolated by the density gradient sedimentation.

CD4+ purification

CD4+ T cells were purified from PBMCs by negative selection using the CD4+ T cell isolation kit. The average purity of CD4+ cells was 96%.

Butyric acid

Stock solutions of butyric acid were prepared in culture medium (100 mM). Adequate volumes of stock solution were added to lymphocyte cultures to obtain final concentrations: 4, 20, 100, 500  $\mu$ M.

T cell cultures

CD4+T cells were cultured in RPMI-1640 medium supplemented with antibiotics + antimycotic and 10 % heat-inactivated fetal bovine serum with TGF- $\beta$  (2 ng/ml) in the presence or absence of butyric acid and activated with Human T-Activator CD3/CD28. Cells were harvested after 5 days of incubation for analysis.

Flow cytometry

In order to characterize T regulatory cells, cells were stained with the surface antibodies CD4 PerCP and CD25 FITC. Intracytoplasmic staining for FOXP3 was performed using the anti-FOXP3 staining kit. Cells were analyzed with flow cytometry (BD Accuri™ C6) equipped with software.

**Results:** We observed that the frequency of CD4+CD25<sup>high</sup>Foxp3+ (Tregs) in the culture with butyric acid (500 $\mu$ M) was significantly higher than that in the control sample without butyric acid (34,7% vs. 19,2%). The concentration of 500  $\mu$ M increased most effectively the frequency of Tregs, comparing to other concentrations. What is more, the expression of FoxP3 in Tregs incubated with butyric acid (500 $\mu$ M) was higher than that in the control sample (mean fluorescence 15 025 vs. 11 171).

**Conclusions:** The results of the study show that butyric acid increases the frequency of induced T regulatory cells. It may have a potential application in adoptive therapy.

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[21]

### Protein expression of interleukin 10 in the brain cardiovascular centres in normotensive and hypertensive rats

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**Trustee of the paper:** Tymoteusz Żera, MD, PhD

**Introduction:** Growing body of evidence suggests a pivotal role of neuroinflammation in the development of hypertension. Interleukin 10 (IL-10) is a major anti-inflammatory cytokine. Its concentration correlates with increased levels of proinflammatory cytokines that have been implicated in pathogenesis of cardiovascular diseases. Cytokines may play an important role in neurogenic hypertension. There is a need to determine specific role of cytokines in neurogenic hypertension.

**Aim of the study:** In the present study we wanted to determine if concentration of IL-10 in the key cardiovascular centres of the brain differ between spontaneously hypertensive (SHR) and normotensive (WKY) rats.

**Material and methods:** We carried out the study on adult male SHR (n=6) and WKY (n=6) rats. Systolic blood pressure was noninvasively measured with tail-cuff method in all animals. Subsequently, rats were deeply anesthetized with urethane (1.5g/b.w.). Blood was collected, centrifuged and serum was aliquoted into cryotubes. Immediately after euthanasia, brains were snap-frozen in liquid nitrogen. Brains and serum were stored at -80°C for further analysis. Coronal sections of brains were done with a rat brain matrix and the hypothalamus (HTS), the rostral ventrolateral medulla (RVLM) and the nucleus of the solitary tract (NTS) were isolated according to coordinates from the rat brain atlas. Tissues were homogenized and centrifuged. Concentration of IL-10 was determined in the obtained supernatants with ELISA kit.

**Results:** SHR rats had significantly higher systolic blood pressure than WKY rats, 186 $\pm$ 14 vs 144 $\pm$ 18 mmHg respectively (p<0.001, Student's t-test). Protein expression of IL-10 in RVLM and NTS of SHR rats was significantly higher than in WKY rats, 3281 $\pm$ 532 vs 2086 $\pm$ 118 pg/mg of tissue (p=0.005, Student's t-test) and 3430 $\pm$ 399 vs 2216 $\pm$ 171 pg/mg of tissue (p=0.001, Student's t-test), respectively. Concentration of the cytokine in the HTS and serum did not differ significantly between normotensive and hypertensive rats.

**Conclusions:** Higher protein expression of IL-10 in chief regions of the brain involved in the regulation of cardiovascular system is associated with elevated arterial blood pressure. These results suggest that anti-inflammatory cytokines and neuroinflammation in the central nervous system are involved in the pathogenesis of hypertension.

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[22]

### **Expression of Nav1.9 channels in medial prefrontal cortex (mPFC) pyramidal neurons in rats**

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**Trustee of the paper:** Paweł Szulczyk

**Introduction:** MPFC plays a crucial role in planning complex cognitive behavior and decision making. Abnormalities in mPFC development lead to widespread neuropsychiatric conditions such as schizophrenia, depression, drug dependence and epilepsy. It is very likely that changes in the behavior are derivative of abnormal prefrontal cortex neuron activity which in turn depends on expression of ion channels. Nav1.9 ion channels activate at or below the resting membrane potential, possess very slow activation and inactivation kinetic, which suggests that Nav1.9 channels are constitutively active and modulate the resting membrane potential.

**Aim of the study:** To assess the quantitative expression of Nav1.9 channels in medial prefrontal cortex (mPFC) layer II and V pyramidal neurons in young (20 days old) male rats.

**Material and methods:** Brain slices were obtained from young (18- to 22-day-old, n=5) male rats. The rats were perfused through the ascending aorta with phosphate-buffered saline (PBS) followed by 4% paraformaldehyde. Tissues were adequately prepared and frozen in dry-ice cold heptane. Next, serial coronal frozen sections (40  $\mu$ m thick) were cut through the mPFC (Leica CM1850UV). Obtained slices were blocked in goat serum in PBS and incubated overnight at 4°C with primary antibodies – guinea pig anti-Nav1.9 with chicken anti-Map2. Secondary antibodies Alexa Fluor® 488-conjugated goat anti-chicken IgG and Alexa Fluor® 568-conjugated goat anti-guinea pig IgG were applied sequentially. Confocal images were acquired from 4-5 fields along layer II and from 4-5 fields along layer V in the mPFC area. Each field at 1024 x 1024 pixel resolution was scanned every 0.5  $\mu$ m in the Z axis. In each field, 4-5 pyramidal neurons were identified. Additionally, 40  $\mu$ m thick sections were cut through the DRG (dorsal root ganglions) and prepared in the same manner in order to compare expression of Nav1.9 in DRG and mPFC neurons. Obtained images were analyzed in ImageJ software. The immunostained area at the level of maximum nucleus diameter was manually encircled and its mean gray value was measured.

**Results:** The mean gray value of layer II pyramidal neurons in young rats was (1389.9 $\pm$ 31.9, n=114) and was higher than the MGV of layer V pyramidal neurons in young rats (910.4 $\pm$ 29.1, n=113). The MGV of big neurons in DRG was assessed to be 427.3 $\pm$ 10.0 (n=823).

**Conclusions:** It was found that the Nav1.9 channels are expressed in layer II and layer V mPFC pyramidal neurons, moreover their expression is markedly more prominent in layer II than in layer V mPFC.

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# Cardiology & Cardiosurgery

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[23]

### **Incidence, timing, and predictors of occluder-associated thrombus in patients after transcatheter left atrial appendage occlusion.**

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**Trustee of the paper:** Radosław Pracoń MD, PhD, Prof. Marcin Demkow MD, PhD

**Introduction:** Occluder-associated thrombi occur in up to 5% of patients after transcatheter left atrial appendage occlusion (LAAC). There is paucity of data on when to expect and how to predict this disturbing complication of LAAC.

**Aim of the study:** The study aimed to describe incidence, timing, and predictors of occluder-associated thrombi after LAAC and its relation to post-procedural dual antiplatelet therapy (DAPT) duration.

**Material and methods:** As part of a prospective, single center registry, 75 consecutive patients underwent structured follow-up (FU) visits at target 45, 180, and 360 days following LAAC with ACP (n=48) or WATCHMAN devices (n=27). Mean age of the studied patients was 74.0±9.4, 40% were females, mean CHA2DS2-VASc score was 4.2±1.7, and mean HAS-BLED score 2.5±1.4. All FU visits included imaging of the appendage. DAPT duration after LAAC was not centrally guided but decided by the attending physicians.

**Results:** During 58,6 patient-years of follow-up, three occluder-associated thrombi in three patients were found (4%). Two thrombi were visualized in patients after LAAC with ACP device at 114 (2nd FU visit) and 449 days (3rd FU visit) after the procedure. One thrombus was found in a patient after LAAC with Watchman device 335 days (3rd FU visit) after the procedure. All thrombi occurred during single antiplatelet therapy. Duration of the post-procedural DAPT course did not differ between patients with and without thrombus (112±110 vs. 215±150 days, p=0.14). Mean occluder size was greater in patients with thrombus on the occluder as compared to patients without thrombus (32.67±1.53 vs 26.56±2.93mm, resp.). Neither baseline patients' characteristics nor post-procedural DAPT duration were associated with thrombus formation by Cox regression analyses. The only predictor of occluder-associated thrombus was size of the implanted occluder (OR 2.03, CI 1.07-3.86). No thromboembolic complications occurred in the studied cohort.

**Conclusions:** Occluder associated thrombus was found in 4% of patients after LAAC. All cases occurred relatively late after occluder implantation, in patients on a single antiplatelet therapy and were not associated with the post-procedural DAPT duration. The only predictor of occluder-associated thrombus was large size of the occluding device. These results imply the need for longer-term surveillance of patients after LAAC with large occluding devices and do not lend support to extended post-procedural DAPT.

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[24]

### **Assessment of left ventricular diastolic function in patients with systemic lupus erythematosus.**

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**Introduction:** Cardiac comorbidities are one of the most serious complications in patients with systemic lupus erythematosus (SLE). They result from the process of autoimmune inflammation that affects all the anatomical heart structures, especially pericardium and endocardium, which may lead to left ventricular (LV) diastolic dysfunction.

**Aim of the study:** The aim of this study was to analyze LV diastolic function in patients with SLE and to evaluate the correlation between the severity of its impairment and the duration of the disease.

**Material and methods:** 71 SLE patients (62F, 9M, mean age 44,7±14,6 years; mean disease duration 8,7±7,4 years) and age and sex – matched healthy controls (48F, 7M, mean age 43 ±11,8 years) were studied retrospectively. Transthoracic echocardiography (Philips, iE 33) for the assessment of LV diastolic function was performed.

**Results:** Abnormal LV filling was observed in 20 (28%) SLE patients and in 6 (11%) controls (p<0,04), evidenced by inverted mitral E/A ratio (Mit E/A<1). The median of Mit E/A in SLE group was lower than in controls (1,1; range 0,6 – 2,5 vs. 1,2; range 0,7 – 2,8, p=0,01). Patients with SLE showed increased E/E' ratio (7,5; range 4 - 22 vs. 6,55, range 1,6 – 10,8, p=0,003) as well as increased DT (200, range 30 – 360 ms vs. 180, range 160 – 275 ms,

p=0,006). No significant differences in pulmonary venous flow between the studied groups were detected. A strong correlation between duration of SLE and E/E' (r= 0,71, p<0,0001) was found.

**Conclusions:** The aberrant echocardiographic parameters, such as: E/E' ratio, E/A ratio and DT in patients with SLE suggest that this disease impairs LV diastolic function. Moreover, the disease duration correlates positively with the severity of LV dysfunction.

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[25]

#### **ALCOHOL SEPTAL ABLATION RESULTS FROM LATVIAN CENTRE OF CARDIOLOGY TIME PERIOD FROM 2001 TO 2014**

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**Introduction:** Cardiomyopathies are defined by structural and functional abnormalities of the ventricular myocardium that are unexplained by flowlimiting coronary artery disease or abnormal loading conditions with prevalence about 1:500 in the general adult population. All candidates for hypertrophic cardiomyopathy (HCM) treatment with alcohol septal ablation (ASA) method should have severe heart failure symptoms (NYHA classes III or IV), refractory to all medications utilized in HCM, septal hypertrophy  $\geq 18$ mm and outflow tract gradient  $\geq 50$  mm/Hg.

**Aim of the study:** Gather and analyze alcohol septal ablation results in Latvian Centre of Cardiology (LCC) time period starting from year 2001 to 2014.

**Material and methods:** Results has been gathered and analysed in LCC which had alcohol septal ablation between 2001 – 2014. We investigated consecutive 91 patients who received ASA.

**Results:** During the time period from year 2001 to 2004 91 patient had ASA (women, n =50 (54.9%)). Maximal pressure gradient before ASA was in average 73.7 mmHg (SD 35.8). After ASA in first month maximal pressure gradient decreased to 30.7 mmHg (SD 27.4), p <0.001. Most common complication after ASA was heart rate and transient or permanent disruption of the conduction system. Transient third degree atrioventricular (AV) block developed in 16 of patients (17.6%), but permanent AV block, why requiring permanent pacemaker (PPM) implantation in 7 case (7.7%). Interventricular septal thickness before ASA was in average 22.4 mm (SD 4.3), after procedure it decreased to 20.3mm (SD 4.6), p<0.001. 30 day mortality after ASA was 0 (0%).

**Conclusions:** Alcohol septal ablation is an effective and safe method in selected patients with hypertrophic obstructive cardiomyopathy. The most common complications after ASA are conduction abnormalities and arrhythmias, in most cases they are transient. According to our study results we can conclude that in Latvia ASA is method of choice for treatment of symptomatic obstructive HCM.

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[26]

#### **Adherence to the antihypertensive therapy by using an electronic pill dispenser.**

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**Trustee of the paper:** Anton Rodionov

**Aim of the study:** adherence is essential in the therapy for arterial hypertension. We investigated the affect of electronic pill dispenser on adherence to antihypertensive medicines.

**Material and methods:** in this randomized controlled trial were 2 groups. The patients in the group (A) used an electronic pill dispenser to control the pills intake. The patients in the control group (B) received standard-of-care. Adherence was measured by pill count.

**Results:** the duration of the study was 62 days. This study involved 49 patients >60 years, who was treated with antihypertensive therapy. We dispensed 25 patients in the group A and 24 patients in the group B. Compliance of the patients using an electronic pill dispenser was 92,6%, in the control group was 73,0%. In A standard deviation ( $\delta$ ) was 10,4; mean compliance for general statistical population was  $92,6 \pm 4,2$  (p<0,05), for the group B  $\delta$  was 18,6, mean compliance  $73,0 \pm 8,1$  (p<0,05).

**Conclusions:** the compliance to therapy in the group A (92,6%) appeared higher than in the group B (73,0%). So doctors should advice to their patients to use an electronic pill dispenser because it controls pills intake and simple for applying. The study proved the efficiency of this device in medical practice.

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[27]

### **Electrotherapy complications among 1973 patients – a single centre analysis**

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**Trustee of the paper:** dr n. med. Agnieszka Kołodzińska (MD, PhD), dr hab. n. med. Marcin Grabowski (MD, PhD)

**Introduction:** The number of implanted cardiac implantable electronic devices (CIEDs) rises. The most common complications are associated with sensing functions (over- and undersensing), rise of the pacing threshold, inadequate and unsuccessful ICD interventions, ineffective pacing, lead dislocation or failure, perforations, and electrical noise.

**Aim of the study:** Our aim was to establish most frequent complications encountered in electrotherapy of arrhythmias which may lead to more effective prevention.

**Material and methods:** In our study we included 1973 patients who underwent CIED implantation. We collected demographic, clinical, and device characteristic at the time of implantation and during follow-up period. The patients were subjected to regular control in intervals from 3 to 12 months depending on the type of device, leads, and clinical state. The mean length of follow-up was 27 months ( $\pm 33,16$ ). Associations in our study we have measured with Statistica 10 software (Statsoft Inc.) using Pearson correlation-coefficient.

**Results:** Patients underwent their first implantation in time period from May 1986 to September 2014 in mean age of 68,4 years [range 13-97] with female subjects making up 36% (n=709) of the studied population. In the group 68,37% (n=1349) patients were holding a pacemaker (PM), and 31,63% (n=624) were holders of an implantable cardioverter-defibrillator (ICD). In the group of ICD patients 18,75% (n=117) had cardiac resynchronization therapy defibrillator (CRT-D). Mostly affected by any of the complications were CRT-Ds with oversensing (in 6,03% of CRT-D patients,  $p=0,018$ ), whereas in other types those were: ineffective RV pacing for DDD PMs (2,02%,  $p=0,084$ ), atrial oversensing for AAI PMs (4,88%,  $p=0,169$ ), oversensing for double chamber ICD (5,24%,  $p<0,0001$ ), and inadequate ICD interventions for single-chamber ICD (3,29%,  $p=0,285$ ). A strong statistical significance was reached by lead failure, which occurred with relatively lower incidence in double-chamber ICD (1,90%,  $p=0,001$ ), however lead dislocation occurred in 2,87% of patients with ICD-DR, it reached lower significance (0,011). What should be noted, T-wave oversensing was observed in all devices, but only in CRT-Ds it reached statistical significance (1,72%,  $p=0,015$ ).

**Conclusions:** Complication related to implantable electronic devices are rare phenomenon. The most frequently oversensing was observed. The complication rate was higher in patients with implantable cardioverter-defibrillator.

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[28]

### **Troponin concentration in patients diagnosed with acute coronary syndrome - gender differences**

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**Introduction:** Cardiac troponins are one of the main biomarkers corresponding with injury of myocardium that occur in acute coronary syndromes (ACS). They are essential for risk stratification and choosing appropriate treatment in patients with ACS. Some studies show significant differences in sensitivity and specificity of blood tests for those biomarkers between men and women.

**Aim of the study:** The aim of the study was to compare cardiac injury biomarkers concentration between men and women in population of patients submitted to the hospital with ACS diagnosis.

**Material and methods:** Medical records of 297 patients were subject to retrospective analysis. The patients were diagnosed with ACS and treated according to ESC Guidelines. All the patients underwent coronary angiography. Sudden cardiac arrest due to ACS, intubation at admission, end-stage renal failure, severe liver disease and pregnancy were excluding criteria. All the patients had specific laboratory blood tests did at admission, including troponin I (TnI), CKMB mass, CKMB and CK concentration.

**Results:** From 297 patients included in this study 96 (32%) of them were women and 201 (68%) men. Study shows that women had significantly lower blood concentrations of cardiac troponin (5,611 ng/mL vs 18,615 ng/mL,  $p=0,042$ ). Similar reliance was observed for CKMB (31,29 ng/mL vs 56,83 ng/mL,  $p=0,024$ ) and CK (234 U/L vs 370 U/L,  $p=0,004$ ). No significant difference was present in concentration of CKMB-mass between both genders (15,58 ng/mL vs 26,06ng/mL,  $p=0,08$ ).

**Conclusions:** The study gives interesting perspective on patients with ACS, showing that there are important differences between males and females due to cardiac injury biomarkers concentration, that can affect on choice of the treatment strategy for each patient.

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[29]

### **The influence of gender on treatment strategy in acute coronary syndrome**

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**Introduction:** One of the most common cardiovascular diseases is coronary artery disease (CAD), which causes acute coronary syndromes (ACS). ACS is a major cause of death in both men and women. The latest reports show higher mortality because of CAD in women than in men. Less specific symptoms of CAD in women cause greater diagnostic difficulties and may play an important role in risk stratification and choice of treatment strategy.

**Aim of the study:** The aim was to investigate the differences between genders in treatment strategy in patients with acute coronary syndrome.

**Material and methods:** We performed a prospective, single-center study (1st Department of Cardiology in Poznan), which included 297 consecutive patients (32% were woman) diagnosed with ACS in 2014. The patients were diagnosed and treated according to the European Society of Cardiology Guidelines. All patients in this registry underwent coronary angiography. They were divided into three groups – STEMI (26,94%), NSTEMI (22,22%) and unstable angina (UA) (50,84%). The study based on blood test results and medical history of the patients.

**Results:** Compared with males, females were older ( $64,8\pm 11,0$  vs.  $68,2\pm 10,6$ ,  $p=0,0175$ ), had significantly higher systolic blood pressure on admission ( $149,1\pm 27,2$  vs.  $142,4\pm 26,6$ ;  $p=0,0340$ ), but the heart rate was similar ( $p=0,0699$ ) there was also no significant difference in BMI ( $p=0,7295$ ). All patients underwent coronary angiography. Female sex was associated with a higher incidence of NSTEMI-ACS (UA and NSTEMI) (82 % vs. 69 %,  $p=0,038$ ). Women were more likely to be treated conservatively than to undergo percutaneous coronary intervention (PCI) or CABG (42,71% vs. 23,88%,  $p=0,0016$ ) compared to men. PCI was performed significantly more often in men than in women (70,65% vs. 56,25%,  $p=0,0016$ ).

**Conclusions:** Gender based differences showed that among the patients with ACS women were older than men. Women were also more likely to be treated conservatively than men. This differences may be caused by a lower incidence of STEMI in women.

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[30]

### **Response to the initial bolus of heparin during the catheter ablation of atrial fibrillation depends on the pre-procedural anticoagulation strategy.**

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**Trustee of the paper:** Piotr Lodziński, MD, PhD

**Introduction:** The catheter ablation of atrial fibrillation (AF) is associated with high risk of the thromboembolic events during the procedure. The optimal periprocedural anticoagulation requires administration of heparin during or immediately after the transeptal puncture with additional boluses of heparin to maintain the level of activated clotting time (ACT) between 300 and 400 seconds.

**Aim of the study:** The aim of the study was to assess the response to first dose of heparin during the catheter ablation of AF in patients on interrupted novel oral anticoagulants (NOACs) and uninterrupted vitamin K antagonists (VKA).

**Material and methods:** Consecutive 64 patients (67,2% males; median age 59; 20 treated with NOACs, 26 with VKA and 18 without any anticoagulation treatment) qualified to the pulmonary vein isolation (PVI) procedure from February 2014 to August 2015 were analyzed retrospectively. Patients anticoagulated with VKA continued the therapy without any interruption to maintain the level of INR between 2 and 3 during the time of procedure. NOACs (dabigatran or rivaroxaban) had been withdrawn 48 hours before the procedure and restarted 6 hours after PVI (dabigatran) or in the morning first day following the ablation. The initial bolus of heparin was administered immediately after the transeptal puncture, in a dose between 90 and 110 u/kg. The first measurement of ACT was done 15 minutes after the initial injection of heparin. Target ACT was > 300 seconds.

**Results:** The ACTs after the initial bolus in the groups without any anticoagulation (NA), treated with VKA and NOACs were 234 s (220-246; NA vs. VKA  $p<0.0001$ ; NA vs NOAC  $p=0.7365$ ), 307 s (255-360) and 238 s (219-267; VKA vs. NOAC  $p<0.0001$ ), respectively. In the analyzed group of patients only 16 reached the level of ACT >300 s after the initial bolus of heparin, while 48 did not achieve the therapeutic anticoagulation. The level of ACT > 300 s was reached in 11.1% of patients without anticoagulation treatment, 53.9% of patients on VKA and 0% on NOACs (NA vs. VKA  $p<0.0138$ ; NA vs. NOAC  $p=0.6528$ , VKA vs. NOAC  $p<0.0001$ ).

**Conclusions:** Patients on NOACs had significantly lower level of activated clotting time after the initial bolus of heparin in comparison to the group on uninterrupted warfarin. There were no statistically significant differences between the NOACs and NA groups.

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[31]

### **Similar clinical and echocardiographic outcomes of cardiac resynchronization therapy irrespectively to presence of left bundle branch block - insights from single-centre registry.**

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**Introduction:** Cardiac resynchronization therapy (CRT) is an important treatment strategy in severe heart failure (HF) with beneficial effect on mortality and morbidity, though it is beneficial only in strictly selected group of patients. Results of clinical trials suggest greater response to CRT in patients with left bundle branch block (LBBB). However, about 30% of patients with heart failure demonstrate conduction abnormalities other than LBBB.

**Aim of the study:** The aim of this study is to evaluate whether patients with HF and non-LBBB conduction abnormalities obtain the same benefits from CRT as those with LBBB.

**Material and methods:** This is a real-life, single centre registry of 55 patients with symptomatic (NYHA class  $\geq$  II), severe HF (left ventricular ejection fraction (LVEF)  $\leq$  35%) who underwent CRT device implantation between mm/rrrr and mm/rrrr. Lack of an informed consent for follow up was the only exclusion criterion. The mean age was 66 years with vast majority of males (80%). At the time of implantation the median LVEF was 26% and NYHA functional class was higher than II in 87% of patients. 73% of patients presented LBBB, whereas 27% other conduction abnormalities with minimal QRS duration 160ms. There was no significant differences with regard to baseline demographic and clinical data between group with or without LBBB except higher incidence of ischemic cardiomyopathy (100% vs 65%,  $p=0,011$ ) and older age (63,9 vs 72,5,  $p=0,00074$ ) in non-LBBB group.

**Results:** Median follow-up was 261 days. The hospitalization rate was comparable between group with or without LBBB (20% vs 27%, respectively,  $p=0,56$ ). The mortality rate was 6% and all deaths were in group with LBBB. The improvement of at least one class in NYHA functional class was similar in both groups (47,5% vs 67%,  $p=0,2$ ). The rate of responders, defined as increase in LVEF of  $\geq$  10%, was also comparable (40% vs 53%, respectively,  $p=0,37$ ). There was no significant differences in other echocardiographic parameters.

**Conclusions:** Surprisingly, in mid-term results there was no significant differences in clinical and echocardiographic outcomes between group with or without LBBB. Similar to other trials, the benefits from CRT in patients with non-LBBB conduction abnormalities are related to the QRS duration. Probably, patients with minimal QRS duration 160ms obtain equal profits to patients with LBBB. These hypothesis should be confirmed in a larger, prospective study.

[32]

### **Obstructive sleep apnea and autonomic nervous system.**

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**Introduction:** Obstructive sleep apnea (OSA) is respiratory disorder associated with recurrent obstruction of upper airways with intermittent hypoxemia and reactive waking reactions during sleep. Recent studies suggest that abnormal autonomic control may be associated with higher prevalence of cardiovascular diseases in patients with OSA due to elevated sympathetic tone.

**Aim of the study:** The aim of the study was to investigate relationship between OSA and ANS parameters.

**Material and methods:** We retrospectively analyzed 1270 patients who were treated in our outpatient sleep apnea clinic. All patients underwent polysomnography. 99 patients with OSA and data obtained from 24-hour ECG-holter (ECG holter) and 24-hour blood pressure monitoring (ABPM) were included in further analysis. Local ethics committee gave consent to conduct the study.

**Results:** In our study population mean age was  $61.2 \pm 9.8$  years, 72.2% were male, 58.8% were smokers, 75.8% were obese, 86.7% had hypertension, 83.7% had hyperlipidemia, 57.1% reported snoring. Average systolic and diastolic BP during awake hours assessed by ABPM were  $131.4 \pm 13.9$  mmHg and  $74.9 \pm 9.7$  mmHg respectively. Mean systolic and diastolic BP during sleeping hours assessed by ABPM were  $121.3 \pm 14.3$  mmHg and  $66.7 \pm 9.1$  mmHg respectively. Average heart rate (HR) assessed by ECG-holter was  $69 \pm 10.3$  per minute.

We identified statistically significant correlations ( $\rho$ -Spearman's rank correlation coefficient) between supine AHI and average systolic BP at night and number of pauses ( $\rho_1=0.252, p_1=0.024; \rho_2=0.345, p_2=0.035$  respectively), as well as between obstructive apnea mean duration and average systolic BP during both awake and sleeping hours ( $\rho_1=-0.282, p_1=0.012; \rho_2=-0.229, p_2=0.042$  respectively). Also we found significant correlation between number of central apneas per hour, number of mixed apneas per hour and minimal HR ( $\rho_1=-0.235, p_1=0.037; \rho_2=-0.346, p_2=0.002$  respectively), between total number of central apnea and mixed apnea and minimal HR ( $\rho_1=-0.230, p_1=0.042; \rho_2=-0.319, p_2=0.004$  respectively), between central, mixed and obstructive apnea mean duration and minimal HR ( $\rho_1=-0.273, p_1=0.015; \rho_2=-0.351, p_2=0.002; \rho_3=-0.322, p_3=0.004$  respectively).

**Conclusions:** Relationship between OSA and ANS activity is currently robustly studied. We found autonomic imbalance in patients with OSA in favour of sympathetic system at night. Hypoxaemia caused by apnea and hypopnea may play crucial role in these changes, though further studies on larger population are needed to assess the importance of those findings.

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[33]

### **Long-term bleeding complications in patients after acute pulmonary embolism treated with vitamin K antagonists, enoxaparin or rivaroxaban**

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**Introduction:** Acute pulmonary embolism (APE) is a potentially serious medical condition. Patients after PE require 3-6 months or perpetual treatment. Anticoagulant therapy consists of oral anticoagulants: vitamin K antagonists (VKA), enoxaparin (ENO) or rivaroxaban (RIV). Nevertheless, bleeding complications occur.

**Aim of the study:** The aim of the study is to compare the incidence of long-term bleeding complications in patients after APE treated with RIV, ENO or VKA.

**Material and methods:** In a telephone survey 55 people from database containing 176 patients after an episode of APE in years 2012-2014 were asked about bleeding complications after leaving hospital. 13 of them were treated with ENO, 22 with VKA, 18 with RIV and 2 were treated with other drugs. The patients not involved in the study were left out due to their death (32 cases) or incorrect telephone numbers. We categorized complications according to WHO bleeding scale.

**Results:** Bleeding requiring RBC transfusion with necessary hospitalization do not occur in RIV and ENO treatment while in 5% ( $p=0,17$ ) of VKA-treated patients was required. Epistaxis occurred in 17% of RIV-treated patients, in 15% ( $p=0,44$ ) of ENO-treated patients and in 9% ( $p=0,2$ ) of respondents taking VKA. The presence of blood in the mouth was reported in 17% of RIV-treated patients, in 5% ( $p=0,1$ ) of VKA-treated patients. In patients treated with ENO ( $p=0,06$ ) there was no sign of blood in the mouth. Hematochezia was found in 6% of RIV-treated patients, in 9% ( $p=0,34$ ) of VKA-treated patients, in 8% ( $p=0,4$ ) of patients treated with ENO. Hematuria was present in 11% of RIV-treated patients, in 9% ( $p=0,42$ ) of VKA-treated patients. There was no hematuria in patients treated with ENO ( $p=0,1$ ). Hemoptysis was reported in 3% of patients treated with RIV, among patients treated with VKA ( $p=0,2$ ) and ENO ( $p=0,26$ ) hemoptysis did not occur. Eye hemorrhage was present in 5% of RIV-treated, 23% VKA-treated ( $p=0,056$ ) and 22% ( $p=0,08$ ) ENO-treated patients. Petechiae were present in 33% of RIV-treated patients, in 15% ( $p=0,13$ ) of patients treated with ENO, in 9% ( $p=0,03$ ) of VKA-treated patients. In 22% of patients receiving RIV hematoma occur, ENO-15% ( $p=0,3$ ) and VKA- 45,5% ( $p=0,06$ ) of patients. Joints bleeding and abnormal vaginal bleeding did not occur in these treatment groups.

**Conclusions:** The frequency of long-term bleeding complications was the lowest in group of patients taking RIV - 56%, comparing to ENO - 69% ( $p=0,23$ ) and VKA - 64% ( $p=0,30$ ).

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[34]

### **Novel oral anticoagulants in comparison to known antithrombotic treatment strategies – patients population characteristics.**

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**Introduction:** Atrial fibrillation (AF) is the most common cardiac arrhythmia worldwide, associated with life-threatening complications like stroke and thromboembolism. At this time, the most widely used thromboembolic protection for patients with AF is vitamin K antagonists (VKAs). Though use of novel oral anticoagulants (NOACs) is increasing.

**Aim of the study:** The purpose of our study was to assess characteristics of population in which NOACs were introduced.

**Material and methods:** We included in the study 565 consecutive patients hospitalized in our Clinic between 10-12.2013. In further analysis 200 patients (male:49%; mean age  $73,1\pm 10,9$ ) were included. According to type of antithrombotic drug we divided patients into 3 groups: low molecular weight heparins (LMWHs) (29, 14,5%), NOACs (67, 33,5%) and VKAs (104, 52%). All patients had transthoracic echocardiography, blood samples and rest-ECG performed. Additionally in all patients we assessed HAS-BLED, CHADS2 and CHA2DS2-VASC score. Patients also had 1 year follow up.

**Results:** In our study patients on LMWHs were the oldest ( $79,69\pm 8,11$  yrs,  $70,84\pm 11,77$  yrs,  $72,76\pm 10,36$  yrs for LMWHs, NOACs and VKAs respectively,  $p=0,002$ ). There were significant differences between study groups regarding frequency of heart failure with reduced ( $27,6\%$ ,  $9\%$ ,  $22,3\%$  for LMWHs, NOACs and VKAs respectively,  $p=0,03$ ) and preserved left ventricular ejection fraction ( $p=0,02$ ), regarding frequency of coronary artery disease (CAD) ( $p=0,017$ ), peripheral AD ( $p=0,005$ ), history of myocardial infarction ( $p=0,013$ ) and history of CA bypass grafting ( $p=0,003$ ). Our population differed also significantly regarding frequency of chronic kidney disease ( $p=0,002$ ) with mean eGFR of  $53,32\pm 22,94$ ,  $72,85\pm 20,35$ ,  $66,77\pm 21,26$  ml/min./ $1,73m^2$  for LMWHs, NOACs and VKAs respectively ( $p<0,001$ ). Additionally we found significant differences in pharmacotherapy. Study groups differed also significantly according to scores in: CHADS2 ( $p=0,004$ ), CHADS2-VASC ( $4,86\pm 1,46$ ,  $3,44\pm 1,82$ ,  $4,06\pm 1,72$  for LMWHs, NOACs and VKAs respectively,  $p=0,002$ ) and HAS-BLED ( $p<0,001$ ). During the one-year follow-up, statistically significant predictive ability of HAS BLED score for bleeding was not observed.

**Conclusions:** In our study population of patients taking NOACs was the youngest, with significantly smaller number of comorbidities, with the best kidney function and with the lowest scores in all assessed scales. In opposite to that was subgroup taking LMWHs.

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[35]

### Evaluation of cardiac risk stratification tools in major vascular surgeries.

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**Introduction:** Despite the improvement in perioperative care 30-day mortality rate in patients undergoing noncardiac surgeries remains at a significant level of 1-2%. Revised Cardiac Risk Index (RCRI) is commonly used by clinicians to predict the risk of cardiac complications after noncardiac surgeries. Despite its usefulness RCRI has several limitations. This fact has been addressed by authors of National Surgical Quality Improvement Program (NSQIP) calculator. Risk prediction in vascular surgeries has been proved to be particularly difficult.

**Aim of the study:** The aim of our study was to evaluate the predictive value of RCRI and NSQIP prediction tools in terms of major adverse cardiovascular events in a group of patients undergoing vascular surgeries.

**Material and methods:** 896 patients, aged 45 years or older, undergoing major vascular surgery were enrolled in the study. We have stratified cardiac risk using RCRI score and NSQIP simplified calculator. High-sensitivity Troponin T (hsTnT) blood levels were measured before and four times after surgical procedure to detect myocardial injury. Patients were closely observed in the perioperative period and 30 days after the surgery in terms of myocardial infarction, cardiac arrest and troponin elevation. Statistical analysis was performed using logistic regression models and goodness of fit measures to establish the most valuable clinical tool for risk stratification.

**Results:** The predictive value of RCRI and NSQIP varied across different clinical endpoints used in analysis, nevertheless the accuracy of both tools was moderate in all cases. NSQIP proved superior to RCRI in prediction of myocardial infarction, cardiac arrest, troponin elevation and death in 30-day observation.

Myocardial infarction/cardiac arrest

NSQIP (OR 1,54; 95%CI 1,23–1,93; p<0,0001; AUC 0,62)

RCRI (OR 1,09; 95%CI 1,03–1,16; p=0,004; AUC 0,62)

Postoperative troponin elevation >0,052 ug/L

NSQIP (OR 2,28; 95%CI 1,83–2,85; p<0,0001; AUC 0,73)

RCRI (OR 1,17; 95%CI 1,11–1,23; p<0,0001; AUC 0,68)

Death of any cause

NSQIP (OR 1,7; 95%CI 1,25–2,29; p=0,001; AUC 0,69)

RCRI not statistically significant (p=0,104)

**Conclusions:** Neither NSQIP calculator nor RCRI reached the expected, satisfactory discrimination level of 0,8 measured with AUC in the analysed set of clinical endpoints. Our results do not justify the routine use of these tools in vascular surgeries and underline the need of more accurate risk prediction models derivation.

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[36]

### 3D-printing models of complex congenital heart defects in pediatric cardiosurgery

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**Introduction:** Real 3D-imaging of congenital heart defects with complex anatomy by 3D-printed heart models is an advanced imaging modality in paediatric cardiology/cardiosurgery. 3D-printed heart models derived on MRI or CT data exactly evaluating complex anatomical spational relationships can be very helpful for surgical planning.

**Aim of the study:** The aim of this study was to confirm the possibility of using FDM 3D printer for surgical planning in paediatric cardiology/cardiosurgery, evaluate the accuracy of printed models and analyse the impact of 3D printed heart model for surgical planning in each patient in the study.

**Material and methods:** Patients with complex congenital cardiovascular anomalies were selected. Data were obtained from CT-angiography in 8 infants. CT images were segmented and Felix-3.0 was used for 1:1 3D model printing. The Accuracy of 3D printing process was evaluated by comparison of 3D printed model size measurements with measurements of the segmented virtual model. A Bland-Altman analysis was used for statistical analysis. Moreover, the impact of 3D printed heart models for surgical planning was analysed in each patient separately.

**Results:** The Bland-Altman analysis confirmed a high accuracy of 3D heart models printing by significant correlation between 3D-models and segmented CT-images dimensions measurements ( $-0,56\pm 0,93\text{mm}$ , mean bias $\pm$ standard deviation). All cardio surgeons confirmed a high impact of 3D printed heart models for optimal surgical planning.

**Conclusions:** Current FDM printers can produce authentic copies of patient's cardiovascular system. Each complex congenital heart anomaly was precisely delineated by 3D-heart model. 3D-printed heart models can optimize surgical procedures due to better planning. They may eventually shorten procedural time and patient's morbidity.

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[37]

### **EFFECTS OF DIRECT RENIN INHIBITORS ASSOCIATION WITH POLYPHENOLIC EXTRACTS IN EXPERIMENTAL INDUCED ARTERIAL HYPERTENSION**

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**Introduction:** Arterial hypertension (AHT) is still a major field of study in the continuous research for new and better treatments. Direct renin inhibitors (Aliskiren), have great potential because they block the first step in the renine-angiotensin-aldosterone system (RAAS). Polyphenols extracts provide a protective role against cardiovascular diseases, alongside multiple biological effects.

**Aim of the study:** The aim of the study was to emphasize the effects of the association between the renin inhibitor and the polyphenolic extract on biochemical parameters and systolic and diastolic blood pressure on an L-NAME (NG-nitro-L-arginine methyl ester) experimental induced arterial hypertension in murine models.

**Material and methods:** The research was performed on Wistar White rats (average weight of 250g) for a period of 8 weeks, which were divided into 6 groups of 12: group I-control; group II-rats that were administered polyphenolic extract from the Aronia melanocarpa fruit; group III- L-NAME induced AHT; group IV-administration of L-NAME and polyphenols; group V- L-NAME and Aliskiren; group VI-rats with AHT that were given Aliskiren and polyphenol.

Also, the exploration of the lipid profile included the measurement by photocolometry, in the serum, of the concentration of total cholesterol (Ch-T), of total lipids (LT), of HDL-col and LDL-col for all the animals included in the experiment.

**Results:** Polyphenolic extract from Aronia melanocarpa reduce systolic and diastolic arterial tension values in rats with drug-induced hypertension, a phenomenon more pronounced when polyphenols are associated with Aliskiren. All the measured blood pressure components revealed a statistically significant blood pressure drop in the groups with polyphenols ( $p < 0.05$ ). The lowest average values of the Ch-T levels have been recorded in Group VI, significantly lower than those recorded in AHT and Control groups. The individual values of the Ch-T presented direct correlations with the systolic blood pressure, for the II ( $r = +0.58$ ) and IV ( $r = +0.76$ ) groups. HDL-col is significantly higher in the VI group than in AHT group.

**Conclusions:** The direct renin inhibitors could become an alternative treatment of AHT, replacing other RAAS therapies, evidence showing that it has less side effects. Beside its hypotensive role, the combination between Aliskiren and polyphenolic extract produce superior hypolipidemic and antioxidant effects which could also maintain a much better protection of the target organs (brain, heart, kidney).

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[38]

### **Predictive factors of postoperative Acid-Base imbalances in adult cardiac surgery**

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**Introduction:** Acid-base imbalances is common clinical problem in critically ill patients and those who have undergone surgery especially cardiac surgery due to cardiopulmonary bypass usage; so in this study we want to investigate the prevalence and correlation of several types of acid-base imbalances within and after cardiac surgery in adults.

**Aim of the study:** to investigate the prevalence and correlation of several types of acid-base imbalances within and after cardiac surgery in adults.

**Material and methods:** There was a fifty patients (34male, 16female) who underwent elective cardiac surgery during 3-4 months were at Shahid Madani cardiac hospital of Tabriz, Iran. Demographic features of patients and information of arterial blood gases analysis that had been taken from patients during surgery and first 24 hours of admission in intensive care unit (ICU) were recorded. Results of arterial blood gases analysis were divided to metabolic acidosis, respiratory acidosis, metabolic alkalosis and respiratory alkalosis; so correlation between imbalances during surgery and after that were checked out. Statistical analysis were performed with T test, X<sup>2</sup>, Fisher, multinomial logistic regression and Pearson correlation coefficient in SPSS17 software.

**Results:** There were 490 arterial blood gas analysis (ABG) totally that 197 of them had been taken during surgery and 293 of them in first 24 hours of admission in ICU. Although ABG analyses were normal in 33.3% of results, but one of the imbalances has been seen in 66.7% of them. There were compensation in 70% during surgery and 72% in first 24 hours in ICU that both of them are same (P=0.557). There was no correlation between acid-base imbalances before and after surgery (P=0.554). Respiratory alkalosis (37%) during surgery and metabolic alkalosis (41%) were the most common disturbances have been seen. There was no correlation between arterial PH and the duration of surgery but hypothermia and extended period of cardiopulmonary bypass cause acidosis temporarily.

**Conclusions:** Respiratory alkalosis and metabolic alkalosis are the most common acid-base disturbances during surgery and first 24 hours after that respectively. There was no correlation between acid-base imbalances before and after surgery. There was no correlation between arterial PH and the duration of surgery but using of hypothermia and extended period of cardiopulmonary bypass cause acidosis.

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[39]

#### **Evaluation of inhaled iloprost in vascular vasoreactivity test of pulmonary hypertension in patients with end-stage heart failure eligible for heart transplantation.**

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**Introduction:** Eligible for heart transplantation requires evaluation of reversibility of pulmonary hypertension, which occurs as a complication of severe left ventricular heart failure and which is a reason for post-operative right ventricular heart failure. Evaluation of vascular vasoreactivity requires application vasodilators, which have the disadvantage of influence on systemic circulation.

**Aim of the study:** The aim of the study is to evaluate of inhaled iloprost in vascular vasoreactivity test in determination of patients' eligibility for heart transplantation on account of severe left ventricular heart failure followed by pulmonary hypertension.

**Material and methods:** In 39 patients (at the age 53,5 ± 12, 85% male) presenting pulmonary hypertension on account of end-stage left ventricular heart failure (i.e. EF<30%, pVO<sub>2</sub><15 ml/kg/min, NYHA III-IV), who were determined of their eligibility for heart transplantation, right heart catheterization with vascular vasoreactivity test was carried out applying iloprost nebulization (dose of 5µg). Patients were qualified for this study, if their pulmonary vascular resistance remained 2,5 WU or more as well as their transpulmonary gradient remained 12 mmHg or more.

**Results:** Relevant reduction of pulmonary vascular resistance (413,9 ± 244,7 vs 294,1 ± 248,5 dyn\*s\*cm<sup>-5</sup>; p<0.05), transpulmonary gradient (22,8±11,7 vs 17,4±11,4 mm Hg; p<0.05) as well as relevant increase in cardiac index (2,36 ± 0,56 vs 2,68±0,95 l\*min<sup>-1</sup>\*m<sup>-2</sup> p<0.05) was observed. 19 patients (56%) fulfilled reversibility criteria, i.e. PVR<2,5 j. Wooda alike TPG<12 mmHg. Mean pulmonary arterial pressure was reduced after iloprost administration and estimated 37,65±10,05 mmHg vs. 42,1±9,8 mmHg p<0,05. One patient (2,5%) was observed to have systemic blood pressure decrease below 85 mmHg. One patient presented pulmonary oedema.

**Conclusions:** Vascular vasoreactivity test with inhaled iloprost induced relevant reduction of transpulmonary gradient, pulmonary vascular resistance and increase in cardiac index without systemic blood pressure decrease. There is a need to assess postoperative prognosis of patients, who were determined of their eligibility for heart transplantation by vascular vasoreactivity test with iloprost. Moreover there is a need to establish appropriate drug doses.

[40]

**Warfarin anticoagulant effect in patients with nonvalvular atrial fibrillation: a review of safety, efficacy, quality of life, and cost effectiveness.**

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**Introduction:** Atrial fibrillation is considered as an independent predictor of origin ischemic stroke and heart failure, regardless of symptoms, caused by fibrillation. This arrhythmia has a significant impact on quality of life and increases the risk hospitalization, disability and of death. One of the main roles play a vitamin K antagonist in primary and secondary prevention of thrombosis .

**Aim of the study:** Examine the prevalence of thromboembolic and bleeding complications in patients with non-valvular atrial fibrillation who receiving warfarin in Ukraine (Sumy).

**Material and methods:** The study included 40 patients with persistent and permanent atrial fibrillation for the period from July 2015 to January 2016. Among them, were 27 (67.5%) women and 13 (32.5%) of men aged from 49 to 77 years. Average age was  $66,7 \pm 0,52$  years. The I group included 24 patients with permanent atrial fibrillation, the II group consisted of 16 patients with persistent atrial fibrillation. Patients who taking warfarin, was calculated TTR (time spent in the target range INR). In the surveyed patients was conducted risk of stratification thromboembolic complications on the international CHA2DS2-VASs scale. To assess the risk of bleeding in AF patients we used the HAS-BLED scale.

**Results:** A stable patient on warfarin was defined as having at least three consecutive International Normalized Ratio (INR) measurements within the expected therapeutic range (2-3, according to indication for warfarin use). Patients, who taking warfarin, INR time spent in the target range (TTR) arranged from 78 to 82%. Patients with high risk of thromboembolic complications (more than 5 points) of CHA2DS2VASS scale was significantly more in I group (18%) compared with II group ( $p = 0.011$ ). The majority of patients had a high risk of bleeding (more than 3 balls) on a HAS-BLED scale.

**Conclusions:** the relationship between monitoring VKAs and their efficacy/safety balance is proven. The exponential increase in studies evaluating health-related quality of life as an important outcome in anticoagulated patients has shown that monitoring these patients leads to more anticoagulation stability, lower incidence of bleeding, and less ischemic events. The structure of the leading risk factors was defined among patients with atrial fibrillation who live in Ukraine (Sumy). The treatment of new oral anticoagulants allows us to assign them without special control laboratory control.

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[41]

**Impact of coronary artery disease complexity on short-term outcomes of transcatheter aortic valve implantation**

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**Introduction:** Transcatheter Aortic Valve Implantation is treatment option of aortic stenosis (AS) for high-risk patient who are burdened with numerous comorbidities - including coronary artery disease. Although percutaneous coronary intervention (PCI) has shown to be feasible for high-risk patients, the optimal timing of the procedure is not defined. Therefore it is important to examine impact of CAD severity on TAVI outcomes.

**Aim of the study:** Study was conducted to determine whether complexity of coronary artery disease is a factor influencing short-term outcomes of performed TAVI.

**Material and methods:** We calculated retrospectively SyntaxScore (SS) for two-hundred patients ( $n=200$ , 49% female, mean age  $80,37 \pm 7,85$  years) that underwent TAVI between March 2010 and July 2015 in the 1st Department of Cardiology, Medical University of Warsaw, Poland. If patient ( $n=44$ ) received staged PCI 6 months or less prior to TAVI then residual SyntaxScore (rSS) was calculated. 37% of patients had CAD (defined as stenosis of  $\geq 50\%$  of any coronary artery). The SS ranged between 1 and 24 with the average of  $8,63 \pm 5,67$ . Clinical outcomes were compared between three groups: no-CAD ( $n=126$ ), low SS (SS 1-8,  $n=43$ ) and high SS (SS  $>8$ ,  $n=31$ ). Primary end point was 30-day cardiovascular mortality and secondary end points included: stroke / transient ischemic attack (TIA), myocardial infarction (MI), vascular complications, conduction disturbances. Endpoints are defined according to Valve Academic Research Consortium II (VARC II).

**Results:** There were not significant differences in 30-day cardiovascular mortality between compared groups (no-CAD: 7,9%, low SS: 9,7%, high SS: 16,1%; p=0,38). However, complications of any type (according to VARC) were observed more often in group of patients with more complex CAD (no-CAD: 39,6%, low SS: 46,5%, high SS: 64,5%; p = 0,043). CAD was associated with higher stroke / tia (no-CAD: 1,6%, low SS: 4,7%, high SS: 13,7%; p=0,03) and MI (no-CAD: 2,5%, low SS: 0%, high SS: 10,8%; p = 0,038) occurrence. Neither vascular complications (no-CAD: 17,7%, low SS: 26,1%, high SS: 25,8%; p = 0,39) nor conduction disturbances (no-CAD: 23%, low SS: 21,6%, high SS: 14,2%; p = 0,57) were significantly correlated with CAD.

**Conclusions:** Severity of CAD does not affect 30-day mortality, nevertheless, it is connected with increased risk of periprocedural complications - especially: MI or stroke.

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[42]

### Performance of ECG to detect left ventricle hypertrophy in hypertensive patients with high risk of target organ damage

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**Introduction:** ECG is recommended in all hypertensive patients, however the data regarding its performance for detection of [LVH] in patients with difficult to control hypertension and high risk of target organ damage is limited.

**Aim of the study:** To assess the performance of different ECG criteria for LVH proposed by current 2013 ESH/ESH guidelines in patients with hypertension treated with at least 3 antihypertensive drugs.

**Material and methods:** We studied 69 hypertensive subjects (M/F 35/34, mean age 53.5±12.9 yrs., BMI 28.8±4.4 kg/m<sup>2</sup>) and receiving ≥3 BP lowering medications for at least 1 month. Complete medical history, physical examination, biochemistry, standard 12-lead ECG, and two-dimensional echocardiography, ABPM. were performed in all pts.

ECG indexes of LVH included: Sokolow-Lyon [S-L] (SV1+RV5,6>3.5 mV), RaVL>1.1 mV, Cornell product [CP] ((RaVL+SV3)-QRS duration >244 mVms ) and gender-specific CP ((RaVL+SV3+0.6 mV added in women)·QRS duration >244 mVms ). Left ventricular mass [LVM] was calculated based on Devereux formula and was indexed over body surface area to calculate LVM index [LVMI]. LVH was diagnosed if LVMI > 115 g/m<sup>2</sup> for men and >95 g/m<sup>2</sup> for women.

**Results:** Mean 24SBP/24DBP was 140±13/84±12 mmHg and 55 pts. (80%) had elevated 24hBP on ABPM. Mean number of antihypertensive drugs was 4.5±0.7. Mean LVMI was 121.6±28.9 g/m<sup>2</sup> and in 49 patients (71%) LVH was diagnosed based on ESH/ESC criteria measured using echocardiography.

Performance of ECG indexes of LVH was assessed as accuracy, sensitivity and specificity as well as positive (PPV) and negative predictive values (NPV):

Criteria	Accuracy (95%CI)	sensitivity	specificity	PPV	NPV
S-L	29% (19-41%)	6%	85%	50%	27%
RaVL	36% (25-49%)	10%	100%	100%	31%
CP	33% (22-46%)	8%	95%	80%	30%
gender-specific CP	38% (26-50%)	16%	90%	80%	31%

**Conclusions:** ECG criteria proposed by ESH/ESC guidelines are insensitive for detection of LVH even in hypertensive subjects with high risk of target organ damage.

[43]

### **Obstructive sleep apnea and cardiac arrhythmias.**

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**Trustee of the paper:** Olga Możejńska, MD; Dariusz A. Kosior, MD, PhD

**Introduction:** Obstructive sleep apnea (OSA) is respiratory disorder associated with recurrent obstruction of upper airways with intermittent hypoxemia and reactive waking reactions during sleep. Studies suggest connection between OSA and atrial fibrillation, ventricular tachycardia, ventricular extrasystoles, second and third degree atrioventricular block, pauses and bradycardia.

**Aim of the study:** The aim of the study was to investigate relationship between OSA and frequency of cardiac arrhythmias.

**Material and methods:** We retrospectively analyzed 1270 patients who were treated in our outpatient sleep apnea clinic. All patients underwent polysomnography. 99 patients with OSA and data obtained from 24-hour ECG-holter (ECG holter) and 24-hour blood pressure monitoring (ABPM) were included in further analysis. Local ethics committee gave consent to conduct the study.

**Results:** In our study population mean age was  $61.2 \pm 9.8$  years, 72.2% were male, 58.8% were smokers, 75.8% were obese, 86.7% had hypertension, 83.7% had hyperlipidemia, 57.1% reported snoring. Average heart rate (HR) assessed by ECG-holter was  $69 \pm 10.3$  per minute. We identified statistically significant correlations ( $\rho$ -Spearman's rank correlation coefficient) between supine AHI and number of pauses ( $\rho=0.345, p=0.035$ ). Also we found significant correlation between number of central apneas per hour, number of mixed apneas per hour and minimal HR ( $\rho_1=-0.235, p_1=0.037; \rho_2=-0.346, p_2=0.002$  respectively), between total number of central apnea and mixed apnea and minimal HR ( $\rho_1=-0.230, p_1=0.042; \rho_2=-0.319, p_2=0.004$  respectively), between central, mixed and obstructive apnea mean duration and minimal HR ( $\rho_1=-0.273, p_1=0.015; \rho_2=-0.351, p_2=0.002; \rho_3=-0.322, p_3=0.004$  respectively).

**Conclusions:** Cardiac arrhythmias in OSA patients population may be caused by hypoxemia, increased sympathetic tone, acidosis and respiratory abnormalities during sleep. We found autonomic imbalance in patients with OSA in favour of sympathetic system at night. Though further studies on larger population are needed to assess the importance of those findings.

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[44]

### **Biochemical blood analysis in obstructive sleep apnea.**

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**Trustee of the paper:** Olga Możejńska, MD; Dariusz A. Kosior, MD, PhD

**Introduction:** Obstructive sleep apnea (OSA) is respiratory disorder associated with recurrent obstruction of upper airways with intermittent hypoxemia and reactive waking reactions during sleep. It is linked with variety of comorbidities and it is considered as cardiovascular, liver and kidney damage risk factor.

**Aim of the study:** The aim of the study was to investigate relationship between OSA and blood biochemical factors and markers of target organ function.

**Material and methods:** We retrospectively analyzed 1270 patients who were treated in our outpatient sleep apnea clinic. All patients underwent polysomnography. 304 patients with OSA and data obtained from detailed blood analysis were included in further analysis. Local ethics committee gave consent to conduct the study. In our study population mean age was  $61.1 \pm 11.1$  years, 72.4% were male, 60.7% were smokers, 72.8% were obese, 87.1% had hypertension, 89.1% had hyperlipidemia, 62.5% reported snoring. Average HGB, RBC, HCT and C-reactive protein level was 14.5g/dl, 5.0mln/ml, 43.4% and 3.9mg/l respectively, average AST, ALT activity was 26.2IU/l, 28.7IU/l respectively.

**Results:** We identified statistically significant correlations ( $\rho$ -Spearman's rank correlation coefficient) between supine AHI and HGB level, RBC level, HCT level and CRP level ( $\rho_1=0.206, p_1<0.001; \rho_2=0.176, p_2=0.003; \rho_3=0.221, p_3<0.001; \rho_4=0.170, p_4=0.005$  respectively), as well as between supine AHI and AST and ALT activity ( $\rho_1=0.151, p_1=0.011; \rho_2=0.207, p_2<0.001$  respectively). Also we found significant correlation between total number of obstructive apneas and HGB level, HCT level, CRP level ( $\rho_1=0.134, p_2=0.022; \rho_2=0.162, p_2=0.006; \rho_3=0.131, p_3=0.031$  respectively), as well as between total number of obstructive apneas and ALT activity ( $\rho=0.151, p=0.011$ ).

**Conclusions:** We found several significant correlations between blood biochemical factors and markers of target organ function in patients with OSA. OSA potential biochemical markers, OSA induced biochemical changes and assessment of potential modifiable factors may be crucial in improvement of OSA risk stratification, diagnosis, and treatment, though further studies on larger population are needed to assess the importance of our findings.

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# Dentistry

## Jury:

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dr hab. n. med. Agnieszka Mielczarek  
prof. dr hab. n. med. Elżbieta Mierzińska-Nastalska  
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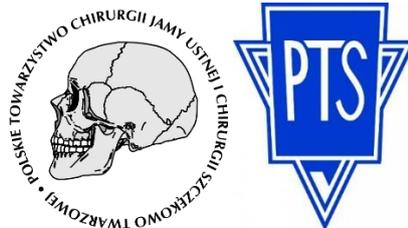
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## Scientific Patronage:

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**Date:**

Friday, May 13th, 2016

**Location:**

Room 231+232, Didactics Center

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Klaudia Kosińska  
Magdalena Trzaska  
Zeinab Hammoud  
Elżbieta Kłosowska-Burkot  
Marcin Łaśko  
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**Short:**

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Marcin Szerszeń  
Marcin Szerszeń  
Ronald Lukaszewich  
Anastazja Żuławnik

[45]

**What do parents know about the use of fluoride products in children? Questionnaire study.**

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**Trustee of the paper:** Anna Turska-Szybka, PhD

**Introduction:** Caries is a common disease among children affecting their health. The use of fluoride products is considered to be the most effective method of preventing tooth decay.

**Aim of the study:** Evaluation of parents' knowledge on the use of fluoride products in children.

**Material and methods:** The study involved 515 randomly selected parents of children aged 1-17 receiving treatment in the Department of Pediatric Dentistry, Medical University of Warsaw. The survey included 33 single-choice questions considering fluoride products used by children, their benefits and limitations. The questions concerned the use of toothpaste and its amount, school fluoride prophylaxis, endogenous prophylaxis and fluoride overdose hazard. The exclusion criteria was the lack of response to at least one question. Chi-square test of independence and Spearman rank correlation was used for statistical analysis. Statistical significance was set as  $p < 0.05$ .

**Results:** The study included 500 correctly filled questionnaires, 15 questionnaires were rejected. More than 89% of respondents claims that their children use fluoride toothpaste, while 90.2% of them is unaware of the concentration of fluoride in the toothpaste. Among the children over 6th year of age, 61.9% participates in school fluoride prophylaxis and 64.2% of all the children do not receive professional fluoride prophylaxis in dental surgery. Over 35% of parents that are aware of a term 'fluorosis'- 66.6% is unaware of the symptoms of fluoride poisoning, and 90% would be unable to provide first aid in such situation. The chi-square test of independence indicates a strong dependence between gender and knowledge of fluoride prophylaxis benefits. Spearman rank correlation showed a weak positive correlation between parents' education and awareness of the symptoms of fluoride overdose, as well as the ability to provide first aid. Over 85% of parents expressed an interest in expanding their knowledge about fluoride prophylaxis.

**Conclusions:** Parent's knowledge concerning oral health and fluoride prophylaxis in children is insufficient. It seems to be necessary to raise the awareness through the introduction of educational programs.

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[46]

**The influence of different finishing and polishing systems on surface roughness and microhardness of dental composite resin – Herculite XRV**

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**Introduction:** The two significant parameter of composite restoration is a composite surface smoothness and microhardness. The roughness of the composite causes bio-film retention, which may lead to discoloration and a secondary caries. Hardness is relevant to resistance the masticatory forces. The aesthetics of these restoratives are heavily dependent on surface finish. Highly polished surface of composites is difficult to achieve, because of factors such as different contents of filler particles, the size of particles and the differences in hardness between the filler and matrix of the resin composite.

**Aim of the study:** The aim of this study was to investigate the effect of different polishing systems on microhardness and surface roughness of restorative material microhybrid Herculite XRV.

**Material and methods:** Twenty specimens of microhybrid composite material Herculite XRV (Kerr) were prepared in metal molds (with dimensions: 6 mm in diameter and 2,5 mm height). Samples were divided into 4 groups and polished with three polishing systems: Kenda, Enhance/PoGo and Sof-lex. Polyester strip was a control. Average surface roughness (Ra) was measured by a confocal microscope. The microhardness measurements were performed by using a Vickers Microhardness Tester. Data was analyzed to ANOVA test.

**Results:** Kenda system obtained the smoothest surface, and statistically it was significant value compared to Polyester strip, which exhibited the highest roughness. Sof-lex revealed significantly higher microhardness values than Polyester strip.

**Conclusions:** Finishing rewers to the gross conturing of the restoration to obtain the desired anatomy. Polishing rewers to the reduction of the roughness. Finishing and polishing have essential influence on microhardness and roughness of composite material Herculite XRV.

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[47]

**The comparison of detection of proximal caries in children and youth under 18 years old using DIAGNOcam KaVo and bitewing radiovisiography.**

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**Trustee of the paper:** Anna Turska-Szybka, PhD

**Introduction:** Detecting early carious lesions at teeth surfaces which are hard to reach, especially proximal ones, is the most problematic part of dental examination. In such cases using additional diagnosis methods becomes a necessity. Nowadays in clinical practice, additionally with clinical examination, using subsidiary methods, such as radiovisiography or laser, in detecting proximal caries is recommended to be used.

**Aim of the study:** The comparison of effectiveness of detecting caries at proximal surfaces of primary molars and permanent molars and premolars in children and youth under 18 years old using laser diagnostic camera DIAGNOcam KaVo and bitewing radiovisiography.

**Material and methods:** Proximal surfaces of molars and premolars in 35 children and youth under 18 years old were examined. All of them were patients of Department of Pediatric Dentistry at Medical University of Warsaw. Examination of proximal surfaces of molars and premolars was conducted using bitewing radiovisiography Digora, laser intraoral camera DIAGNOcam KaVo and visual and tactical examination according to ICDAS-II classification scale. Ethics Committee approval was obtained. Statistical analysis was conducted using Wilcoxon matched pair test (differences statistically significant while  $p < 0,05$ ).

**Results:** Two hundred twenty three teeth were examined, including 85 primary molars, 60 premolars and 78 permanent molars using laser intraoral camera DIAGNOcam KaVo and bitewing radiovisiography. Caries were diagnosed at proximal surfaces of 28 teeth (12.56%) in radiovisiography examination, whereas using DIAGNOcam of 24 teeth (10.76%). Lack of statistical significance for examination of proximal teeth surfaces using DIAGNOcam vs. radiovisiography was stated. The sensitivity of radiovisiography was 83,33 and the specificity 84,38, whereas the sensitivity of DIAGNOcam was 80,0 and the specificity 81,1. The agreement of examiners was assessed as good ( $kappa = 0,734$ ).

**Conclusions:** Diganostics methods that were used have varied sensitivity and specificity. Examination of proximal surfaces using DIAGNOcam is less sensitive than radiovisiography, as well as less specific. Both of the methods have limitations in usage.

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[48]

**A new approach in glide path of root canal treatment: G-file**

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**Introduction:** One of the actual problems in modern endodontics is breakage of endodontic instruments during mechanical part of treatment, which followed-up with serious complications. Many studies were dedicated for solving this problem. Creating a glide path is one of them. Numerous number of instruments have been manufactured to reduce the risk of instrument breakage and to make a glide path more simple and fast before inserting conventional Ni-Ti rotary instrument. G- files was chosen by me as one of the new inventions in the world of endodontics, that provide endodontic treatment in more safe rotary way

**Aim of the study:** To evaluate experimentally and microscopically the root canals prepared by G-files and stainless steel K-file and their efficiency in creating of safe glide path during mechanical step of endodontic procedure for prevention breakage of shaping nickel-titanium rotary instrument

**Material and methods:** Thirty premolars, extracted by orthodontic indications, were checked by hand K-reamer №10 till apex constriction. Followed by dividing them into two groups. In group A, canals were instrumented by using K-file №10, №15 ( 2% taper), while in group B, canals were instrumented with G-files #12, #17 (3% taper). Shaping part was continued by rotary system ProTaper till 25(6% taper) for checking the breakage during all treatment protocol. Endopilot (Shlumbum, Germany) was used like endomotor for rotary files interrupted by 3% sodium hypochlorite for irrigation. After mechanical processing, canals were analyzed

under microscope followed by checking the cyclic fatigue resistance in endoblocks and analyzed by student's test with evaluating the processing speed.

**Results:** Microscopically examination after 15 times of repetitive motion with G-files resulted with remarkable larger canal diameter at D1 only ( $p < 0.05$ ) with absence of apical foramen transportation and maintaining the natural anatomy of the canals, which advance creating a safe glide path with minimal fractured shaping rotary instruments in a shorter duration. And after 10 times of simultaneous pecking motion in endoblocks, G-file(#17) showed lowest cyclic fatigue resistance in comparison to K files.

**Conclusions:** G files proved to be the most rapid system in creating safe glide path with better cyclic fatigue resistance, minimal risk of fracture, wider root canal diameter and as a consequence of creating glide path, we enhanced the circulation of irrigation solution to apex from initial phase of treatment and saved the dentist's chair time

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[49]

### **Awareness of the occurrence of anterior teeth damage and dental protector usage amongst musicians playing wind instruments.**

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**Trustee of the paper:** Kamila Wróbel-Bednarz PhD, DDS

**Introduction:** Musicians playing wind instruments (WI) are exposed in particular to anterior teeth damages. Incautious insertion or applying mouthpiece into the mouth may cause excessive toothwear, cracking of enamel, incisal edge chipping, fractures or even excessive tooth mobility. To protect anterior teeth, proper dental protectors are therefore being recommended. There are several types of protectors, however individual protectors, made by a dentist and standard protectors adjusted by the patient are the most popular among this group.

**Aim of the study:** The aim of this study was to evaluate both the frequency of damage occurrence in anterior teeth and the level of awareness of the possibilities of using dental protectors amongst musicians playing WI.

**Material and methods:** A survey was conducted among 1,067 musicians playing WI, from 49 countries. Detailed questions were asked about damage and excessive tooth mobility in anterior teeth (caused by WI playing) and incidence of the need for fixed restorations. Respondents also replied to questions such as – “do you know about the ability to make dental protector?” “do you own it?” and “what kind of protector is it?”.

**Results:** 1,067 people aged between 10-80 participated in the survey. 86% of respondents have been playing a WI for at least 6 years. 49,7% practice everyday, of which 32,6% play 1-2h a day and 47,9% play 2-4h a day. Excessive tooth mobility was noted by 27,2% of musicians in the survey. 9,3% claim that playing a WI caused damage to their anterior teeth. 26,1% confirmed they have fixed restorations in their anterior teeth. Among respondents 19% knew about the possibility of making a dental protector, but only 11,3% (2,2% of the total) of them actually own one. Most of them are individual protectors made by a dentist. Only 5% of respondents had been informed by their dentist about specific dental problems occurring amongst musicians playing WI. Statistical analysis was performed on the results with  $p < 0,05$ .

**Conclusions:** Musicians playing WI are at higher risk of earlier and more frequent damage to their anterior teeth. The prevalence of these problems could be minimized by appropriate prophylaxis, for example: creating an individual dental protector for anterior teeth. The results of this study indicate, however, that this method of preventing teeth damage is used by only a small group of respondents. For this reason musicians playing WI require specific care and education at dental surgery.

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[50]

**Evaluation of Mandibular Body Fracture Treatment Method Utilizing Digitally Designed Platelet Based on CBCT Image Prior to the Reponation Procedure. Pilot Study.**

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**Trustee of the paper:** PhD MD Zygmunt Stopa, PhD DDS Piotr Regulski

**Introduction:** Traumas, especially mandible fractures are frequent conditions that maxillofacial surgeons encounter. Main principle during surgical procedures was stabilization of bone pieces. Modern technologies give us opportunity to approach this problem from different point of view. Utilizing 3D simulation technology surgeons may not only perform osteosynthesis but also restore function and stabile occlusion to the patient.

**Aim of the study:** The aim of the current study was to evaluate clinical utility of individually designed platelet in treating mandibular body fractures based on anatomical measurements of maxillofacial diameters.

**Material and methods:** Analysis was based on animal specimen (total of 10 sheep skulls). CBCT of the jaws was performed prior to the fracture. Then the researchers applied force at various angles with enough strength to fracture base of the mandible. That procedure required special preparation: due to post mortem concentration we had to cut of masticatory muscles to enable jaws opening. Another CBCT was performed. Relying on its results bone fragments were virtually reponated. Emulated image was saved in .stl format, was sent to 3D printer and provided base for modelling the platelet. 3D printed prosthesis was utilized during the procedure of fracture reponation. After succesful surgical operation controll CBCT's was performer. Pre-fraction CBCT and final one were compared: sagittal, horizontal and vertical dimensions were measured and anatomical conditions were compared.

**Results:** Comparison of sagittal, horizontal and vertical diameters shows mostly compatible measurements. Occlusal conditions seem stabile with no signs of occlusal disturbance and pathology. In spite of sheep skulls are very usefull as anatomical mock-up in pre-clinical reaserch, it is impossible to evaluate function of jaws. We can only predict that correct anatomy and correct static occlusion will remain a base to proper TMJ and bite function.

**Conclusions:** Results are expected to confirm clinical importance of chosen method and to provide favourable anatomical and occlusal conditions on animal specimen. Furthermore, it might significantly shorten time and facilitate the procedure to an operating surgeon.

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[51]

**The influence of using various bone-cutting devices (dental drill, piezoelectric ultrasonic knife, Er,Cr:YSGG laser) on the temperature of bone – animal model-based study.**

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**Trustee of the paper:** Zygmunt Stopa, MD, PhD; Robert Franczyk, MD

**Introduction:** Surgical procedures in many specialties, such as oral surgery or orthopedics, often involve manipulation in bone tissue. There are many cutting devices available: drills, piezoelectric knife and lasers. Prolonged use of any of them leads to bone healing, that with inadequate cooling may result in osseous necrosis occurrence (critical temperature: 47°C).

**Aim of the study:** This study aims to compare the temperature of bone during its cutting with the use of different devices.

**Material and methods:** The study was conducted on pig ribs obtained from planned slaughter. They were warmed up in water bath until temperature of meat increased to 37°C. 30 spot cavities at the depth of compact bone (1.8-2.0 mm ) were performed, using: cemented carbide dental bur (diameter = 2.2 mm), at speed of 40,000 rpm; diamond-coated tip of piezoelectric knife (diameter = 2.2 mm), vibrating at frequency of 35 kHz and Er,Cr:YSGG laser at power of 5 W and frequency of 20 Hz. Initial and the highest temperatures were recorded by the probe of digital thermometer placed in compact bone at 1 mm distance from the area of intervention. Time of procedure was measured. Cooling was provided by external irrigation at room temperature. Average pressure applied with the use of drill and piezoelectric knife was held at the level of 4 kg.

**Results:** Depending on device used, results vary greatly. As far as temperature is concerned, its growth was observed only using piezoelectric knife (mean temperature growth: 11.4°C, SD=3.62°C), while using dental bur and laser bone temperature decreased respectively 6.1°C and 7.0°C (SD=1.76°C and 2.28°C). The longest mean preparation time was observed during using of piezoelectric knife (40.1 s, SD=11.2 s); The shortest was mean time of drilling with dental bur (time increases with the number of repeating procedures from 10.1 s to 24 s after 15 spot cavity drilling).

**Conclusions:** We were able to measure all chosen parameters in all cases. The highest temperature of bone was observed during using of the piezoelectric ultrasonic knife as well as the temperature exceeded 47°C (11 cases). The maximal water irrigation protects bone from overheating during the use of dental bur. Maximal temperature and duration of procedure depend on the number of the bur usage.

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[52]

### **Influence of background on visual matching precision.**

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**Trustee of the paper:** Katarzyna Brus-Sawczuk MD PhD, Ewa Grabowska MD

**Introduction:** Accurate restoration colour matching to tooth shade is important during conservative and prosthetic treatment in order to obtain satisfying aesthetic effect. Factors that may influence colour matching precision are matching person's gender, age, experience and defects of vision, temperature and light intensity during colour matching, and also the background (BG) on which the shade was chosen.

**Aim of the study:** The aim of this study was to determine the influence of gender and age of the subject being examined, as well as BG colour, on colour matching precision.

**Material and methods:** Examinee's (50 people) were asked to match into pairs compatible colours from three VITA Classical shade guides (2 out of 3 were used during each matching), one by one on five BG corresponding to different clinical situations (white, beige, red, green, black). The study was conducted in identical lighting conditions – artificial lighting at a temperature equal to normal daylight (5800K). Statistical analysis was performed with ANOVA Kruskal-Wallis, U Mann-Whitney, and chi-square tests, with  $p < 0,05$ .

**Results:** The examined group consisted of 35 women (70%) and 15 men (30%), aged 19-31 (M=23,3; SD=1,85). Overall, the proportion of correctly recognized shades was 51.1%. Depending on the BG colour, correct recognition ranged from 43.4% (red BG) to 62.6% (beige BG). Differences between the level of recognition on different BG were statistically significant ( $p < 0.0001$ ). Women more effectively recognized the unique shades, with an average of 53.0% correct, whereas men achieved a result of 46.3% ( $p = 0,094$ ). The effectiveness of fifth year students and trainees was found to be significantly higher in comparison to their younger colleagues ( $p = 0,029$ ). Representatives of both genders made the best matching of colours on a beige BG. The worst results were shown by women on black and red BG ( $p = 0,0018$ ), and by men on red and green BG ( $p = 0,0031$ ).

**Conclusions:** The best BG colour for matching shades is beige. Colour should therefore be matched against a BG of other teeth or beige tiles. Besides what has been shown here, the safest colour for female dentists to surround themselves with is a dental surgery of white and green, whereas for men it should be white and black. Colour matching on a red BG (e.g. lips or tongue) should be avoided. In spite of common convictions, gender has no significant impact on precise colour matching. Broader experience is far more conducive to proper colour matching.

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[53]

### **Evaluation of clinical usefulness of selected bite registration materials.**

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Department of Prosthodontics

**Trustee of the paper:** Piotr Okoński MD PhD

**Introduction:** Individual measurement of condylar inclination lets prepare prosthodontic restorations in harmony with patients occlusion. It is possible by means of mandibulars' caputs movements computer analysis or protrusion registrants and articulator. Bite registration materials should be highly precise, have a long shape durability and guarantee stable and unchanging models position. Should also have taste, smell and consistency pleasant for the patient.

**Aim of the study:** To evaluate clinical usefulness of four different materials for bite registrants and to assess the best materials for protrusion registrants.

**Material and methods:** Examination was conducted in the group of 15 patients with full dentition. For all of them hard gypsum models were prepared and bite registrations (protrusion and central) taken. Registrants were taken from four different materials: bite registration silicone, pink hard wax, pink model wax and grey aluwax. In each case facial arch measurements were conducted. Every patient evaluated materials in case of taste, smell, consistency, easiness of biting and provided general opinion. Models were articulated in Bioart articulator. Stability, precision, unchanging set and the presence of deformations of central and protrusion registrants were assessed. Subsequently, all condylar inclinations were measured. Statistic analysis with Spearman and Chi-square tests was conducted,  $p < 0,05$ .

**Results:** Patients evaluated materials considerably different ( $p < 0,001$ ). Silicone received the best note (4,33 on average), grey wax - the worst (2,87 on average). Central registrants were disparate in terms of deformation ( $p < 0,001$ ). Protrusion registrants differed in models stability ( $p < 0,001$ ). Obtained results of condylar inclination assessments were highly compatible (for the vast majority of materials more than 0.933).

**Conclusions:** The grey wax registrant was of the highest assessment, but material obtained the worst evaluation in patients opinion. Silicone, unanimously chosen as the best material by examiners, was rated the lowest in terms of protrusion registrants quality. It shows the difficulty in gaining the material comfortable for patient and solid in clinical procedures. The method used in this examination provides similar results in terms of condylar inclination measurements in case of all materials, but still there is a risk of miscount during models casting and articulating.

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[54]

#### **The prevalence of bifid mandibular canal in Polish population on CBCT examinations.**

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**Introduction:** Bifid mandibular canal is an anatomic variant of the mandibular canal, encountered in 0.08%-65% of population. Currently, cone beam computed tomography (CBCT) is the most precise method of assessment of the mandibular canal structure. A non-recognized bifid mandibular canal may cause pain in patients using dentures, may be a cause of unsuccessful anesthesia, may complicate tooth extraction or implant placement.

**Aim of the study:** To assess the prevalence of bifid mandibular canal in consecutive patients undergoing CBCT in an academic department of dental and maxillofacial radiology.

**Material and methods:** From all 2290 CBCT examinations performed from 06.2012 to 06.2013, 606 mandible examination were chosen. 335 examinations were excluded from analysis because of edentulous mandible, lesion or fracture in a mandible, braces, osteosynthetic plates or partially visualised mandible. Finally 271 CBCT examinations were retrospectively assessed. Presence and shape of the bifid mandibular canal (according to Naithon et al., and Nortje et al.) was assessed. The results were analyzed using the chi-square and t-Student tests,  $p < 0.05$ .

**Results:** Analyzed group consisted of 139 women (51.3%) and 131 men (48.7%) aged from 14 to 84 ( $M=40,6$ ;  $SD=14,62$ ). Bifid mandibular canal was found in 125 of all patients (46.1%), in 19,9% on the right, in 13.6% on the left, in 12.6% bilaterally (difference not significant,  $p=0,131$ ). Accessory canal was more common in females (47.4%) than in males (45.0%), the difference was not statistically significant ( $p=0.646$ ). Age did not significantly influence occurrence of bifid mandibular canal ( $p=0,052$ ). Most common variant was forward (34.1%, 59 cases), then retromolar (28.3%, 49 cases) and dental (25.4%, 44 cases) accessory mandibular canal. Trifid mandibular canal was observed in 16 cases (5.9%).

**Conclusions:** Prevalence of bifid mandibular canal in the examined population is often. Gender, age and side of mandible does not influence bifid mandibular canal occurrence.

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[55]

### **An Overview of Clinical Dental Student Working Posture Using RULA Measurement Methods**

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**Introduction:** Dentists are at higher risk of experiencing occupational musculoskeletal disorders. There are many factors responsible for such disorders, one of which is dentist's posture during work.

**Aim of the study:** The aim of this research is to describe such posture among two batches of students (2009 and 2010) clinical dental profession at Faculty of Dentistry Padjadjaran University as assessed using RULA method.

**Material and methods:** This descriptive research utilizes a cross-sectional survey. The samples consisted of 66 students divided into 2 groups, 30 from batch 2009 and 36 from batch 2010, all of whom are currently performing conservation, periodontics, prosthodontics and endodontics. The study was conducted by analyzing pictures of the students working posture using Rapid Upper Limb Assessment method.

**Results:** The results showed that most of the samples were in action level 4 for the right side of the body and action level 3 for the left side in conservation, periodontics, prosthodontics and endodontics.

**Conclusions:** The conclusion is that correction of the working posture among dental practitioners is necessary, with an emphasis on providing education in the ergonomics of proper posture.

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[56]

### **Comparative analysis of the formation of the artificial occlusion surface with conventional Gysi's method and Biofunctional Prosthetic System in complete dentures.**

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**Introduction:** Conventional method of setting teeth patented by Alfred Gysi and Biofunctional Prosthetic System (BPS) are successfully applied nowadays. Both methods are significantly different, but their common intention is to achieve a balance in the morphological and functional masticatory system.

**Aim of the study:** To compare geometrical features of the formation of the artificial occlusal surface in full dentures whose teeth were set using two methods: conventional Gysi's and biofunctional – BPS.

**Material and methods:** An analysis was performed on 224 complete dentures made by 56 students of the 3rd year of bachelor's degree course on Dental Technology course the Faculty of Medicine and Dentistry at Medical University of Warsaw. Each student produced two sets of full dentures. One set was made in accordance with the setting of artificial teeth by Gysi's cuspal method. The second set of dentures was made by using BPS. A manual Digitizing System 3D-MicroScribe™ G2X was applied to measure the distribution of 20 occlusion-active points of artificial teeth in lower dentures. The use of the Monsopt 2.0 software allowed for assessment and analysis of the geometry of the occlusal surface in accordance with the Monson's Spherical Concept of Occlusion. The plane of occlusion was oriented in the Cartesian coordinate system x, y, z. In an elaborated procedure the following were calculated: adjustment of the generated optimal radius sphere  $R_{opt}$  to the 4-inch Monson's sphere  $R_s = 101.6$  mm and also the length of the dental arch on the right side (DLP) and on the left side (DLL), index of sphere depth on the right side (WGSP) and on the left side (WGSL) and index of occlusion curve (IKZ).

**Results:** The obtained mean values were:  $R_{opt}$  Gysi =  $103.12 \pm 1.15$  mm and  $R_{opt}$  BPS =  $101.63 \pm 0.39$  mm;  $DLP_{Gysi}$  =  $42.86 \pm 0.64$  mm and  $DLP_{BPS}$  =  $42.18 \pm 1.11$  mm;  $DLL_{Gysi}$  =  $42.96 \pm 0.68$  mm and  $DLL_{BPS}$  =  $42.36 \pm 1.04$  mm;  $WGSP_{Gysi}$  =  $2.19 \pm 0.41$  and  $WGSP_{BPS}$  =  $2.21 \pm 0.36$ ;  $WGSL_{Gysi}$  =  $2.37 \pm 0.37$  and  $WGSL_{BPS}$  =  $2.37 \pm 0.29$ ;  $IKZ_{Gysi}$  =  $1.2 \pm 0.02$  and  $IKZ_{BPS}$  =  $1.22 \pm 0.02$ . The difference was statistically significant ( $p < 0.05$ ).

**Conclusions:** 1. Occlusal surface in the BPS method is better adjusted to the Monson's sphere than in the conventional method.

2. In the BPS method, a repeatable geometric model was obtained.

3. One side of the dental arch is symmetric to the second side in both methods.

4. The length of the radius spatial occlusion curve in the studied methods is slightly longer than the circumference of the mandibular dental arch.

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[57]

### **The influence of cleaning methods and decontamination products on plastic polymeric materials**

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**Introduction:** Plastic polymeric materials are being used increasingly in the production of denture prosthodontics. It has become common to use them as temporary occlusal splints, sport mouthguards and therapeutic materials for relining and rebasing of removable dentures. The presence of a plastic polymeric material in the mouth, however, has an impact on the tissue, particularly by means of micro-organisms colonizing the surface, and by changing the porosity of the material. Therefore, it is extremely important to develop appropriate rules and protocols of decontamination and disinfection of restorations made from plastic polymeric materials, protecting their surface against mechanical damage.

**Aim of the study:** Evaluation of the impact of various methods and decontamination products on the surface of plastic polymeric materials.

**Material and methods:** The research material were samples of 1 cm x 1 cm x 0,3cm made of five polymeric materials: Impak, Corflex, Erkoflex, Plastitanium, Mollosil, ZetaPlus who have undergone five different methods of purifying using tooth brushes, soap and brushes, toothpaste and brushes, denture cleaning pastes and brushes, tablets and special mouth guard spray disinfectant. By means of the electron microscope scanning, images were taken before treatment and after 1, 5, 10 and 15 minutes of cleaning in order to evaluate and compare the mechanical damage of materials.

**Results:** All tested materials, depending on the time of treatment, were irreversible mechanically damaged.

**Conclusions:** As a result of the use of disinfectants and mechanical forces, there are changes in the surface of polymeric materials.

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[58]

### **The analysis of the prevalence of type periodontal and oral mucosa diseases in patients treated in the Department of Periodontology and Oral Mucosa Disease, Medical University of Warsaw between 2010 and 2015.**

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**Introduction:** Correlation between general health and condition of periodontal tissues has been the subject of scientific concern in most recent studies. According to the research there is a possible link between periodontal problems and cardiovascular diseases, diabetes and stroke. Other general diseases might have symptoms in oral cavity. Simple examination of oral cavity may represent patients general condition.

**Aim of the study:** The aim of the study was to analyze the prevalence of periodontal and oral mucosa diseases as well as correlations between them and systemic diseases in patients treated in the Department of Periodontology and Oral Mucosa Disease, Medical University of Warsaw, between 2010 and 2015.

**Material and methods:** The authors reviewed through 515 patients' medical histories during over the last five years to find individuals diagnosed with periodontal and oral mucosa diseases. Patients' age, sex, place of residence, dental diagnosis and general diseases were taken under consideration. The data was analyzed statistically and presented graphically.

**Results:** Almost 70 percent of patients were women. Most of them lived in Warsaw. 233 medical histories revealed oral mucosa disease, 208 revealed periodontal disease and 74 presented both diseases. Among the periodontal disease chronic periodontitis predominated. Gingivitis caused by dental plaque is especially observed in patient under thirties. The most common general diseases observed in patients with periodontal disease were hypertension and diabetes type II. Candidiasis was the most common among oral mucosa disease.

**Conclusions:** General diseases and their treatment can have an influence on both periodontal and oral mucosa health. Dentists should have knowledge about these impact.

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[59]

### **3D Printing technology as support in planning autogenous tooth transplantation**

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**Introduction:** 3D printing became cheaper and more available than ever before. Clinicians from many specialties started to use this technology in everyday practice. In oral surgery additive manufacturing has a wide range of applications, it allows producing physical models, which are used not only as valuable planning and training tools but also for support during operations. Surgical movement of a tooth from one position to another – autogenous tooth transplantation is a procedure where 3D printing could provide a significant assist by reducing operation time and minimizing periodontal ligament trauma, both being critical factors for successful transplantation.

**Aim of the study:** Recognition of usefulness and possible benefits for the patient that 3D printed models may give in tooth transplantation.

**Material and methods:** 3 CBCT scans were obtained. Donor teeth and recipient sites were chosen based on following criteria: adequate alveolar bone support to allow stabilization of the transplanted tooth and no signs of inflammation in the surrounding tissue. Donor teeth and recipient sockets were segmented and converted from DICOM to STL. After virtual processing STL files were 3D printed, teeth and recipient site replicas were obtained. Virtual models of tooth and socket were compared in order to work out the presurgical plan. Preparation of the 3D printed recipient site was performed, so it was a little larger than donor's roots. The donor was positioned in the previously prepared socket. After this successful simulation one may consider 3D printing the same donor tooth for intraoperational purpose.

**Results:** 3D printed patient-specific models of donor tooth and recipient site give dentist opportunity for carrying out a simulation of autotransplantation. This may lead to faster real-life operation. Additive manufacturing allows producing a replica of donor tooth from a certified material that can be sterilized and used for contact with the human body during operation. This permits 3D printed tooth model to be used for every attempt of adjusting and positioning in the recipient site. This results in minimal extraoral time for real donor tooth and reducing periodontal ligament cells traumatization.

**Conclusions:** 3D printing used in autotransplantation may be a relevant tool for increasing chances of better success rates by making the procedure less invasive, shorter and easier. 3D printing technologies are under constant development and it is worth a closer look what they have to offer.

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[60]

### **A clinical comparison of aesthetics and functionality of conventional and BPS-developed dental prostheses in accordance with patient's evaluation of denture sets.**

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**Introduction:** Biofunctional Prosthetic System (BPS) is an alternative to conventional methods of developing dentures. Differences in protocols include both clinical and laboratory steps. BPS seems to provide good stability of dentures even in difficult clinical conditions, as well as shortened overall time necessary for denture development.

**Aim of the study:** The main goal of the study was to compare functionality and aesthetics of prostheses developed using two different methods – conventional and BPS, in relation to patient's evaluation.

**Material and methods:** Two sets of complete removable dentures were delivered to the patient with a two-month break period in between (upper complete denture, lower complete overdenture on two implants with Locator attachment system). The first set was developed using conventional clinical and laboratory methods, the second one using BPS. During the study the overall appointments time, number of visits, necessary corrections, clinical stability and retention of dentures were evaluated. Obtained results were compared with available literature.

**Results:** Patient's and clinicians' evaluation proved to be in BPS favour. Number of visits and necessary corrections were reduced. The patient felt more comfortable with the BPS dentures and described them as more stable though no significant clinical difference in stability was observed. Retention of BPS prostheses was better.

The aesthetic results were satisfactory in both cases. Comparison with available literature shows similar results among other authors.

**Conclusions:** BPS allows clinicians to achieve stable results even in difficult conditions such as poor quality of prosthetic field (mobility of underlying mucosa, bone deterioration) and high demands of patients. In the authors' opinion the use of BPS should become more frequent as it may be of great help to clinicians in their daily practice.

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[61]

### The influence of various polishing methods on the color changes of dental composite materials

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**Introduction:** One of the disadvantages of dental composite materials is their tendency to discoloration. To prevent the colour changes very important is an accurate polishing of composites restorations, which ensure smoothness and consequently - reduce the color changes.

**Aim of the study:** The aim of this study was to evaluate the influence of different polishing methods on discoloration of two composite materials: microhybrid Herculite XRV and nanohybrid Herculite XRV Ultra.

**Material and methods:** Two composite resins – microhybrid Herculite Ultra and nanohybrid Herculite XRV Ultra were selected for this study. Twenty five specimens were prepared in metal molds (with dimensions: 6 mm in diameter and 2,5 mm height) from each of those materials. These samples were polished with four polishing systems: one-step: Enhance and Occlubrush, and multi-step: Kenda and Sof-lex. Groups, which kept untreated constituted control groups. After polishing all samples were immersed in coffee solution for 24 hours. Then a VITA Easyshade spectrophotometer was used to evaluate a color changes using CIE L\*a\*b scale. The total color difference ( $\Delta E$ ) was analyzed with a two-way ANOVA test.

**Results:** Polishing had significant impact on colour change. Significant interactions were also observed between material and polishing method. Material did not have significant impact on colour change. The least significant discoloration was observed in specimens prepared with polyester stip. Among polishing methods the lowest values of  $\Delta E$  was obtained in Kenda group for microhybrid material and in Sof-lex group for nanohybrid material. The highest colour change was seen in specimens polished with Sof-lex (microhybrid material) and Occlubrush (nanohybrid material).

**Conclusions:** Polishing have significant influence on the color changes of dental composite materials. The samples from control groups revealed the lowest values of discoloration and the polishing increased these values.

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[62]

### Shift on Lab color space after polishing of the dental resin composites

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**Introduction:** Aesthetic of dental filling is essential to fulfilling requirements of patient. Polishing is crucial clinical procedure and it changes considerably optical properties of composites.

**Aim of the study:** The aim of this study were to detect changes of colour, lightness, red/green and yellow/blue positions after polishing.

**Material and methods:** Twenty-eight specimens were prepared with metal mold, which had 6.5 mm in diameter and was 2.5 mm thick. Samples were divided randomly into 4 groups (n=7), which were prepared by use of Sof-Lex, Kenda, Occubrush and Enhance&Pogo systems. The colour parameters of Herculite XRV (microhybrid composite) were measured before and after polishing by spectrophotometer (Vita EasyShade). A 1-way analysis of variance (ANOVA) was used for statistical analysis ( $p < 0.05$ ) of changes in optical parameters. After polishing the colour change ( $\Delta E$ ) was calculated by the equation:  $\Delta E = \sqrt{[\Delta L]^2 + [\Delta a]^2 + [\Delta b]^2}$

**Results:** Specimens polished with Occlubrush had significantly higher values of  $\Delta E$  and  $\Delta B$  from those polished with Kenda and Sof-Lex polishing system. Samples prepared by Enhance&Pogo have significantly lower values in  $\Delta A$  than those prepared by different systems and in  $\Delta L$  than specimens finished by Kenda and Sof-Lex. In  $\Delta A$  Occlubrush caused significantly higher change than Kenda.

**Conclusions:** The results of this research suggests that all system cause a clinically visible colour change ( $\Delta E > 3.3$ ). The highest colour change was observed in the group prepared with Occlubrush, which were considered as remarkably different in comparison to the values achieved with two other examined polishing systems.

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[63]

### **Osteoradionecrosis of facial part of cranium after head and neck radiotherapy treatment. Metaanalysis.**

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**Introduction:** Osteoradionecrosis (ORN) is one of the most serious complications after tumour radiotherapy. It is caused by ionized radiation which affects not only tumour, but also its surrounding tissues. Despite the fact that prevalence of ORN has diminished over last years, it still poses serious threat to oncologic patients. Because of characteristic head and neck anathomy as well as various oral bacterial culture, ORN is especially frequent in this area radiotherapy.

**Aim of the study:** The aim of the study was to assess ORN prevalence after head and neck radiotherapy.

**Material and methods:** By means of 15 studies and case reports on head and neck ORN, occurrence of this complication was evaluated. The localization of lesions was assessed. Moreover, the radiation doses and time between radiotherapy and ORN occurrence were considered. Patients age and sex were also determined.

**Results:** Out of 2776 patients 71 have developed osteoradionecrosis (2,56%, standard deviation 7,61pp). The most common localization was mandible (91,6%), lesion was localized in maxilla in 8% and in one case ORN has developed both in maxilla and mandible (0,4%). Mean radiation dose used in cancer radiotherapy was 62 Gy (standard deviation 12Gy). Patients who suffered from ORN were mostly men (85% of patients) aged from 49 to 75 years old. Time between the end of the radiotherapy and development of ORN varied from 8 months to 11 years (mean value 35 months, standard deviation 57 months). In two prospective papers number of patients who developed ORN was 0.

**Conclusions:** The paper confirms data contained in most of maxillofacial surgery textbooks. In comparison to other adverse effects of radiation therapy, ORN is one of the rarest. ORN risk group includes men over age of 50 who was exposed on radiation dose higher than 62Gy. Proper oral sanitation protocols can greatly minimize ORN risk, even to 0%.

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[64]

### **Diseases and disorders of the temporomandibular joint amongst musicians playing wind instruments.**

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**Introduction:** There are different kinds of wind instruments (WI), with each one requiring a different method of blowing into a mouthpiece. Playing them requires muscle tension and also the need to maintain the mandible in unusual, forced position, both of which may cause problems in the area of temporomandibular joint (TMJ). Regardless of the type of WI played, all disorders remain similar.

**Aim of the study:** The aim of this study was to understand and present problems, as well as disorders, which musicians playing WI around the world suffer from, linked to the TMJ.

**Material and methods:** 1,067 musicians from 49 countries participated in a survey. Questions regarding time of playing, method for blowing into a mouthpiece, TMJ symptoms e.g. occurrence of pain in area of TMJ, limitation of mandible movement, crunches or popping in the TMJ and also about excessively worn down teeth, grinding or habitually clenching teeth as well as frequency of headaches, muscular pain around head and neck were asked in order to determine disorders of TMJ among musicians playing WI.

**Results:** Musicians aged 10-80 participated in the survey. 86% respondents have been playing WI for at least 6 years. 49,7% practice everyday, of which 32,6% play 1-2h a day and 47,9% play 2-4h a day. Different kinds of WI require a different method for blowing into a mouthpiece. Over 58,3% have to put instrument's mouthpiece only to the lips while 41,7% insert the mouthpiece directly into their mouth. 19,3% of respondents complain of daily TMJ problems with 7% admitting to feeling TMJ pain while playing their instruments, 15% notice mandible movements limitation while playing and 8,5% notice crunches, popping in TMJ. About 16,1% reports worn down teeth. 31% confirms to grind or habitually clench teeth. 68% report having headaches and 24,7% of those have them once a week or more. Facial and neck muscles pain is also often reported. Statistical analysis was performed on the results.

Data analysis of this group of musicians revealed that respondents often reported recurrent headaches, pain and cramping of neck muscles, mandible movement limitation, crunches and popping in the TMJ, and also habitual grinding or clenching of teeth.

**Conclusions:** The study revealed that musicians who play WI are a group of patients who may present disorders of the TMJ and/or head and neck muscle movement system.

Reported symptoms indicate that playing a WI may predispose the individual to the occurrence of disorders within the TMJ, including myofascial pain as well as degenerative conditions.

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[65]

### **The comparison between the mechanical resistance of sutures used in maxillofacial surgery**

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**Introduction:** Surgical sutures belong to the group of biomaterials, either natural or synthetic. Their primary function is to bring together fragments of tissues damaged by trauma or surgical intervention. Despite the fact that currently there are many mechanical methods for the fusion of damaged tissue, such as staples and tape, sutures are the most widely used materials in wound closure.

**Aim of the study:** The aim of the study was to investigate the tensile strength of sutures and the impact of the environment on the tissue properties of the sutures.

**Material and methods:** Three types of surgical sutures: Safil, Mersilk and Caprosyn were examined. Sutures were taken out of the original packaging and were cut into equal pieces of 15cm. The next stage was the preparation of a model Ringer's solution. The pH was measured immediately after mixing of components the solution and after 4 days of holding in the sutures at 37 °C. To measure pH Mettler Toledo SevenMulti Toledo device and Clarytdorde Electrode 120 were used. Upon removal the surgical sutures from the solution after 4 days the mechanical strength of dry and kept in Ringer's solution sutures was examined. Each suture has been fixed to each of the tensioning arm and subjected to tension. In both trials the same parameters on the machine used to determine the strength (Zwick Z010) were set. Obtained results show the response of the surgical suture in contact with biological fluid and its sensitivity to dynamic loads.

**Results:** Long term moisturizing sutures Mersilk at Ringer's solution causes that the force used to break must be greater than the dry suture. For other sutures results are reversed. Elongation after sutures moistening in the solution increases for Mersilk and Caprosyn and decreases for Safil. The greatest tensile strength among materials tested demonstrated Safil suture. For resorbable sutures the force required to rupture decrease after storage in Ringer solution. For sutures not resorbable situation is reversed.

**Conclusions:** After the treatment in the field of oral surgery all sutures are staying in a moist environment (saliva and tissue fluids). Therefore, it is important to know the mechanical properties of sutures, which facilitates the selection of particular surgical sutures for the treatment.

[66]

**The comparison of acrylic dentures physical properties depending on dental material used.**

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**Introduction:** Prosthetic treatment of edentulous patients, excluding the possibilities of implantology prosthetics, is limited to removable prostheses such as full dentures made of acrylic resin. The strength of PMMA (polymethyl methacrylate) is often insufficient for the forces produced by the patient during mastication as well as in group of patients suffering from neuromuscular disorders resulting from the elderly or general diseases (e.g. Huntington's disease, epilepsy, Parkinson's disease,). For many years the most widely used reinforcing material in dentures were metal structures in the form of nets placed in the acrylate plate. However, a new reinforcing materials in form of a mesh made of resin impregnated glass fiber appeared on the dental prosthetics market.

**Aim of the study:** The aim of this study was to compare the durability of dentures' plates depending on the type of material used for reinforcement.

**Material and methods:** 60 dentures plates were made and divided into three research groups. Twenty of plates were reinforced with metal mesh, another twenty with resin impregnated glass fiber mesh (the material was adapted to the gypsum model in accordance to the manufacturer's instructions using the vacuum apparatus), the remaining twenty plates were made of acrylic without placing any reinforcing material - this series was classified as a control group. Prepared in this manner the prostheses plates will undergo strength tests (fracture force and toughness trials). The load at which failure occurs will be recorded in a way that allows comparison of results between the groups. Results will be compiled and analyzed statistically.

**Results:** Based on scientific research we expect, that the plates reinforced with resin impregnated glass fiber provide higher strength than the plates reinforced with metal mesh and ones without reinforcement. Study is waiting for physical test on Military University of Technology.

**Conclusions:** The differences revealed in the study may imply finding the best solution for the treatment of prosthetic edentulous patients struggling with the problem of cracking dentures.

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[67]

**Ectopic mineralization of styloid process of temporal bone among patients with calcium and phosphate metabolism disorders.**

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**Introduction:** Styloid process is an osseous element localized on anterior surface of lower segment of the petrous part of the temporal bone. There are many theories explaining reasons for elongation of styloid process. Theses concerning "reactive hyperplasia", "reactive metaplasia" and "anatomical predisposition" as well as congenital elongation of styloid process resulting from persistent Richter's cartilage, idiopathic calcification of stylohyoid ligament and growth of bone tissue located in stylohyoid ligament's attachment hypotheses. Many authors link styloid process length perturbations with calcium-phosphate metabolism disorders, however genetic predisposition is also mentioned in literature.

**Aim of the study:** The aim of this study was to confirm or abolish hypothesis based on scientific research and authors' observations. This hypothesis suggests, that calcium-phosphate metabolism disorders and proteinuria occurring in renal and liver failure or caused by immunosuppressive therapy may have an influence on excessive growth of styloid process.

**Material and methods:** Panoramic radiographs of 175 patients were taken into analysis. Treatment group consisted of 84 patients from Department of General Surgery and Transplantology of The Infant Jesus Teaching Hospital in Warsaw who had OPG performed in order to evaluate and eliminate or stabilize sites of oral infection in Department of Oral Surgery. Control group included 91 patients routinely present in Department of Oral Surgery, who had an OPG taken. Both groups bore resemblance as far as mean age, sex proportion and date of examination were taken into consideration.

**Results:** Elongates styloid processes were observed in 57,65% experimental units, whereas in control group only in 17% cases such disorder occurred.

**Conclusions:** In conclusion, our study shows that elongated styloid process as well as calcified stylohyoid process occurs three times more frequently in patients struggling with calcium-phosphate metabolism disorders occurring in renal or hepatic insufficiency.

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[68]

**Morphology evaluation of temporomandibular joint in patients with performed arthroscopy**

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**Trustee of the paper:** Franczyk Robert MD, Regulski Piotr PhD DDS, Zygmunt Stopa PhD MD

**Introduction:** Diseases of the temporomandibular joint (TMJ) become more and more common. It is a diagnostic problem which impedes proper treatment. The most valuable except of clinical examination is radiological imaging, however universal parameters of TMJ disorders are unknown.

**Aim of the study:** The purpose of this study was to compare the morphology of temporomandibular joints of healthy people with those with clinical symptoms of TMJ disorders.

**Material and methods:** Firstly, we searched PubMed to estimate the current state of knowledge about the TMJ measurements and to choose the most recurrent parameters. Then, we carried out the proper part of the investigation. The material was 50 cone beam computed tomography scans: 25 of patients with clinical symptoms of TMJ disorders and 25 of people with proper TMJ. In all cases following parameters of both TMJs were assessed: head of mandible shape and dimensions, distance between heads of mandible, angle between horizontal axis and head of mandible, synovial cavity height in 3 points and the gonial angle.

**Results:** We were able to measure all parameters in almost all cases. Results obtained in the study group differ from those in the control group. Shapes of heads of mandibles did not differ between both groups. The biggest differences were observed in distances of heads and mandibular fossa.

**Conclusions:** Parameters chosen in this study were easy to measure. Morphological abnormalities of temporomandibular joints correlate with clinical symptom. Further studies are needed to evaluate the clinical significance of chosen parameters.

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[69]

**Influence of different kinds and modes of polymerization lamps on degree of marginal leakage of Class II composite resin restoration.**

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Department of Conservative Dentistry

**Trustee of the paper:** dr Karolina Kowalczyk

**Introduction:** Composite materials shrink during the polymerization, what provides to marginal leakage between filling and hard dental tissues. Marginal leakage is the reason of microleakage mainly bacterial one which leads to discoloration of filling margin and it causes secondary caries. Intensive development of new technologies focus on elaborate processes of decreasing risks of arising microleakage.

**Aim of the study:** The purpose of this in vitro study was to estimate marginal leakage degree in composite fillings which were polymerized with different kinds of lamps. Three types of polymerization lamps were compared: halogen lamp, high intensity LED lamp and LED lamp with three modes of work.

**Material and methods:** 35 extracted human permanent molars were used in the study. Calibrated cavities on interproximal surfaces (class II acc. Black classification) were prepared. After etching and adhesive system application cavities were filled with composite material and polymerized. Marginal leakage was evaluated by dye penetration estimation and SEM images registration and marginal gap quantitative analysis.

**Results:** PRELIMINARY RESULTS: In most of the analyzed samples dye penetration was not observed. Authors will expect single cases of dye penetration into marginal leakage in samples polymerized with high intensity LED lamp.

**Conclusions:** Based on the preliminary research it is concluded that the higher light intensity of polymerization lamp the shorter time of polymerization, what is a benefit from clinical point of view. However, too high intensity light can induce strong, shrink tension, which results in increasing marginal leakage.

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# Dentistry Case Report

## Jury:

prof. dr hab. n. med. Renata Górską  
dr hab. n. med. Agnieszka Mielczarek  
prof. dr hab. n. med. Elżbieta Mierzińska-Nastalska  
prof. dr hab. n. med. Dorota Olczak-Kowalczyk  
dr n. med. Wojciech Popowski  
dr hab. n. med. Izabela Strużycka  
prof. dr hab. n. med. Kazimierz Szopiński  
dr hab. n. med. Leopold Wagner  
dr hab. n. med. Małgorzata Zadurska  
dr n. med. Paweł Zawadzki

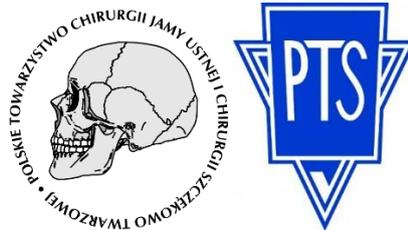
## Coordinators:

Filip Kaczyński  
Agnieszka Miedzińska

## Scientific Patronage:

National Consultant in Maxillofacial Surgery Mariusz Szuta MD PhD

Polskie Towarzystwo Chirurgii Jamy Ustnej i Chirurgii Szcękowo-Twarzowej  
Polskie Towarzystwo Stomatologiczne  
Polskie Towarzystwo Ortodontyczne



**Polskie Towarzystwo Ortodontyczne**  
**Polish Orthodontic Society**

## Sponsor of the session:

Wydawnictwo Lekarskie PZWL



**Date:**

Friday, May 13th, 2016

**Location:**

Room 231+232, Didactics Center

**Regular:**

Przemysław Kosewski

Michał Oszwałdowski

Aleksander Nobis

Katarzyna Fiedorowicz

Marcin Szerszeń

Jacek Nowak

Agnieszka Drożdżyńska

[70]

**Blade-form implants: relic of the past, or a full-fledged method of therapy?**

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**Trustee of the paper:** Piotr Stendera PhD, Dariusz Mateńko DDS

**Background:** The concept of blade-form implants significantly varies from the mainstream of intraosseous dental implants. There are scientific reports about impressive number of patients treated with blade implants with full success. These facts cannot be unseen by modern medicine.

**Case:** Case I: patient aged 54 presented at dental surgeon's office because of mobility of implantoprosthesis appliance. X-ray images revealed nonfunctional blade-form implant. Procedure of surgical extraction of the implant was carried out, and subsequently, after full healing of the wound, 4 screw implants were implanted.

Case II: patient aged 60 presented at dental office because of reasons unconnected to implants present in the mouth. X-ray image revealed presence of blade implant. Image of the bone surrounding the implant did not indicate any active osteolysis process. Clinical examination did not reveal any symptoms of inflammation. Change of prosthetic appliance was planned, however the implant itself remains functional.

**Conclusions:** The concept of blade-form implants as a therapeutic option is not widely accepted by dentists. There exist clinical cases, as well as scientific reports militating for success of this method. Blade-form implants remain a curiosity in the world of implantology and their wider usage (if it ever will happen) will require further studies.

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[71]

**Clinical application of surgical guide for precise implant placement – case report**

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**Trustee of the paper:** Dr Bartłomiej Iwańczyk

**Background:** Alveolar bone atrophy due to tooth extraction is a common phenomenon. The total volume of the bone decreases most significantly one year after tooth removal but the process continues in the following years. Some patients present for dental implant therapy long after they lose their teeth. During radiographic image evaluation, it appears that the alveolar bone loss is substantial and potential spaces for implant placement are very tight and limited. In these cases, treatment should be precisely planned and performed, leaving no room for error. Surgical guides were developed to improve accurate implant placement and to allow better transfer of operation plans through the surgical field.

**Case:** A 56-year-old male patient presented for implant treatment with the complaint of the unstable maxillary denture. A clinical examination revealed broad and severe alveolar bone atrophy and one implant placed in the right maxillary tuberosity. A CBCT scan was performed. Although it confirmed low volume of alveolar bone, its form and density allowed for planning two more implant placements in the maxilla, provided that implant positioning will be carried out perfectly. In order to achieve optimal treatment results, with proper implants angulation and spacing, surgical guide was planned. Already fixed implant enabled the guide to remain stable during the drilling procedures. An impression was taken and sent with the CBCT scan to a dental laboratory. Surgical guide was created in the way it was previously prearranged. The treatment consisted of positioning of two implants using surgical guide, performed under local anesthesia.

**Conclusions:** Surgical guide is a tool which allows dental implant therapy to be performed in accordance with an operation plan, and maximize treatment opportunities limited by patient's anatomy. Additionally, the guide reduces possibility of imprecision that, in some cases, may not be tolerated.

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[72]

### **A rare case of mucosal melanoma of the palate treated with radiotherapy (RT) alone**

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**Trustee of the paper:** Ewa Sierko, M.D., Ph.D.

**Background:** Melanoma usually occurs on the skin. Only 1% of all melanomas occurs on mucosal membrane of the head and neck with 1951 cases reported from 1945 to 2011 in the world.

**Case:** A 65-year-old man treated from skin psoriasis was referred to the oncology department by dermatologist with the suspicion of palate melanoma. Physical examination showed painless black changes present at mucous at the palate durum, palate mole, mucous of the right cheek and right upper alveolus. Pathological examination proved mucosal lentiginous melanoma. CT revealed a thickening of mucosal membrane in area of palate durum, especially on the right side. PET-CT demonstrated active process exclusively in right palate. Chest X-ray examination demonstrated no metastases in the lungs. The patient refused major surgical treatment, so he underwent radical X 6 MV megavoltage photon beam RT to the tumour area at the dose 50 Gy/20 fr./2,5 Gy. After RT cessation, the tumor was less saturated with the black color with no decrease in diameter. 2 months after RT, the melanoma disappeared from the mucous of the right cheek and alveolus and it was slightly reduced at the periphery on the palate. The extend of the lesion was similar also 3, 4, 5 months after RT, however intensity of the black colour was further decreasing. One and a half year after RT the melanoma lesion decreased and stabilized. After 1 year and 7 months - progression of the disease appeared on right alveolus causing two slightly painful, non-healing ulcers. New intensive black spots appeared on the palate. Two months later the disease progressed - a thick tumour was found on the palate, and more black spots on the mucous of the cheek and alveolus developed. The patient refused chemotherapy because of fear. The recurrent melanoma was slowly, but constantly progressing. Nearly 3 years after RT cessation, he suffered from pain. Chest X-rays revealed suspicious lesions in the right lung. Head and neck CT revealed enlargement of mucosa of right alveolus and palate, which exceeding midline, and osteolysis of right alveolus as well as palate durum. This time he signed informed consent to undergo chemotherapy.

**Conclusions:** General practitioners, dentists and other specialty doctors should be aware of possibility of melanoma occurrence in the oral cavity to diagnose the disease at an early stage when surgical treatment (most effective approach) is possible.

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[73]

### **Death due to odontogenic phlegmon - case report**

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**Trustee of the paper:** Michał Szeremeta

**Background:** Local inflammation caused by the presence of pulpitis can spread the infection throughout the body through blood vessels, lymph, nerves, and the increased inflammation of the infected area. The process of inflammatory spreading may also lead to sepsis. Sepsis is caused by the effect of bacteria and toxins spreading throughout the bloodstream, this occurs in patients with weakened immune systems. This development is a threat to life, which could lead to death.

**Case:** The following case was assessed in 2008 by the Department of Forensic Medicine at the Białystok Medical University. A 31-year-old patient called for an ambulance due to severe toothache 46, this was accompanied by swelling of the surrounding tissue, a fever of 38 ° C, sore throat, and difficulties swallowing. Swelling was present for three days and increased over time. Previously, there were episodes of tooth pain and swelling, which lasted approx. 2 weeks. The emergency medical technicians recognized the abscess floor of the mouth and sent the patient to a laryngological clinic. The doctor diagnosed the patient with phlegmon floor of the mouth and the surrounding chin area. The doctor prescribed the patient an antibacterial therapy: Dalacin C 300, Metronidazole, an anti-inflammatory: Tantum Verde. Over the following days, the patient did not consult a doctor; witnesses testified that the patient did not consume the medication prescribed. Four days later the patient died. The cause of death has been established as sepsis.

**Conclusions:** In the case of an appropriate treatment includes immediate hospitalization, medication in the form of a general antibiotic, and rebuilding the immune water electrolyte levels. This is directly followed by

surgical treatment to drain the pus and elevate inflammation. Finally the extraction of the infected tooth is completed. To prevent serious complications of odontogenic the process must include early and proper diagnosis, as well as appropriate treatment in both pharmacological and surgical procedures.

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[74]

**Kazanjian's vestibuloplasty technique – case report.**

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**Trustee of the paper:** lek. dent. Piotr Sobiech

**Background:** Recession of gingiva especially in mandibular central incisal region is not a rare condition among children. Sometimes this type of periodontal disorders undergo spontaneous remission due to stomatognathic system development, however, in some cases surgical treatment is necessary. Correct diagnosis concerning the cause of recession is difficult because of changes of attached gingiva width and soft tissue growth in young patients. Nevertheless, thoroughly taken medical history and intraoral examination indicate optimal dental therapy. One of the most popular surgical methods in case of shallow vestibule is Kazanjian technique.

**Case:** A 12-year-old boy was referred to the Pedodontics Department of the Medical University of Warsaw for a regular check-up visit. Besides small amount of dental plaque, intraoral examination revealed gingival recession in the mandibular incisal area and significant flattening of the vestibule with presence of „pull syndrome”. The surgical Kazanjian's method vestibuloplasty in local anesthesia was planned and performed to expand the zone of attached gingiva with an intact periosteum. Several follow ups revealed satisfactory deepening of the vestibule and the disappearance of anemization due to pulling lip test.

**Conclusions:** Thorough intraoral examination concerning not only hard but also soft dental tissues combined with appropriate treatment method selection depending on clinical view and age of the patient ensure therapeutic success. Kazanjian's vestibuloplasty technique is the most common, recommended in literature method providing acceptable treatment result.

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[75]

**Assessment of causes and the course of treatment of the patient with pseudoanodontia.**

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Medical University of Warsaw/ Department of Oral Surgery

**Trustee of the paper:** dr n.med. W. Popowski, lek. dent. B. Iwańczyk

**Background:** For years, dental abnormalities have been the subject of research describing anomalies of the anatomical and histological structure of teeth as well as irregularities relating to their number, time and place of their eruption. Thus, etiopathogenesis of dental abnormalities is still being studied and investigated. At present, we can distinguish between a number of factors negatively affecting the formation of a dental organ. Among anomalies related to the number of teeth, the following group should be mentioned, i.e. the increased number of teeth manifested by the presence of supplemental teeth with normal structure and supernumerary teeth with malformations. Reduced number of teeth can pertain to congenitally missing single tooth, larger group of teeth or even to a total lack of teeth. Both the increased and reduced number of teeth may be a symptom of a systemic disease with genetic background or an isolated defect.

**Case:** A 48-year-old woman presented with the pain of the area of tooth 22, preventing her from using the complete upper denture. The patient reported that she has been experiencing the symptoms of varied intensity for several months. Clinical study demonstrated craniofacial anomalies as well as intraoral maxillar and mandibular complete edentulism. The eruption of the permanent teeth never occurred in the patient. Cone beam computed tomography showed the impacted teeth, supplemental teeth and the lack of tooth germs in lateral segments. All teeth in the maxilla have been extracted and the material for genetic tests for gene RUNX2, which is responsible for cleidocranial dysostosis, has been taken. The test results did not confirm the diagnosis. In order to restore the function of the patient's masticatory system, the overdenture prosthesis 'all on 4' has been planned.

**Conclusions:** Cleidocranial dysostosis is an extremely rare genetic disorder that can cause a lot of diagnostic problems. On the basis of clinical symptoms cleidocranial dysostosis has been identified but genetic tests for gene RUNX2 responsible for 90% of cases of dysplasia did not confirm the initial diagnosis. It is possible that the patient is among 10% of people with dysplasia attributable to mutation in another gene.

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[76]

**Resin infiltration – an Evaluation of a minimally invasive method of white spots treatment using QLF and Diagnodent : a case report.**

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**Trustee of the paper:** lek. dent. Karolina Kowalczyk

**Background:** Nowadays, the number of patients for whom a beautiful, healthy smile is very important has increased. A significant group of patients is concerned because of spots and discolorations of their teeth. Mostly these are caries spots. There are also cases, in which we diagnose fluorosis. In the case where patient has both caries and fluorosis spots in one patient, choosing the treatment method may be problematic, due to different etiology of these lesions. Modern minimally invasive dentistry suggests resin infiltration. The aim of this study was to present case report, where the resin infiltration was performed as a white spots treatment method (for both caries and mild fluorosis).

**Case:** A 22-year-old patient's main expectation was to improve smile aesthetics. In clinical examination the prevalence of both fluorosis (irregular, chalk white spots in incisal edge area and white streaks visible after drying) and white caries spots (around orthodontic brackets and cervical area, as a complication after 3 years of orthodontic treatment using fixed appliance) was alleged. In order to assess the character and level of lesions advancement, the photographic documentation was collected, indicators (Russel's, Dean's, TF, ICDAS II) were specified and 128 tooth surfaces were examined, using devices such as Diagnodent and QLF system (fluorescence phenomenon). Resin infiltration (Icon DMG, Germany) was chosen as a treatment method. Before the treatment had started, all surfaces were cleaned, rubber dam was placed and procedure has been performed according to the specific producer's guidelines. Clinical evaluation of undergoing treatment was made after procedure. Russell's, Dean's, TF and ICDAS II indicators were defined and photographic documentation was made. Measurements with Diagnodent and QLF system were taken for the second time in order to determine the effectiveness of resin infiltration.

**Conclusions:** Simultaneous occurrence of caries lesion and fluorosis is not only a diagnostic problem but may also cause difficulties when choosing proper treatment method. Resin infiltration is a procedure of early caries lesions treatment. Furthermore, this is a minimally invasive method that improves aesthetics through masking white spots and postponing progress of caries lesions. Recently, it is used increasingly to treat fluorosis and other lesions resulting from enamel mineralization disorders e.g. hypomineralization , MIH (molar incisor hypomineralization).

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# Dermatology

**Jury:**

dr hab. n. med. Ryszard Galus  
dr n. med. Kamila Padlewska  
prof. dr hab. n. med. Lidia Rudnicka

**Coordinator:**

Magdalena Chrabąszcz

**Scientific Patronage:**

Polskie Towarzystwo Dermatologiczne  
Czasopismo Dermatologia i Kosmetologia  
Przegląd Dermatologiczny



DERMATOLOGIA **praktyczna**  
*i kosmetologia*

Przegląd  
Dermatologiczny

**Date:**

Saturday, May 14th, 2016

**Location:**

Room 139, Didactics Center

**Regular:**

Beata Wańczyk  
Bartosz Balcewicz  
Victoria Prilutskaya  
Varvara Savitskaya  
Maciej Żochowski  
Jacek Komuński

[77]

### **Assessment of the role of dermatologists in recognising and managing psychocutaneous diseases.**

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**Trustee of the paper:** Aneta Szczerkowska-Dobosz, MD, PhD.; Prof. Roman Nowicki, MD, PhD.

**Introduction:** There is a strong link between dermatologic and psychiatric diseases. The objective was to assess knowledge, practiced patterns and attitudes towards psychocutaneous diseases among dermatologists.

**Aim of the study:** The aim of the study was to establish whether and why dermatologists play an important role in recognising and managing psychocutaneous diseases.

**Material and methods:** The study was based on an anonymous, self-made survey distributed among 42 dermatologists in hospitals and outpatient clinics. Results have been analysed in Google Docs spreadsheet.

**Results:** Over 60% of the respondents assess their level of knowledge about psychodermatology as average, less than 20% as high. About 80% of the participants admit, however, that they see patients with psychiatric symptoms at least once a month. The most commonly suspected psychiatric disorder is depression and anxiety associated with dermatological illnesses, whereas the least common are delusions of parasitosis. The most common reason to visit dermatologist rather than psychiatrist is the lack of patients' awareness of the psychiatric nature of their condition. Moreover, many answers also show that patients trust a dermatologist more than a psychiatrist. Almost 70% of the respondents have negative attitude towards prescribing psychiatric drugs. Approximately a half states that psychocutaneous diseases cannot be treated only by dermatologists. Over 70% of the doctors had no training in psychodermatology during their residency or were presented too little knowledge in this subject. More than 90% of answerers are willing to continue education in psychodermatology. 100% of the participants believe that the cooperation of dermatologists and psychiatrists is useful and important for the patient.

**Conclusions:** The results show that psychocutaneous diseases are often perceived by dermatologists. With their high level of trust they can also convince patients to undergo psychiatric therapy. That is why dermatologists are important in the process of diagnosing and managing these conditions. Therefore, further education in psychodermatology is needed to provide efficient cooperation of dermatologists and psychiatrists.

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[78]

### **Assessment of Nail Involvement in Patients with Chronic Plaque Psoriasis**

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**Trustee of the paper:** Dorota Jenerowicz MD PHD

**Introduction:** Psoriasis is an inflammatory skin disorder in which nails are commonly involved. However, it is often an overlooked feature despite its significant burden for the patient. Being the cause of functional impairment of manual dexterity, pain, and psychological stress.

**Aim of the study:** The study aims to evaluate nail psoriasis occurrence, its impact on patient's quality of life and possible correlations with some inflammatory markers and disease severity.

**Material and methods:** The study included patients with exacerbation of chronic plaque type psoriasis selected from Dermatological Wards patients. Complete blood count (CBC), erythrocyte sedimentation rate (ESR), C-reactive protein (CRP) was measured for all patients. Each patient had their fingernails photographed on a focusing marker using digital camera. Photographic documentation of each finger was later evaluated and scored using Nijmegen - Nail psoriasis Activity Index tool (N-NAIL). To assess the severity of the disease the Self-Administered Psoriasis Area Severity Index (SAPASI) and Twelve item Psoriasis Quality of Life (PQOL-12) questionnaires were used. Ten percent of the test group was also examined using regular Psoriasis Area Severity Index (PASI) to verify SAPASI method.

**Results:** The mean N-NAIL score value was 11,03 ( $\pm 7,7$ ) and was correlated with SAPASI ( $p= 0,046$ ) in psoriatic patients with nail involvement who represented 46% of the study group. In the analysed group of patients nail involvement was noticed at younger age ( $39,9 \pm 14,48$ ) and after shorter disease duration ( $10,9 \pm 7,57$ ). No statistically significant difference was observed between groups in case of circulating inflammatory markers.

**Conclusions:** The nail involvement in psoriasis is a frequent finding. It might be considered as a risk factor for fungal infections and other ailments. Analysis of nail involvement might prove diagnostically useful when proper scoring system is introduced when it comes to the severity of the disease but further study on a larger group of patients is still required.

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[79]

### **Red Blood Cell Distribution Width and Serum Uric Acid in Evaluation of Patients with Chronic Psoriasis**

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**Trustee of the paper:** Dorota Jenerowicz MD PHD

**Introduction:** Psoriasis is a systemic inflammatory process. Numerous studies revealed that elevated red blood cell distribution width (RDW) and the serum uric acid level (SUA) are associated with the disease activity in various inflammatory disorders and can be considered as an important risk factor for cardiovascular diseases.

**Aim of the study:** The study aims to evaluate possible correlations between the RDW, SUA and other inflammatory markers in the blood serum, the disease severity, cardiovascular risk in patients with psoriasis.

**Material and methods:** The study included patients with exacerbation of chronic psoriasis selected from the dermatological wards and age, gender and metabolic profile matched healthy individuals. Complete blood count, SUA, C-reactive protein (CRP) and lipid profile was measured for all patients and controls. For the assessment of the disease severity and cardiovascular risk a set of standardized questionnaires was used. Patients with comorbidities or medications that could interfere with laboratory test parameters were excluded from the study.

**Results:** The mean values were found to be significantly elevated in patients with psoriasis  $p=0.049$  for SUA and  $p=0.00007$  for the RDW. Furthermore, RDW showed significant correlation with erythrocyte sedimentation rate ( $p=0.01$ ) and CRP ( $p=0.02$ ). Cardiovascular risk assessment shows increased risk of lifetime atherosclerotic cardiovascular event in the study group but shows no correlation with RDW or SUA for the time being.

**Conclusions:** Psoriasis requires adequate and effective monitoring for earlier prevention of associated cardiovascular comorbidities in which a high potential has RDW and SUA. Further study on a larger group of patients is still required.

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[80]

### **The new mechanisms in pathogenesis of pruritus.**

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**Trustee of the paper:** Victor Novoselov

**Aim of the study:** itching is an irritating condition that makes you want to scratch. The possible causes for itchiness range from internal illnesses such as kidney or liver disease to skin rashes, allergies and dermatitis. The main mechanism of chronic itch in dermatology initiates with immune molecules histamines. The pathogenic therapy with antihistamines relieved short-lived itch caused by allergens, but it partially relents the chronic itching in diseases like eczema or psoriasis. So, other pathways exist and cause the unrelenting itch in such conditions.

**Material and methods:** a review for publications in PubMed and Cochrane library between years 2011-2016.

**Results:** many studies were dedicated to the well-known mechanism of pruritus - degranulation of mast cells. But I found 3 interesting researches which showed new mechanisms. The first research was made in the USA in 2013 and found out that damaged skin cells produced a protein called thymic stromal lymphoprotein (TSLP) which activated afferent neurons and immune cells to promote inflammatory response in the skin. Another discovery in 2013 in the USA showed a protein BRAF which is a serine/threonine kinase. The cells containing BRAF produced elevated levels of gastrin-releasing peptide (GRP), which induced itch. The third research in the USA in 2015 proved that Staphylococcus aureus produced delta toxin. It contributed to the skin inflammation and itching in people with eczema by discharging histamines of the mast cells.

**Conclusions:** these three recent studies discovered new mechanisms that lead to skin inflammation and itching. Knowing these mechanisms allows us to find more effective treatment for these irritating conditions of the skin.

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[81]

**Attention to details: skin manifestation of endocrine system disorders**

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**Trustee of the paper:** Lomonosov Konstantin, M.D.

**Introduction:** Skin disorders can be found in various endocrine diseases, for example in diabetes mellitus, Cushing's syndrome, hypo- and hyperthyroidism, acromegaly. Often these diseases manifest with skin lesions, while other symptoms may lack. Thus it is highly important to be aware of particular peculiarity of skin lesions in endocrine disorders, because it may help to diagnose it and to start treatment on time.

**Aim of the study:** The aim of the study is to analyze the peculiarity of skin disorders in patients with endocrine system disease

**Material and methods:** Critical analysis of 133 articles released between 2009 and 2015 years was undertaken. 21 articles were excluded from the study because of unclarity of materials and methods. Final amount of 112 articles was analyzed

**Results:** Sometimes patients having diabetes mellitus suffer only from skin disorders: dryness of skin, desquamation, hyperkeratosis, small wounds. These signs are the initial manifestation of the diabetic foot, found in more than 40% patients having uncontrolled hyperglycemia. Erythema and lipoid necrobiosis (0,3-0,7%) can also present.

Thinning and atrophy of the epidermis, subcutaneous hemorrhage ( 27.7 %), acne (58.3 %), pustular and fungal infections (11.1 %), trophic disturbances may appear in patients with Cushing's syndrome.

Patients with hyperandrogenism suffer from hirsutism, seborrhea and dermatopathy.

In patients with hyperthyroidism skin can be wet (86,1%), hot (88.9 %), also palmar erythema , softness and striation nail ( 13.9 % ), onycholysis ( 3.9 % ), pruritus (22 %), rash, diffuse alopecia dyschromia and pretibial myxedema may appear.

**Conclusions:** Thus, skin manifestations often occur in patients with endocrine disease. Unfortunately, on the early stages these patients may be treated in Department of Dermatology. Increasing the awareness of doctors of dermatological signs of endocrine diseases may help to diagnose it and start an appropriate treatment on time.

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[82]

**Impact of alcohol and nicotine in prevalence of melanoma**

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**Trustee of the paper:** Małgorzata Maj

**Introduction:** Melanoma is a malignant neoplasm derived from melanocytes. Genetic factors and UV exposition have the most influence on the risk of development for future melanoma. Amongst other environmental factors nicotine and alcohol use were taken into consideration. Tobacco smoke has a proven cancerogenous influence on human cells which was especially proven in the epithelium of the respiratory tract. On the other hand there was no unequivocal influence of nitocotine towards epithelium containing melanocytes. Cancerogenic impact of alcohol in melanoma is yet to be fully investigated and understood

**Aim of the study:** Assesment of relevance for limitating widely available stimulants in the prevention of melanoma progression.

**Material and methods:** The studied population comprised of 265 patients aged 21-88 with a histopathological recognition of melanoma. Based on patient interviews, several factors were assessed in the progression of skin cancer including sex, fototype, age in which the cancer was discovered, intake of alcohol ( $\leq 2$  x per week or  $>2$  x per week including drinks of low percentage-beer, medium percentage-wine and high percentage) and also amount of daily cigarette packs smoked throughout the years (0,  $<10$ , 11-20,  $>20$  pack-years). Statistically relevant results were recognised for  $p < 0,005$ .

**Results:** The connections between Breslow Scale and the following factors were: sex ( $p=0,541$ ), fototype ( $p=0,675$ ), alcohol use  $\leq 2$  x per week or  $>2$  x per week ( $p=0,618$ ) and pack-years ( $r=-0,02$ ;  $p = 0,864$ ).

**Conclusions:** There was no relevent association between the severity of melanoma and the factors taken into consideration. It cannot be concluded that neither alcohol use nor smoking have any relevent influence on this neoplasm.

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[83]

### **A 2-year retrospective study of Basal Cell Carcinoma in Department of Dermatology of Medical University of Warsaw - A comparison between anatomical location and histopathologic subtype**

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**Trustee of the paper:** Agnieszka Michalska MD, Joanna Czuwara PhD, MD, Jacek Szymańczyk PhD, MD

**Introduction:** Basal cell carcinoma (BCC) is a malignant tumor of epithelial origin. Skin cancer is the most commonly diagnosed cancer type and 80% of skin cancers are BCC. The main risk factor for developing BCC is ultraviolet radiation. Nevertheless, genetic factors and immunocompetence of a patient also play a role.

**Aim of the study:** To investigate the incidence of BCC in a Polish population in relation to sex, age and localization of the tumor.

**Material and methods:** Retrospective analysis of 584 cases of BCC in Department of Dermatology of Medical University of Warsaw during the period from July 2014 to October 2015. We took into account information from hospitalization records, surgery notebooks and histopathological results. Statistical software was used to analyze the gathered data.

**Results:** We recorded 584 BCC lesions occurring in 425 patients (180 males and 245 females, M/F ratio 0.73) of mean age  $72.34 \pm 11.51$  SD years. The youngest patient was 23 and the oldest was 96 years old. The highest incidence of BCC in total was in 8th decade. Peak incidence in males was in 9th while in females in 8th decade. Of the 584 BCCs, 280 (47.95%) were classified to one of the histological subtypes from: superficial, nodular, infiltrative and styloid. Other 304 (52.05%) were unclassified. Among classified, 57.50% were superficial, 22.50% infiltrative, 18.57% nodular and 1.43% were styloid. Superficial was most common in both males (56.14%) and females (58.43%). Anatomic distribution of 584 BCCs showed the prevalence of face ( $n=190$ , 32.53%) and trunk ( $n=142$ , 24.32%). Ear was the only location where tumors occurred more frequently in men than in women. Among 161 superficial BCCs, the most common localization was trunk ( $n=58$ , 36.02%), while face among infiltrative ( $n=32$ , 50.79%), nodular ( $n=33$ , 63.46%) and styloid ( $n=3$ , 75.00%). While incidence of BCCs on face among male and female was almost the same (ca 44% both in males and females), the incidence of BCCs on the trunk was various for male and female (M 21.93% vs. F 31.93%).

**Conclusions:** Despite the similarities in the most common subtype of BCC and the most common localization of lesions, there are differences between male and female in distribution of BCC subtypes among different localizations.

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# Endocrinology & Diabetes

## **Jury:**

dr hab. n. med. Marianna Bąk  
prof. dr hab. n. med. Tomasz Bednarczuk  
prof. dr hab. n. med. Leszek Czupryniak  
dr hab. n. med. Małgorzata Gietka-Czernel  
prof. dr hab. n. med. Wojciech Jeske  
dr hab. n. med. Lucyna Papierska  
dr hab. n. med. Agnieszka Szypowska

## **Coordinators:**

Aleksandra Mazurkiewicz  
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## **Scientific Patronage:**

National Consultant in Gynecological Endocrinology Prof. Robert Spaczyński MD PhD  
National Consultant in Endocrinology Prof. Andrzej Lewiński MD PhD  
National Consultant in Diabetology Prof. Krzysztof Strojek MD PhD

Polskie Towarzystwo Endokrynologiczne



**Date:**

Friday, May 13th, 2016

**Location:**

Room 140, Didactics Center

**Regular:**

Alexandra Konstantopoulou

Ewa Nowak

Karina Kharchenko

Monika Gubała

Karolina Kunecka

Ewa Olszańska

Katarzyna Mendyk

Anna Pasierb

Karolina Borowska

**Short:**

Muhammad Asyraf Mad Dan

Kiron Johncy

Agnieszka Witkowska

Natalia Mykhalevska

Katarzyna Moskalik

Cieszymierz Gawiński

Mateusz Mieczkowski

[84]

### **Adrenal incidentalomas – morphological and hormonal evaluation.**

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**Introduction:** Adrenal incidentalomas (AI) are unsuspected clinically silent adrenal masses discovered incidentally by imaging methods. They constitute a heterogeneous group of various morphology, size and hormonal production

**Aim of the study:** Aim of this study was to examine morphological parameters in the group of patients with AI and to assess their relation to steroid hormones.

**Material and methods:** In this retrospective study 121 patients with AI (78 women, 43 men) of average age 57.7 (median 56.5) were included. All of them underwent hormonal evaluation with measurement ACTH, cortisol, aldosterone, plasma renin activity (PRA) and dehydroepiandrosterone (DHEAS). Metanephrines were examined to rule out pheochromocytoma. Morphological evaluation comprised CT characteristics including size, density, washout etc.

**Results:** Among all AI 97 (80%) were unilateral (42% left, 38% right, respectively), 24 AI (20%) were bilateral. Mean size of AI was 3.41 + 2.48 cm (13% smaller than 1 cm, 56.2% between 1 and 4 cm and 25.6% larger than 4 cm, respectively). The most common morphological type of AI were adenomas (52%). There was a positive significant correlation between size and DHEAS ( $r = 0.48$ ,  $p = 0.032$ ), however no correlation was observed between size and serum cortisol, ACTH or aldosterone, respectively.

**Conclusions:** Authors concluded that adrenal adenomas represent the most common morphological type of AI. Size of adrenal mass positively correlates with serum DHEAS.

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[85]

### **The concentration of vitamin B12 and the presence of diabetic complications in patients with diabetes mellitus type 1 and 2. The correlation between cobalamin and HDL, TAG, hsCRP plasma levels.**

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**Trustee of the paper:** Araszkievicz A, Zozulińska-Ziółkiewicz D.

**Introduction:** Vitamin B12 inadequacy may be associated with occurrence of diabetic complications.

**Aim of the study:** Was to assess the serum concentration of vitamin B12 in patients with diabetes. The objective was to compare serum vitamin B12 concentration between patients with type 1 (DM1) and type 2 diabetes (DM2) mellitus and to assess the relationship between B12 and presence of diabetic complications as well metabolic control and duration of diabetes.

**Material and methods:** Retrospective review of patients with diabetes treated in the Department of Internal Medicine and Diabetology, Poznan University of Medical Sciences. Data regarding type, duration of diabetes, serum vitamin B12 and hsCRP concentration, HbA1c level, lipid profile and presence of chronic complications were analyzed. The analysis included 236 DM1 patients (141 men) aged 44(IQR:18-81) with disease duration 18(IQR:0-66) and 245 DM2 subjects (160 men), aged 62(IQR:21-89), with disease duration 14(IQR:0-40).

**Results:** The median serum level of vitamin B12 was 339,5pg/ml. Serum vitamin B12 concentration was significantly lower in patients with DM2 than DM1 [301(IQR:226-406) vs 368,5(268-488),  $p < 0.001$ ]. Patients with macroangiopathy as compared to subjects without macroangiopathy had lower vitamin B12 level [325 (226-403) vs 348 (249-472),  $p = 0.02$ ]. In patients with DM2, the presence of retinopathy as well as any diabetic microangiopathy were associated with significantly lower vitamin B12 concentration [270 (213-386) vs 348 (249-416),  $p = 0.005$ ] and [286 (219-400) vs 364 (272-443),  $p = 0.004$ ]. Significant correlations between vitamin B12 level and duration of DM2 ( $R_s = -0.14$ ,  $p = 0.02$ ), HDL cholesterol level ( $R_s = 0.14$ ,  $p = 0.001$ ), triglycerides concentration ( $R_s = -0.15$ ,  $p = 0.0006$ ) and hsCRP level ( $R_s = -0.11$ ,  $p = 0.02$ ) were found.

**Conclusions:** Patients with DM2 present lower levels of vitamin B12, probably partially related to metformin therapy. Lower serum concentration of vitamin B12 is related to the presence of late diabetic complications. A meaningful correlation between vitamin B12 and HDL, triglyceride and hsCRP plasma levels was found.

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[86]

### EFFECT OF WATER AND SALINE OVERLOAD ON THE CONTENT OF GLYCOGEN IN THE LIVER OF STREPTOZOTOCIN DIABETIC RATS

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**Introduction:** Diabetes mellitus is a common but serious metabolic disorder associated with many functional and structural complications. Glucose metabolism is disturbed due to an absolute or relative insulin deficiency.

Salt plays an important role in the control of blood pressure in obesity and diabetes mellitus.

**Aim of the study:** The aim of the present study was to evaluate the effect of water and saline overload on concentration of glycogen in the liver of streptozotocin (STZ) diabetic rats.

**Material and methods:** Material and methods. Male Wistar rats weighing 180 +/- 50 g were made diabetic by injection with a single intraperitoneally (i.p.) dose of STZ (65 mg/kg b. w.). After 5 and 12 days was carried out to determine the level of glucose in vivo. Blood was taken from the tail vein evaluate the basal glycemia level with the use of One Touch Ultra (Life Scan, USA). Water stress was carried out by introducing the animals water at the rate of 5% of body weight. Saline loading diabetic rats was performed by introducing a 0,1% NaCl at a rate of 5% of the body weight of rats. Liver samples were collected at day 12 post STZ injection (from diabetic group serum glucose level significantly elevated  $\leq 300$  mg%,  $p \leq 0.05$ ). The animals were divided into subgroups: 1) intact rats (the control group); 2) STZ- diabetic rats with overt (basal glycemia  $>150$  mg%) diabetes; 3) animals with overt diabetes undergoing water stress; 4) animals with overt diabetes undergoing saline stress. Determinations of glycogen content in the liver made by standard methods.

**Results:** Our results showed decrease of glycogen content in groups of diabetic rats and diabetic rats with water overload by an average of 20% respectively compared with the same indexes of control rats. According to the results obtained in the blood of rats with STZ diabetes, which had saline stress, content of glycogen decreased by 32% compared with the same indexes of control rats. So, diabetes in rat liver is accompanied by increase phosphorolysis of glycogen. These changes are more pronounced in the group of diabetic rats undergoing saline load. It is known that, the main neurohumoral mechanisms of salt-induced cardiovascular changes in STZ-diabetes are increased sodium and vascular sensitivity to adrenergic stimuli, which act in combination to produce a final result of higher arterial pressure levels.

**Conclusions:** Conclusion. Salt load accelerates the process using glycogen in diabetic rats.

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[87]

### Knowledge of diabetes among Polish mountain guides

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**Introduction:** It is estimated that currently 387 million people worldwide suffer from diabetes and by 2035 the number of sick people will rise up to 592 million. More and more people with diabetes are involved in various forms of intense physical activities, including those activities taking place in the mountains, hiking and alpine trekking. In Poland, at an altitude of over 1,000 meters above the sea level, mountain guides often take care of organized groups, in particular regarding their safety on the trail and providing the first aid.

**Aim of the study:** The aim of this work is to verify the knowledge of mountain guides about diabetes using standardized questionnaire adapted form by Lee et al.

**Material and methods:** The questionnaire of the knowledge about diabetes was sent in January 2016 electronically to 500 Polish authorized, active mountain guides. Basic demographic data of respondents was collected. Standardized questionnaire was used, consisting of 41 questions, with 5 main sections relating respectively to: general knowledge about diabetes, risk factors, symptoms and complications, treatment and monitoring of diabetes and questions from the unclassified category. For the correct answer YES or NO 1 point was to receive, the incorrect response or "DO NOT KNOW" 0 point was given. The maximum, possible number of points was 41.

**Results:** 103 mountain guides filled in the questionnaire. 61.2% of them were male, 38.8% female. Among the respondents, the majority declared to obtain university education level (85.4%), and being a mountain guide ranged from 6 months to 44 years. The average score obtained from the questionnaire was 72.1% (+/- 12.7%) of the maximum possible score (29.6 of 41 points). The proportion of "correct answers" for each question ranged in each section between 23-100% (general knowledge), 46-97% (risk factors), 38-91% (symptoms and complications), 45-95% (treatment) 73-98% (monitoring). As the main source of knowledge about diabetes, respondents pointed people suffering from diabetes in the family and environment (33%), and 12.6% first aid courses.

**Conclusions:** Mountain guides' knowledge about diabetes is good, especially that it is not derived from courses which prepared them to the role of the guide. However, there are areas in which the results were lower than the average, and it would be worth to draw the attention of organizers, that there is need for education in this field.

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[88]

### **Insulin requirements and the factors contributing to insulin dose during the first year of type 1 diabetes duration in children treated with insulin pump.**

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**Trustee of the paper:** Katarzyna Dzygała

**Introduction:** Insulin pump therapy (CSII) is initiated in many patients immediately after type 1 diabetes (T1D) onset. It is important to establish simple guidelines on the basis of patient characteristics that could help clinicians to optimize insulin dose programming on CSII implementation in this group.

**Aim of the study:** The aim of the study was to assess the insulin requirement and determine factors contributing to insulin dose in the first year of type 1 diabetes duration in children on insulin pumps.

**Material and methods:** A total of 100 children (49 boys) with newly diagnosed T1D treated with insulin pump from the beginning were included. The mean age at the onset was 8.16±3.58 (0.7-15.9) years, mean initial HbA1c was 12.04±2.49%, BMI 15.4 kg/m<sup>2</sup> and BMI z-score -0.75±2.20.

The following parameters were analysed: c-peptide, HbA1c, total daily insulin dose (TDD) defined as units of insulin per kilogram of body weight per day, basal/TDD proportion (basal%) and BMI at onset, 3, 6, 9 and 12 months of follow-up.

**Results:** Daily insulin requirements remained low in the subsequent months of follow-up (0.37, 0.40, 0.47, 0.5 units/kg, p<0.0001). Basal insulin rate was low (16.7, 18.7, 21.4, 23.5%; p=0.0003). Patients had good diabetes control (HbA1c 6.2, 6.4, 6.6, 6.7%). We found correlation between C-peptide level and the age (r=0.42 95%CI [0.23-0.57]; p<0.0001). There was no correlation between age and TDD or basal%. Correlations between levels of C-peptide and BMI were observed during the entire period of observation (p<0.05). At the onset: significant negative correlation between BMI and TDD (p=0.0001) and the correlation between HbA1c and TDD (p=0.0002), and basal% (p=0.012) were found. In addition, at diagnosis of diabetes correlation was found between C-peptide and TDD (p=0.011), HbA1c (p=0.090), basal% (p=0.036). After 3 months of observation correlation between C-peptide and TDD (p=0.001) and HbA1c (p=0.029). None of these correlations were seen after one year of diabetes duration.

**Conclusions:** During the insulin pump programming in patients with newly diagnosed diabetes, their levels of BMI, HbA1c and C-peptide should be considered. Lower insulin requirement is expected in children with higher BMI, lower initial HbA1c and higher C-peptide levels. In the first year of diabetes duration, basal insulin rate is low and remains lower than 25% of TDD. These findings may help clinicians in clinical decision making regarding CSII therapy.

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[89]

### Knowledge about diabetes among medical students in Poland.

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**Introduction:** Diabetes is the first non-infectious disease, which is called “epidemic of the XXI century”. The number of patients suffering from this disease is constantly increasing. Undiagnosed or inadequately treated diabetes leads to many complications, therefore the doctors from different specializations and students preparing to perform the medical profession should demonstrate adequate knowledge of the disease.

**Aim of the study:** The aim of the study was to assess diabetes knowledge among students from first up to sixth year of medical study of 14 medical universities in Poland using diabetes knowledge survey.

**Material and methods:** A Self design questionnaire about knowledge of diabetes was prepared, consisting of 19 questions related to risk factors, symptoms and complications of diabetes. The questionnaire for was approved by two specialists in the diabetology field and was pre-tested on a group of 30 medical students, then available online in November 2015 for students from 14 medical universities in Poland using one of the social networking sites. Basic demographic data of respondents and the information on the current year of studies were collected. Medical students were divided into preclinical group (1-2 years of study) and the clinical group (3-6 years of study). The results were statistically analyzed.

**Results:** The survey was filled in by 1268 students. 70,9% were women and 29,1% men. 1,63% of the responder suffered from type 1 diabetes. Average result of the survey was 66,15%, the worst score was 29,4% and the best was 100%. Number of correct answers in the questionnaire in clinical group compared to preclinical one in the section about risk factors for diabetes was  $83\pm 15\%$  vs  $55\pm 15\%$  respectively. In the section relating to symptoms of diabetes the outcome for clinical and preclinical students was  $85\pm 12\%$  vs  $58\pm 20\%$ , while in the part related to complications of the disease score  $92\pm 8\%$  vs  $59\pm 10\%$  respectively. Obtained results correlated positively with age of the respondents ( $p < 0.001$ ) and negatively with higher BMI of the respondents ( $p < 0.004$ ).

**Conclusions:** Knowledge about diabetes in the group of medical students, especially in preclinical group is insufficient. Gaps in knowledge are noticeable in all the surveyed areas of knowledge about the disease. Students with higher BMI know less about the disease comparing to those with lower BMI. There is a strong need to improve diabetology knowledge among students during medical education.

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[90]

### Hormonal disorders among people with pituitary macroadenomas and microadenomas

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**Introduction:** Pituitary adenomas are an important clinical problem and represent approximately 10-15% of all intracranial tumors. They constitute the most common cause of pituitary hormonal disorders. The presentation of the abnormalities is variable and can take the form of hormone hypersecretion or dysfunction of particular tropic pituitary axis depending on hormonal function of adenoma or the occurrence of the mass effect (destructive pressure exerted by the tumor upon surrounding glandular tissue). Adenomas which exceed 10 mm are defined as macroadenomas with those smaller than 10 mm referred as microadenomas

**Aim of the study:** Evaluation of the prevalence of hormonal disorders among patients with pituitary microadenoma or macroadenoma.

**Material and methods:** A retrospective evaluation of medical records of 161 patients (89 women, 72 men) hospitalized in the Department of Endocrinology Medical University of Lublin between 2010-2015, to undergo hormone evaluation tests because of the diagnosis of pituitary adenoma. The analysis included 51 patients with pituitary microadenoma and 110 with macroadenoma

**Results:** Macroadenomas accounted for 68% and microadenomas for 32% of adenomas in the study group. The majority of macroadenomas (60%) and microadenomas (68%) were endocrine-inactive. The most common hormone disorder among patients with pituitary macroadenoma was hyperprolactinemia (25%) and among patients with microadenoma hyperprolactinemia (14%) and hypersecretion of ACTH (12%). ACTH-dependent Cushing's syndrome occurred in 10% of people with microadenoma. Hypersecretion of gonadotropins was observed among 2% patients with microadenoma and 1% with macroadenoma

Pituitary insufficiency was recognized among 33% patients with macroadenoma and 10% with microadenoma. Gonadotropin insufficiency was the most common, occurring in 13% of patients with macroadenoma and 4% with microadenoma. Insufficiency in ACTH secretion was noted among 8% of patients with macroadenoma and 2% with microadenoma.

**Conclusions:** Pituitary adenomas usually do not exhibit hormone secretion. The frequency of functional adenomas does not appear to correspond with diameter of tumour. Hyperprolactinemia is the most common hormone disorder among patients with pituitary adenomas.

Hormone insufficiency occurs more often in case of macroadenoma than microadenoma due to more extensive impact surface exerted on normal pituitary tissue by a larger tumor.

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[91]

### **The dark side of testosterone deficiency: type 2 diabetes and insulin resistance**

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**Introduction:** Recent studies have reported low serum testosterone levels in men with type 2 diabetes (T2D). It has been suggested that testosterone deficiency syndrome might play a significant role in the development of insulin resistance and glucose homeostasis among men with T2D.

**Aim of the study:** The goal of this study was to examine the prevalence of testosterone deficiency and to assess the relationship between testosterone levels and markers related to diabetes in men with T2D.

**Material and methods:** We recruited 15 men with T2D (57.61±12.75 years) and they were evaluated for testosterone deficiency defined as serum total testosterone (TT) level <3.5 ng/ml. Diabetes criteria were described by the American Diabetes Association. The concentrations of serum: TT and sex hormone binding globuline (SHBG) were measured by electrochemiluminescence method—(ECLIA) using the Roche diagnostics tests dedicated to Elecsys and Cobas automatic analyzers, glycated hemoglobin (HbA1c) was measured by capillary electrophoresis and fasting plasma glucose (FBG) was measured from blood samples by standard method. Serum free testosterone (FT) level was calculated from TT and SHBG levels. Insulin resistance was estimated by the homeostasis model assessment method (HOMA-IR) and the quantitative insulin sensitivity check index (QUICKI).

**Results:** The prevalence of testosterone deficiency in diabetic men was 33,3%. There was significant correlation between TT levels and FBG ( $r=-0.723$ ,  $p=0.003$ ), HbA1c ( $r=-0.709$ ,  $p=0.003$ ), HOMA-IR ( $r=-0.658$ ,  $p=0.009$ ), QUICKI ( $r=0.744$ ,  $p=0.001$ ), Body Mass Index (BMI) ( $r=-0.515$ ,  $p=0.05$ ). We observed the correlation between FT levels and FBG ( $r=-0.519$ ,  $p=0.047$ ), HbA1c ( $r=-0.532$ ,  $p=0.041$ ). There was no significant correlation between FT levels and HOMA-IR ( $r=-0.373$ ,  $p=0.17$ ), QUICKI ( $r=0.485$ ,  $p=0.067$ ), BMI ( $r=-0.263$ ,  $p=0.344$ ).

**Conclusions:** Low testosterone levels appear to negatively affect insulin sensitivity and glycemic control in men with diabetes. Testosterone deficiency might play a crucial role in maintaining metabolic homeostasis.

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[92]

### **Predictors of malignancy in thyroid nodules with cytological diagnosis of follicular neoplasm (FN).**

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**Introduction:** Follicular nodules receive III or IV category of Bethesda System what do not permit for preoperative distinguishing between thyroid carcinoma (TC) and benign lesions (BL), therefore there is a necessity for creation a key clinical features that can predict malignancy in FN.

**Aim of the study:** Investigation of potential clinical factors for the preoperative prediction of malignancy in FN.

**Material and methods:** 139 patients who applied to the Department of Oncological Endocrinology and Nuclear Medicine, Institute of Oncology, Warsaw with diagnosis of FN were submitted to fine needle aspiration biopsy under control of ultrasonography from May 2014 to January 2016 and 53 of them underwent surgery. Patients were divided into two groups according to the histopathological diagnosis: TC and BL. Ultrasonographic findings of observed focal lesion and results of selected laboratory tests: serum thyroglobuline (Tg) level, titre of antibodies against thyroglobuline (aTg) and against thyrosine peroxidase (aTPO) were analyzed and compared.

**Results:** TC was diagnosed in 22 patients (41,5%): papillary thyroid carcinoma - 14 cases, follicular thyroid carcinoma - 6, low-differentiated carcinoma - 2. BL were represented by adenomas - 16 and hiperplastic nodules - 15. In the preoperative cytological diagnosis 8 patients received higher category of Bethesda System – V (suspicious of malignancy), remaining 14 obtained category IV. 86 patients, who did not undergo surgery received category IV or lower in the preoperative cytological examination and are qualified for watchfull observation and/or await for surgery. An irregular contour of lesion, taller than wide ratio and lack of cysto-solid structure were the only significant predictive factors for malignancy in case of FN ( $p < 0,05$ ). TC in comparison with BL more frequently presented: profuse circumferential vascularisation (41% vs. 19%), hipoechogenicity (55% vs. 42%), calcification (55% vs. 45%) and elevated aTPO (32% vs. 23%), but those differences were statistically insignificant.

**Conclusions:** 1. A cooperation of endocrinologist, surgeon and pathologist is the best way of treatment in case of patients with diagnosis of FN. 2. A cytological suspicion or diagnosis of malignancy is the most important predictor of TC. 3. An irregular contour of lesion, taller than wide ratio and lack of cysto-solid structure could be important clinical features to predict malignancy in FN.

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[93]

### **Health Literacy among Patients with Type 2 Diabetes attending an Ambulatory Diabetes Services in Ireland**

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**Introduction:** The institute of Medicine (2004) defines health literacy as “The degree to which individuals have the capacity to obtain, process and understand basic health information and service needed to make appropriate health decisions”. Sub-optimal health literacy has been described as a risk factor for chronic diseases such as type 2 diabetes. It is also linked with poorer glycemic control and higher complication rates. There is no data on health literacy in patients with type 2 diabetes in Ireland.

**Aim of the study:** This study measures health literacy in patients with type 2 diabetes attending the ambulatory diabetes services at Galway University hospital in Ireland.

**Material and methods:** Patients with type 2 diabetes attending the out-patient diabetes clinic over a 4 week period in June/July 2015 were invited to participate. Functional health literacy was measured by administering the Newest Vital Sign (NVS), a validated tool to measure health literacy. Ethics approval was obtained from the Galway University Hospitals' Ethics committee.

**Results:** Sixty seven participants, ranging from 39 to 84 years, completed the study. Twenty seven (40%) had a high likelihood of limited functional health literacy, 16 (24%) a possible likelihood of limited health literacy and 24 (36%) had adequate health literacy. Only 2 participants (3%) perceived their level of health literacy as low.

**Conclusions:** Just over one third of participants in this study had adequate health literacy. Most of the participants with a high likelihood of limited health literacy did not perceive their health literacy skills as being inadequate. Health care professionals should deliver care using plain language and clear explanations.

[94]

### **The Role of Structured Education in Improving Medication Adherence in Type-2 Diabetic Patients in a Rural Tertiary Care Centre – A Randomized Controlled Trial**

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**Trustee of the paper:** Kiron Jacob Johncy

**Introduction:** Diabetes mellitus is a chronic disease, requiring long-term medical attention to prevent development of complications. Medication adherence is a key factor determining therapeutic success and control of the blood glucose levels in diabetics. Poor adherence accounts for substantial worsening of disease, early onset of complications and increased health care costs.

**Aim of the study:** To assess if planned structured education improves medication adherence as measured by the Morisky Medication Adherence Scale – 8 (MMAS-8) in Type -2 diabetic patients admitted to a tertiary care hospital.

**Material and methods:** This is a parallel group, prospective, single blinded randomized controlled trial with allocation concealment. 66 diabetic patients admitted to the Medicine ward were randomized to intervention and control groups. Initial MMAS-8 questionnaire was administered by the investigator to assess present medication adherence. After a structured education (interactive talk, handout on importance of medication adherence, and medication log) to the intervention group, follow up MMAS-8 scores were assessed after 2 weeks by a blinded assessor. The follow-up scores in the two groups were analysed using the Pearson Chi square test.

**Results:** Two patients were lost to follow-up. Out of the remaining 64, in the initial assessment, 76.5 % of the participants had low adherence, 10.9% had medium adherence and only 12.5% had high adherence. In the follow up assessment, there was an increase in high adherence in the intervention group (43.8%) compared to the comparator group (18.8%). On analysis, this had a significant p value of 0.008, indicating significant increase in adherence by the MMAS-8 scale following the structured education.

**Conclusions:** There was a significant enhancement in medication adherence following planned structured education in the intervention group, implying the need for communication about medication adherence to the patient. Practise of keeping a medication log will be encouraged among patients in the hospital.

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[95]

### **Osteocalcin as a promising cure-all for low testosterone level among old and middle-aged diabetic males**

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**Trustee of the paper:** Zbigniew Bartoszewicz, PhD; Agnieszka Kondracka, PhD; Piotr Miśkiewicz, PhD;

**Introduction:** It has been proven that bone skeleton plays a vital role influencing energy metabolism. There has been more research on the correlation between the level of osteocalcin and testosterone in mice than humans. There is the lack of data if osteocalcin has a potential fertile role as a stimulator of testosterone production by testes in males.

**Aim of the study:** A major question raised by this study was to determine if the bone structure also regulates testosterone production and male fertility in humans.

**Material and methods:** The study was performed in 15 men with type 2 diabetes (57.61±12.75 years) and 16 non-diabetic control group (63.93±8.83 years) in the Department of Internal Diseases and Endocrinology and Diabetology of Medical University of Warsaw. Diabetes criteria were described by the American Diabetes Association. All patients gave written informed consent and all protocols were approved by Medical University of Warsaw Research Ethics Committee. The concentrations of serum: total testosterone (TT), estradiol (E2), luteinizing hormone (LH), sex hormone binding globuline (SHBG) and N-MID Osteocalcin (tOC) were measured by electrochemiluminescence method (ECLIA) using the Roche diagnostics tests dedicated to Elecsys and Cobas analyzers. Free (cFT) and bioavailable testosterone (BT) were calculated from TT and SHBG levels and the andropause index (AI) from TT and LH. Statistical analyses were performed using GraphPad Prism 6.07.

**Results:** Low osteocalcin level was found in 60% diabetics and 31.25% non-diabetics (odds ratio [OR]=3.3; 95% CI, 0.75-14.47). We measured higher grade of TT (4.99±2.52 vs. 4.31±1.89, p=0.4638), cFT level (0.076±0.039 vs. 0.038±0.069, p=0.54) in diabetic men but tOC was higher in control group (18.99±7.59 vs.

14.59±9.15, p=0.0438). In the relation between osteocalcin and other parameters in research group, simple Spearman correlation analysis showed tOC level was related with TT (r=0.61305, p=0.015) BT (r=0.6297, p=0.0119) and AI (r=0.736, p=0.0018) whereas in the control with BT (r=0.509, p=0.0441) and AI (r=0.5589, p=0.0244), however the results were not significantly different between groups based on Mann Whitney test p>0.05.

**Conclusions:** Osteocalcine is a part of bone-testis axis increasing testosterone level. Lower concentration in diabetics exposes them to hypogonadism so its supplementation may revolutionize the prevention of it, therefore further prospective analysis is needed in a wider groups both in the general population and cohorts of patients with metabolic disorders.

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[96]

### **Identification of late-onset hypogonadism in middle-aged and elderly men: a quest for a sensitive and specific assay**

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**Introduction:** Late-onset hypogonadism (LOH) is defined as testosterone deficiency, either total or free, associated with clinical symptoms or signs such as lethargy, sleep disturbances, diminished libido, erectile dysfunction, hot flushes, visceral obesity and insulin resistance. Because of the slow and constant decrease in testosterone in males above 40 years, some of signs might be misdiagnosed. Standard questionnaires either ADAM or IIEF-5 are unreliable and have low specificity, so they are not effective for low testosterone level screening.

**Aim of the study:** The aim of this study was to evaluate a predictor for early LOH recognition among asymptomatic men with low testosterone levels.

**Material and methods:** We collected data on 15 male subjects, aged 37.6-79.3 (mean 61.39±13.34) with either total (<3.49 ng/ml), calculated free (<0.07 ng/ml) or both low testosterone levels at Departments of Internal Medicine: Endocrinology and Diabetology of Medical University of Warsaw from October 2015 to January 2016. Total testosterone (TT) was measured by electrochemiluminescence method (ECLIA) and free testosterone level in saliva (ST) by using a manual enzyme immunoassay (DRG, Germany). Free serum testosterone (FT) was estimated using Vermeulen calculator. The patients had undergone a comprehensive medical examination: BMI, WHR, visceral adipose index (VAI), an andropause index (AI; TT/LH) and insulin resistance indices: the homeostasis model assessment method (HOMA) and the quantitative insulin sensitivity check index (QUICKI).

**Results:** The analysis revealed correlation between AI and TT (r=0.6182, p=0.0478) and FT levels (r=0.8462, p=0.0009) but no statistical difference in AI using Mann-Whitney U test (MW) (p=0.8678). There was a correlation between ST and HOMA among men with TT deficiency (r=0.6582, p=0.0278, WM p=0.6822). However, there was no statistically significant difference between BMI, WHR, HOMA, QUICKI and TT, cFT, ST, respectively.

**Conclusions:** A simply screening test determining a potential risk of hypogonadism among men remains an open question. We did not prove the relevance of excessive fat tissue (BMI, WHR, VAI) with low testosterone level, albeit there were small numbers in the trial. Small studies will often report non-significance even when there are real effects which a large study would have detected. Because of a steady decline in testosterone levels and no characteristics signs, LOH might be disregarded in the elderly.

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[97]

### **Indicators of nonspecific resistance while aging under the influence of pineal gland on seasonal and circadian chronorhythms**

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**Trustee of the paper:** Oleksandr Zakharchuk

**Introduction:** Mammal and human epiphysis plays an important role in circadian endocrine activity synchronization. The role of epiphysis in neuroendocrine regulation of organism functions and the role of epiphysis in the development of general adaptation syndrome is known/ Epiphysis is one of the main oscillators of regulation of chronological organism processes.

**Aim of the study:** To determine the influence of pineal gland on seasonal and circadian chronorhythms and to explore the indicators of nonspecific resistance while aging.

**Material and methods:** Male rats of a Wistar line of two age groups: mature(adult) – at the age of 12-15 months and old - at the age of 24 months and older have been studied. Epiphysectomy influence upon the dynamic of circadian and season rhythms indicators of unspecific immune resistance and the influence on rhythmostasis at the organisms aging have been researched. Indicators of unspecific immunity have been researched: activity of a serum complement, concentration of a serum lisocym, general number of leucocytes, HCT-test, mieloperoxide activity and phagocytic index of polymorphnucleous leucocytes.

**Results:** The results of experimented researches show, that after the pineal gland removal indicators of serum complement activity, lisocyme, glycogen storage, HCT-test and mieloperoxide activity level change, that is the direct evidence of phagocytic activity in old animals decreased significantly, epiphysectomy resulted in phasing disturbance of a daily curve, in changing of indicators levels decreased significantly at every daily time intervals. The exogene injection normalized decreased indicators of phagocytic activity, in both adult and old rats, but at gland presence a hormone didn't influence upon this indicator at the standart photoperiod. At the oppression of pineal gland by long lightning, the melatonin injection has stimulated the phagocytic activity in both adult and old researched animals. Consequently, at the lack of pineal gland melatonin effects doesn't depend on photoperiod.

**Conclusions:** Multidirectional biorhythmological changes of humoral and cell indicators unspecific resistance is providing the most valuable adaption to cyclic changes of an environment. Pineal gland is directly related to circadian rhythm system regulation of unspecific immunological resistance of organism. There are some age features, but Pineal gland influence is staying the same to old age. Epiphysis regulating influence upon immunostucture homeostasis is carried by melatonin and, maybe, the other Biologically active substances produced by this organ.

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[98]

### **The analysis of causes of failure in off-loading methods use among Diabetic Foot patients.**

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**Trustee of the paper:** Ph.D.M.D.B.Mrozikiewicz-Rakowska

**Introduction:** One of the key elements of Diabetic Foot treatment procedure is the application of off-loading methods. Proper selection of off-loading method contributes to 75% wound formation risk reduction and enhancement in existing ulcers healing.

**Aim of the study:** The aim of the study is to analyse reasons of failure in off-loading methods use among patients with Diabetic Foot.

**Material and methods:** The study was conducted among 100 patients treated in Department of Internal Diseases and Diabetology Medical University of Warsaw and Diabetic Foot Clinic between January and December 2015. The study was conducted from an anonymous survey mailed to patients. 72 surveys, which had been sent back to researchers, were analysed and reviewed.

**Results:** The average age of those surveyed was  $56,87 \pm 9,61$  years of age ( $54,60 \pm 12,41$  vs.  $57,76 \pm 8,24$ , respectively for women and men), average diabetes duration  $17,97 \pm 9,07$  regardless of diabetes type, (for  $n=15$  people with type 1 diabetes was  $21,73 \pm 10,70$  years, for  $n=56$  with type 2 diabetes was  $16,96 \pm 8,41$  years), average time from first wound occurrence was 8,06 years. 93% of patients were treated with insulin. The median value of glycated hemoglobin of examined group was 7,65. The most common reasons of noncompliance included:

high costs of off-loading devices (n=10), every day activities impediment (n=8), discomfort (n=7), inefficacy (n=5), lack of time for reimbursement claims (n=5), aesthetic reasons (n=6) and uncomfortable being seen as having a medical condition (n=6).

**Conclusions:** Preliminary results present that noncompliance with off-loading methods use is related to fear of job loss, perception by other people and lack of acceptance of orthosis design. Reasons are directly linked to 1/ difficulty in accessing the healthcare system for patients with reduced mobility 2/ lack of patients' awareness of noncompliance consequences. It is key that the healthcare personnel will take steps to 1/ simplify the employment process for people with reduced mobility, as this group includes people of working age. Fear of job loss results in noncompliance with off-loading methods and increases the risk of limb amputation 3/ organising rehabilitation programmes and including psychomotivation in order to promote off-loading methods.

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[99]

## NEW CRITERIA FOR GDM – PATIENTS' CHARACTERISTICS AND PREGNANCY OUTCOMES

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### Trustee of the paper:

**Introduction:** In June 2014 the Oral Glucose Tolerance Test (OGTT) criteria for diagnosing Gestational Diabetes Mellitus (GDM) changed. Before, to diagnose GDM fasting plasma glucose level should have been greater than or equal to 100 mg/dL, 1h glucose level to 180mg/dL, and 2h glucose level to 140 mg/dL. Now the borderline values are changed to 92mg/dL, 180mg/dL, and 153mg/dL, respectively.

**Aim of the study:** The aim was to compare old and new criteria in terms of patients' characteristics and pregnancy outcomes.

**Material and methods:** We did a retrospective analysis of 475 patients with GDM. They were divided into three groups: 1- patients meeting only old criteria (61 patients); 2- patients meeting both old and new criteria (396 patients); 3- patients meeting only new criteria (18 patients). We compared these three groups in terms of pre-pregnancy BMI, gestational weight gain, GDM therapy, week of diagnosis, fasting glucose levels, OGTT levels, estimated fetal weight (EFW) and neonatal birth weight.

**Results:** Patients from group 1 had the lowest pre-pregnancy BMI out of all three groups (median 22.3 kg/m<sup>2</sup>, 24.7 kg/m<sup>2</sup> and 26.6 kg/m<sup>2</sup>, respectively; p=0.001), but gained more weight during pregnancy than patients from group 2 (median 11.0 kg vs. 9.0 kg; p=0,032). They were treated only with diet more frequently than patients from group 2 (88.5% vs. 75.3%; p=0.022) and 3 (88.5% vs. 66.7%; p=0.063). Patients from group 1 were diagnosed at the same week of pregnancy as patients from group 2 and later than patients from group 3 (median week of pregnancy they were diagnosed was: 26, 26, and 23, respectively; p=0.05).

Group 1 had the lowest median fasting glucose levels (83.5 mg/dL in comparison to 88.0 mg/dL and 93.0 mg/dL; respectively; p=0,012) and OH glucose levels in OGTT (79.0 mg/dL, 89.0 mg/dL, and 95.0 mg/dL respectively; p=0.001). Median 1H glucose levels in OGTT in group 1 were lower than in group 2 and higher than in group 3 (152.0 mg/dL, 183.0 mg/dL and 139.0 mg/dL; p=0,001). The same pattern was observed in terms of 2H glucose levels in OGTT (146.0 mg/dL, 157.0 mg/dL, 111.0 mg/dl respectively; p=0.001).

In group 1 the EFW was the lowest (mean 2963.5 g vs 3207.6 g vs 3377.0 g respectively; p=0,008) and the birth weight of neonates was the smallest (mean 3208.6 g, 3400.0 g, and 3566.1 g, respectively; p=0.015).

**Conclusions:** Patients treated for GDM in the past, who do not fulfill new criteria of GDM, differ from those meeting both old and new criteria in terms of anthropometric and metabolic features and neonatal outcomes.

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**Comparison of the effects of insulin and metformin therapy in an experimental chronic wound model on streptozotocin-induced diabetic rats**

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**Trustee of the paper:** B. Mrozkiewicz-Rakowska

**Introduction:** The main condition of wound healing in diabetes is to optimize glycemia . There has not been established yet, whether there was an independent effect of antidiabetic drugs on the healing of chronic wounds in diabetes. To assess the influence of such therapy on wound healing, we need repeatable animal model, closely as possible to the conditions observed in patients with longstanding diabetes .

**Aim of the study:** Evaluation of influence of antidiabetic drugs (insulin, metformin) on wound healing, based on previously developed experimental model of chronic wound healing? in Wistar rats .

**Material and methods:** The study was performed on a group of 80 male Wistar rats with streptozotocin – induced diabetes. After 7 days, they were divided into 3 groups: group 1 received injections of human NPH insulin, group 2 intragastrically metformin and group 3 (control) injections of 0.9 % NaCl. The dosages of drugs were determined based on the literature. After 30 days of treatment, qualified rats were wounded ( thin layer of the skin from the back 2x2 cm) and sutured with a silicone disc 4x4 cm to stabilize the skin and standardize the process of healing. Every 3 days, digital pictures of the wound surface and a biopsy, were performed. Samples were histologically examined - H + E staining and immunohistochemical methods (evaluation of the expression of the Ki67 antigen)

**Results:** Mean glucose levels in the treatment groups did not differ significantly (350-450 mg / dl). The ratio of the wound area reduction on day 9 was: in group 1 (insulin) 67%, in group 2 (metformin) 40%, in group 3 (control), 48%. Preparations from biopsies of wounds of animals from the group receiving insulin have only a slight infiltration of inflammation, in rats treated with metformin infiltration was significantly greater. Immunohistochemical assessment showed the greatest density of centers of proliferation in group 1 (insulin).

**Conclusions:** First results show that there are different mechanisms affecting tissue regeneration in wound healing using insulin and metformin, apart from glycemic effect. Methods of measurements and the standardization of wound creation brings us closer to the conditions of healing observed in clinical practice in humans.

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# Gastrointestinal & Hepatic Surgery

## **Jury:**

dr hab. n. med. prof. PAN Marek Durlik  
dr hab. n. med. Maciej Kosieradzki  
dr hab. n. med. prof. AWF Marek Szczepkowski

## **Coordinators:**

Łukasz Mielczarek  
Milena Snopek

## **Scientific Patronage:**

National Consultant in General Surgery Prof. Grzegorz Wallner MD PhD

Towarzystwo Chirurgów Polskich



## **Sponsor of the session:**

Wydawnictwo Lekarskie PZWL



**Date:**

Saturday, May 14th, 2016

**Location:**

Room 119, Library - CBI

**Regular:**

Nathan Walker  
Maciej Gaciong  
Ewa Olszańska  
Krzysztof Kobryń  
Radosław Pietrzak

**Short:**

Khaled Ben Saad  
Zhuldyz Beiseyeva  
Alexander Mordovskiy  
Pavels Zibenko  
Tomasz Charytoniuk  
Jan Kempski

[101]

### **The use of Virtual Patients in assessment of Postgraduate General Surgical Trainees – A Pancreatic Cancer model**

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**Trustee of the paper:** Nathan Walker

**Introduction:** Virtual patients (VP) are a valuable method of e-learning and assessment of competencies, particularly clinical decision making.

**Aim of the study:** Using the Low-Fidelity (Lo-Fi) method of VP design, we created a peer-reviewed VP map model and assessed its value to surgical trainees in making clinical decisions in a safe environment.

**Material and methods:** A Virtual Patient map was created based on the case of a 65 year old male with undiagnosed pancreatic head adenocarcinoma. Decision making for trainees spanned from the patient's initial GP referral through to palliative care involvement. The map was synthesised using specific mind-mapping software and the data placed into 'action maze' software known as Quandary, creating a fully interactive VP. Combined with our intent to create a patient avatar throughout the case using iClone, a realistic environment will be enhanced. At three intervals during the development, focus groups comprising of Surgical Trainees of varying levels and a Hepatobiliary Fellow critiqued the map, focusing on accuracy, fidelity and value of the decision stems.

**Results:** Trainees of all levels found the VPs to be valuable and the decision making challenging and rewarding. They identified the freedom to make the "wrong" decision and manage the consequence of this action as a valuable process for learning and that the feedback gained was essential. They reported that the scenario was realistic and suggested implementing supportive clinical supervision to increase fidelity. The fellows found the map to be of most value as they would soon have to make the decisions as Consultants. All trainees identified they would like more access to VPs and agreed they would use regularly. The Fellows were a vital resource for identifying clinical inaccuracies in the content of the map and ensuring the data was up to date.

**Conclusions:** Surgical trainees find VP's to be a useful tool and is an area they would like more exposure to. It was found that our map is potentially useful for decision-making and assessment. Despite being in its initial stages, our intention is to incorporate the VP into the assessment process of general surgical trainees, revolutionising their assessment currently in the UK today.

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[102]

### **Epidemiology and risk factors of cholangitis after liver transplantation – single center experience**

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**Trustee of the paper:** Jolanta Gozdowska, MD, PhD

**Introduction:** Bacterial cholangitis is common complication after liver transplantation (LTx).

**Aim of the study:** We analyzed demographic, clinical and microbiological characteristics of patients (pts) with bacterial cholangitis after cadaveric LTx performed in single transplant center.

**Material and methods:** After retrospective analysis of medical records we identified 50 pts(30/20, M/F, age during transplantation 45.7±16,6) with bacterial cholangitis among recipients of cadaveric liver transplanted between 2011 and 2015. Diagnosis of cholangitis was based on clinical symptoms, laboratory findings (elevation of markers of acute inflammatory reaction and cholestasis) and positive results of blood/bile cultures. Analysis included recipients' demographic and clinical data, results of laboratory tests (CRP, bilirubin, AST, ALT, GGTP, ALP), bacterial etiology with antibiotic resistance. Choice of therapy, duration of treatment and clinical outcomes were also evaluated.

**Results:** Causes of liver failure included cirrhosis due to HCV or/and HBV infection (n=21) and autoimmune hepatitis: PSC, AIH, PBC (n=17). Among 33 pts with bile samples obtained during endoscopic retrograde cholangiopancreatography, 32 had positive cultures. Most common isolates were: Enterococcus faecium (18%), Enterococcus faecalis (18%), Escherichia coli (13%), Klebsiella pneumoniae (13%), Pseudomonas aeruginosa (11%). Multiple drug resistant (MDR) species were found in 22% pts and in 27% of bacterial isolates. Among them were: vancomycin resistant Enterococcus (33%), extended-spectrum beta-lactamases-producing K. pneumoniae (33%), high-level aminoglycoside resistant Enterococcus (17%) and methicillin resistant coagulase negative Staphylococcus (17%). Antibiotic regimen included carbapenems (34% pts), vancomycin (22% pts) and colistin (4% pts). Multiple regression analysis showed that patients with higher CRP level on admission required longer antibiotics treatment and had higher blood tacrolimus level (p=0.047). Within this group more often was obtained growth of multidrug resistant bacteria culture from bile (p=0.014). Duration of hospitalization was 15±8days and was longer in patients with higher ALP plasma activity (p=0.047). Recurrent bacterial cholangitis developed in 64% pts.

**Conclusions:** Cholangitis after LTx is a recurring infection frequently caused by MDR bacteria. MDR is associated with more severe clinical course and requirement for combined antibiotic therapy.

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[103]

### **Concentration of HSP70 in selected tissues of ZUC-Lepr(fa) rats after of ileal transposition (IT).**

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**Trustee of the paper:** Tomasz Sawczyn PhD

**Introduction:** Ileal transposition (IT) improves insulin sensitivity and causes weight loss. All of the underlying mechanisms attributing to the effects of IT surgery remain unknown. Heat shock proteins (HSP) are the family of proteins that are produced by cells in response to exposure to stressful conditions, like inflammation or oxidative stress, which are characteristic for obesity and insulin resistance. HSP levels are low in the insulin dependent tissues like liver, skeletal muscle and adipose tissue in obesity.

**Aim of the study:** The aim of this study is an assessment of IT effects on the change of HSP70 concentration in liver, muscle and plasma of Crl:ZUC-Lepr(fa) rats 6 months after IT surgery.

**Material and methods:** Twenty Zucker Lepr(fa) rats underwent IT surgery(n=10) and sham operation (SHAM, n=10). After 6 months rats were euthanized and tissues was obtained from the animals. Concentrations of HSP 70 in liver tissue were assessed by immunoenzymatic method with the ELISA kits. The sensitivity of the kit was  $\leq 0.045$ ng/mL.

**Results:** HSP70 concentration levels in liver were significantly higher in IT group ( $1.836 \pm 0.4$  ng/mL/mg wet tissue) compared to SHAM ( $1.330 \pm 0.3$  ng/mL/mg wet tissue) and difference was statistically significant (p<0,05). The effect of IT operation on muscle HSP70 concentration was significant ( $1,69 \pm 0,28$  vs  $1,37 \pm 0,32$ ng/mL/mg wet tissue, p<0,05). The HSP70 concentration in plasma was also statistically higher in IT group ( $1,92 \pm 0,15$  vs  $1,35 \pm 0,17$ ng/mL/mg wet tissue, p<0,05).

**Conclusions:** The increase of HSP70 caused by IT may be associated with an improved insulin sensitivity. It is a proof that IT surgery causes advantageous changes in metabolic pathways in obese organism.

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[104]

### **Influence of preoperative imaging examination on the outcome of liver resections**

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**Trustee of the paper:** Konrad Kobryń, MD

**Introduction:** Nowadays, widespread accessibility to imaging methods leads to a better understanding of pathological processes which in turn has an effect on the course of surgical procedures.

**Aim of the study:** The goal of this study was to assess the impact of preoperative imaging diagnostics that it has on hepatic resection.

**Material and methods:** During a period of 12 months a prospective cohort study was carried out. It involved 108 patients with secondary liver tumors qualified for surgery. Each patient underwent ultrasound, CT or MRI examination before the operation. A specifically designed protocol was randomly handed off to the operator

before the potential resection. Medical data along with information of the last diagnostic image and location performed, as well as planned resection and actual operation performed were filled out by the operator after surgery in the protocol and implemented into the digital computer base.

**Results:** Out of all the laparotomies (no. = 108), 50 (46,29%) were performed according to preoperative scenario. 13 pts (12%) had an abdominal CT and 62 pts (57%) had ultrasound at the hospital under 2 weeks from the liver resection. Patients with diagnostic imaging of the liver performed outside the hospital were in majority 92 (85%) with 11 pts (10%) having imaging over 8 weeks old. In single variant analysis the time of image examination exceeding 8 weeks and/or performed outside the hospital were independent factors predicting modification of intraoperative decision.

**Conclusions:** Hepatic resection should be performed no longer than 4 weeks following liver imaging diagnostics as to avoid tumor growth and intraoperative change of decision. If possible patients qualified for hepatic resection should be examined radiologically at the hosting hospital since results from different centers vary too much.

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[105]

### **Evaluation of contrast enhanced ultrasound as a preoperative imaging examination for metastatic liver tumors.**

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**Trustee of the paper:** Dr Konrad Kobryń

**Introduction:** Better quality of radiological imaging helps surgeons for more accurate planning of liver resection due to metastatic tumors. Preoperative chemotherapy or one following a primary resection negatively impacts kidney and liver cells which may disqualify patients from being administered contrast for computed tomography(CT). One of the promising methods is contrast-enhanced ultrasound(CEUS), which is a combination of regular ultrasound(US) with Sulphur hexafluoride microbubbles surrounded by a phospholipid shell as a contrast. CEUS has been found to be useful when diagnosing Hepatocellular Carcinoma(HCC). Some researchers suggest that CEUS can also be used in diagnosing liver metastases(LM) tumors, but there is not enough data to have unambiguous assessment.

**Aim of the study:** To investigate the usefulness of CEUS(by SonoVue) in preoperatively evaluating LM

**Material and methods:** In 2014-2015 a prospective, randomized study, with a cohort of fifteen patients, nine males(60%), six females(40%), at a median age 59(6+-12 years) with suspicion of LM. Three patients were excluded from the study due to disqualification from the surgery. Rest of patients were divided into 2 groups: group A with five patients who only had US and CEUS to evaluate the LM, and in group B there were seven patients who had CT additionally to CEUS. All patients underwent regular US, secondly CEUS was performed. A third US was done intraoperatively to compare the previous US examination with the postoperative histopathological examination.

**Results:** From the cohort in ten(83%) cases, following regular US, CEUS didn't bring new findings into the examination, in the other two(17%) cases, CEUS differed from US and was intraoperatively proven to be more detailed and correct with the histopathological confirmation. Only eight out of twelve(67%) CEUS related diagnosis of the tumors found their histopathological confirmation. In group B we additionally compared CEUS examination with CT imaging and in one case(14%) found no differences between the imaging examinations. In the other six cases(86%) when CEUS differed from CT, four(57%) proved CEUS results to be more precise and identical with the intraoperative and histopathological examination in comparison with CT. However, we found that in two cases(29%) CT imaging was more specific then CEUS.

**Conclusions:** CEUS can be helpful in the evaluation of LM. This is only a preliminary report but already shows promising results that may lower costs of examination and be of less harm to chemotherapy induced patients.

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[106]

### LONG-TERM FUNCTIONAL OUTCOME OF LAPAROSCOPIC ANTI REFLUX SURGERY

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**Trustee of the paper:** Prof. Dr. Sorinel Lunca

**Introduction:** Medical treatment of gastro esophageal reflux is associated with relapse in 30% of cases. In these patients, the best therapeutic option is surgical treatment, performed laparoscopically. However, there are few data on long-term functional outcome.

**Aim of the study:** To determine long-term results of laparoscopic antireflux surgery the mechanisms involved in patients with worse results.

**Material and methods:** We studied patients operated for reflux disease. They had either total or partial laparoscopic fundoplication. These patients were contacted to assess postoperative improvement, satisfaction and asked about the occurrence or not of a persistent postoperative dysphagia.

**Results:** Seventy one patients were included (Nissen in 61% of the cases and Toupet in 39%). After an average period of 52.4 months, 80 % of patients were satisfied. 58% were completely improved, while 31% were partially improved after surgery. Persistent reflux symptoms were observed in 8 patients and postoperative dysphagia was reported by 11 patients. Gastroesophageal reflux revealed by chronic cough was the only independent parameter associated with bad functional results in our patients.

**Conclusions:** Laparoscopic anti reflux surgery is associated with a high frequency of satisfaction. However, patients with chronic cough respond less better to surgery. Strict selection of the patients before surgery must be done, to improve the functional results after anti reflux surgery.

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[107]

### The implementation of minimally invasive techniques in the treatment of destructive pancreatitis.

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**Trustee of the paper:** Doctor of Medical Sciences/Professor Zhanbai Kyzhyrov

**Introduction:** In necrotizing pancreatitis from 40-70% of patients getting infected necrotic foci destruction. Overall mortality in acute pancreatitis reaches 15-25%. Currently there is widely use of minimally invasive surgical techniques in the treatment of patients with acute fluid accumulations.

**Aim of the study:** The implementation of minimally invasive treatment of destructive pancreatitis.

**Material and methods:** Minimally invasive intervention, including laparoscopic and puncture draining interventions under control of ultrasound, and traditional surgery applied in the treatment of 44 patients with necrotizing pancreatitis treated at City Clinical Hospital №7, Almaty city from 2014 January to 2015 December.

**Results:** There was 16 patients to whom minimally invasive interventions on the abdominal cavity was carried out under ultrasound control. To 10 patients with peritonitis, with signs of free fluid in the abdominal cavity were removed peritoneal exudate under ultrasound control.

In the work of clinic there was implemented the minimally invasive methods of diagnosis and treatment of acute pancreatitis:

- Laparoscopic diagnosis and sanitation of the abdominal cavity in the acute pancreatitis.
- Percutaneous external drainage of the fluid abdominal cavity in the acute pancreatitis under ultrasound control by a one-time set Ivshina.
- Percutaneous external drainage of the fluid in the retroperitoneal space acute pancreatitis under ultrasound control.

Length of stay of patients in hospital varied from 3 to 162 days.

The multiple organ failure was observed at 11 (25%) patients. Despite minor traumatic interventions, multiple organ failure was the cause of 4 (9,1%) patients' death. The attention was allured to two patients with erosive hemorrhage where to one it was succeeded to stop bleeding at surgical interventions. The local complications proceeded considerably easier due to the increased opportunities for diagnosis and rehabilitation.

**Conclusions:** Thus, laparoscopy and puncture draining interventions under ultrasound control in patients with necrotizing pancreatitis allow you to use the entire set of interventions previously used as laparotomy. The implementation of the minimally invasive interventions in treatment of destructive pancreatitis under ultrasound control leading to the reduction of complications and shorten the terms of treatment of patients in intensive care and length of stay in hospital. The mortality rate of the necrotizing pancreatitis has reduced to 9.1% through the use of minimally invasive method and further improvements in its elements.

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[108]

### **An innovative instrument for generating intestinal anastomosis**

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**Trustee of the paper:** Pert Nikiforovich, Svetlana Shamatkova

**Introduction:** Failure of single row intestinal enteroanastomosis occurs in 2.7% to 45.5% cases, this percentage increases 5 times in Emergency Surgery.

**Aim of the study:** was to confirm effectiveness of our innovative instrument which can be used for formation of intestinal anastomosis (patent number 2552916).

**Material and methods:** A tool tested in experiments on gastrointestinal complex pigs and 10 Vistar rats.

We imposed two equidistant sides taped at the proximal and distal bowel loops for a more accurate comparison of the edges. Mesenteric proximal edge and distal intestine loops are fixed between the clamping jaws and the supporting elements. Then we sews the front wall of the intestine in the area between the taped using a continuous encircling sero-submucosal stitch. Next, the tool is rotated 180 degrees, and stitch the rear wall of the intestine above description stitch. After that, the tool is returned to its original position. Strange blade pressed against the clamping element and tool resected portion located between the blades. The instrument with a resected colon portion is removed. The suture is tightened and model anastomosis.

**Results:** No early and late postoperative complications associated with the use of the instrument were noted. Revision of the abdominal cavity was carried out on the 14th day. We found that there were no abdominal adhesions in 6 cases, in 4 cases were single loose adhesions were revealed. Such complications as anastomosis suture failure, anastomosis and peritonitis were not identified.

**Conclusions:** Application of the instrument allows creating the most functional adaptation of the edges of the intestinal wall, maintain trophism edges anastomoses, reducing the execution time of the anastomosis and allows model to him, preventing stenosis of formed anastomosis.

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[109]

### **Deep vein thrombosis prophylaxis after surgical treatment of rectal cancer in hospitals of Latvia.**

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Rīga Stradiņš University

**Trustee of the paper:** PhD Arnolds Kadiss MD

**Introduction:** The mortality rate of deep vein thrombosis (DVT) and pulmonary embolism (PE) reaches 60/100000 in Europe. Cancer surgery increases risk six times in comparison to the other causes. DVT occurs in 2-30% of cancer patients. Surgeons should consider DVT risk factors and prescribe individual prophylaxis therapy.

**Aim of the study:** To investigate, whether preventive care of DVT after rectal cancer surgery took place in Latvian hospitals. What medications were used and how effective they were.

**Material and methods:** A retrospective study with 90 patients, who underwent surgical treatment of rectal cancer in Latvian hospitals during the 2014 year. Clinical data was collected from the patients' medical histories and analyzed via MS Office Excell

**Results:** During year 2014 in 3 Latvian hospitals 90 operations were made. The age range was from 39 y.o. till 89 y.o. The main age of patients, who underwent the surgery was 70-79 y.o. (37.50%). There was no connection between patient age/gender and medication used. The mean hospitalization time was 12,35 days, in which medication was given for 9,76 days. In 97,78% of cases the preventive care was used and in 2,22% - wasn't. After surgical intervention several anticoagulants were used: Dalteparinum Natricum, Nadroparinum

calcicum, Enoxaparinum natricum, Bemiparinum Natricum. The most frequently used was Dalteparine - 34.09% and the most infrequently - Bemiparine- 3.41%. In all cases there were no signs of DVT/PE during hospitalization.

**Conclusions:** Latvian surgeons are aware of DVT risks and use adequate prophylaxis - the medication was given almost precisely as recommended. All used anticoagulants are equally effective, so the choice of medicine depends on the surgeon. The only factors affecting choice of medication are type/durance of surgery and immobilization time afterwards, not the patient's gender or age. Nevertheless, laparoscopic approach and non-radical treatment reduce risk of DVT, according to the recommendation, preventive care is still indicated. There are surgeons, who don't use the recommendations and increase complication possibility. So, the next step would be analyzing other hospitals and other types of surgeries and promoting the importance of DVT prevention.

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[110]

### **Totally Robotic Stapler-less Sleeve Gastrectomy - A Feasibility Animal Study**

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**Trustee of the paper:** Tomasz Rogula, MD, PhD

**Introduction:** The sleeve gastrectomy is one of the most commonly performed bariatric surgery procedures. Traditional stapler method is associated with disadvantages such as bleeding, leakage, and high financial burden. Therefore, alternative approach has been explored. A totally robotic stapler-less sleeve gastrectomy (TRSLSG) might be a solution to those problems.

**Aim of the study:** The aim is to check the feasibility of the totally robotic stapler-less sleeve gastrectomy, as an alternative method to the traditional technique, and to compare the two.

**Material and methods:** The surgery was performed with the use of da Vinci Si System. The studies were carried out on 10 pigs - 5 in the study group SG, and 5 in the control group CG. The CG underwent a standard robotic sleeve gastrectomy. The resected stomachs were sealed with staplers and then oversewn with the Lembert's suture. The SG underwent the use of the stapler-less method, stomachs were sealed with Vessel Sealer. Then, an initial running suture and second Lembert's suture were applied. After the resection, EGD was carried out to assess the sealing of the stomach walls and to check for possible leakage. Two weeks later, before gross inspection of stomachs, a second EGD was performed. The gastric wall integrity was analyzed using the pressure test.

**Results:** Stapler line bleeding in the CG and gastric wall disintegrity in the SG were the main intraoperative problems. In post-surgical EGD blood oozing was noticed in 4 CG cases. Stomach wall bulging occurred in 2 SG cases. During postoperative period minimal complications appeared only in the SG. In second EGD, bulging was noticed in 4 CG cases and in 2 SG cases. Inflammatory reaction was visible as red zone and was larger and more frequent in CG. During gross inspection, larger adhesions were noticed in the CG. The pressure test revealed that stomach durability is comparable in both groups.

**Conclusions:** A totally robotic stapler-less sleeve gastrectomy (TRSLSG) may be in some cases, a reliable alternative approach. The long-term effects - coherence and durability of the stomach walls, is comparable in both methods. The tested technique did not prove to increase probability of post-operative complications (adhesions, inflammation), however it completely eliminated intra-operative bleeding. The alternative technique raises problems with welding the walls of the resected stomach, which may lead to spilling of the gastric content. The TRSLSG reduces costs, but extends a surgery time.

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[111]

### **Finding the balance: the IL22/IL22BP Axis in Colorectal Cancer**

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**Trustee of the paper:** Jan Kempfski, Samuel Huber

**Introduction:** Previous studies have shown a critical role of cytokines associated with Th17 cells for tumorigenesis in the colon. Both IL-17A and IL-22 increase the local growth of tumors in mice and favour the proliferation and stemness of human colorectal cancer cell lines. The crucial role of IL22 for intestinal homeostasis is emphasized by the existence of a naturally occurring antagonist: the IL22 Binding Protein (IL22BP). However, the roles of

IL-17A, IL-22 and the IL22BP for the progression of colorectal cancer (CRC) in humans are poorly understood.

**Aim of the study:** In this study we aimed to describe the expression levels and cellular sources of IL22 and the IL22BP in CRC. Next, we investigated which factors control the expression those cytokines. In the end, we linked our findings with the clinical outcome of patients with CRC.

**Material and methods:** Surgically removed tissue from patients with colorectal cancer was analyzed using qPCR, FACS, FACS-Sorting, immunohistochemistry and 16S Sequencing.

For studies in mice we used the well established AOM/DSS model for colorectal cancer.

**Results:** In line with previous findings we found an increased infiltration of IL-17A and IL-22 producing cells in colorectal cancer tissue. We also describe for the first time a significant downregulation of the IL-22BP in the tumors in both mice and humans. Additionally, we identified CD11c+ Dendritic Cells as the major source of the IL22BP in humans and found that the expression of this protein is controlled by both the intestinal microbiota and the local cytokine milieu. IL22 on the other hand seems to be upregulated mainly by the increased production of this cytokine by Th17 cells rather than Th22 (IL17A- IL22+) cells or Group 3 Innate Lymphoid Cells (ILC-3) . Furthermore, we were able to link the expression levels of IL-17A, IL-22 and the IL-22BP to the survival of patients with colorectal cancer independently of the UICC score.

**Conclusions:** Our findings clearly show that the balance between IL-22 and the IL-22BP is crucial for the progression of colorectal cancer. Furthermore, we could associate the expression levels of those cytokines with a specific cytokine profile in the patients and subsequently link it to the clinical outcome.

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# General Surgery

## Jury:

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mgr Krzysztof Krasuski  
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**Date:**

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**Location:**

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Justyna Tęczar

Oleksandr Riabokon

Magdalena Duchyńska

**Short:**

Patrycja Torchalla

Iryna Soroka

Karolina Bednarska

Marta Patyk

Maciej Rutkowski

[112]

### **Pre-transplantation blood morphology properties affecting short-term kidney graft function.**

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**Trustee of the paper:** Piotr Hogendorf, MD, PhD

**Introduction:** Kidney transplantation (KTx) is a widely used treatment method for the end stage renal disease. It is acknowledged that inflammation is an important mechanism in rejecting kidney graft, since it might trigger acute rejection of the organ. A few blood morphology properties, such as neutrophil to lymphocyte ratio (NLR), and the overall balance between white blood cell (WBC) types are the indicators of inflammation.

**Aim of the study:** Our aim was to assess pre-transplantation blood morphologies of recipients in order to evaluate their usefulness in predicting kidney graft function.

**Material and methods:** We conducted a single centre retrospective study. Between September 2011 and April 2015, 135 patients received a kidney graft from the deceased organ donors. We divided patients into 2 groups- patients with eGFR $\geq$ 30 on 21st post-transplantation day (n=36) and patients with eGFR $<$ 30 on 21st post-transplantation day (n=99) to assess kidney graft function. As for predictors, we took into account a pre-transplantation BMI, age, gender, cold ischemic time (CIT), warm ischemic time (WIT), the type of immunosuppression. We also calculated neutrophil to lymphocyte ratio (NLR), neutrophil to monocyte ratio (NMR), platelet to lymphocyte ratio (PLR) and lymphocyte to monocyte ratio (LMR). These parameters were then transformed using natural logarithm.

**Results:** There were statistically significant differences between eGFR $<$ 30 and eGFR $\geq$ 30 groups in the average lnLymphocytes (0,36 +/-0,6 vs. -0,016 +/-0,74 respectively p=0,004) lnNLR ( 1,27 +/-0,92 vs. 1,73+/-1,08 p=0,016) lnLMR (1,01 +/-0,57 vs. 0,73 +/-0,64 p=0,02) and lnPLR (4,97 +/-0,55 vs. 5,26 +/- 0,67 p=0,023). No significant differences were observed for the age, gender, BMI, ischemic times or the type of immunosuppression.

On univariate analysis, factors lnLymphocytes  $\geq$ 0,22 (OR=0,331 95%CI 0,151-0,728 p=0,006), lnLMR $\geq$ 1,16 (OR=0,308 95%CI 0,106-0,895 p=0,03) were associated with worse graft function, while lnNLR $\geq$ 1,05 (OR=2,653 95%CI 1,158-6,078 p=0,021) and lnPLR $\geq$ 5,15 (OR=2,536 95%CI 1,155-5,566 p=0,02) indicated better graft function.

**Conclusions:** Elevated absolute lymphocyte count might be a vital factor contributing to the worse kidney graft functioning during the direct post-transplantation period. Further research into lymphocytes subtypes accounting for this phenomenon is needed. The proper ratios between lymphocytes and the other WBC types and platelets are also important, as they are generally associated with better graft function.

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[113]

### **Differences between frequencies of selected immune cells in patients undergoing emergency or elective splenectomy.**

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**Introduction:** In 10% to 30% of traumatic abdominal damages, spleen is being injured to some extent. The majority of these cases require removal of the organ. Also, splenectomy is considered to be an effective and safe second-line treatment for immune thrombocytopenic purpura (ITP). This creates the possibility of determining if there are immunological exponents which could be used as empirical factors advantageous in decision making process during the clinical treatment of patients suffering from ITP.

**Aim of the study:** Comparison of selected immune cells in patients undergoing emergency (EMS) or elective (ELS) splenectomy.

**Material and methods:** A study group of 100 subjects, with age of 31.23 $\pm$ 28.13 years, was recruited at the Department of Clinical Immunology and Immunotherapy of the MUL. 50% were splenectomised due to blunt abdominal trauma with spleen injury and 50% due to ITP. Control samples of peripheral blood were obtained from 20 healthy volunteers (age: 34.82  $\pm$  31.12 years). Nobody of the subjects in both groups complained of ailments characteristic of the current infection. None of them underwent immunosuppressive or immunomodulative therapy at the last 3 months. The Local Ethical Committee at the MUL approved the research

and patients gave their prior written consent. Three-colour immunofluorescence analyses were performed using a FACS Calibur flow cytometer (Becton Dickinson) equipped with 488 nm argon laser. Statistical analysis was performed using Statistica 6.0 (Stat Soft Inc.).

**Results:** Significant differences occurred in some variables levels and proportions due to the reason of splenectomy. Increased median percentage of Tregs(10%) in patients after EMS in contrary to the group which underwent an ELS(8%),  $p<0.05$ . A similar dependency stand for CD5+/CD19+ B-cells; higher mean proportions of CD5+/CD19+ was observed in the group of EMS(3.2%), whereas other group manifested significantly lower median percentages of these cells(2.4%),  $p<0.05$ . Also Th17 cells and NK cells frequencies were higher in patents who underwent ELS(Th17 cells: 1.6% vs. 0.9%, and NK cells: 0.51% vs. 0.21%, respectively),  $p<0.05$ .

**Conclusions:** There are marked differences in selected immune cells in the studied groups of patients. It seems that immune system of patients who underwent ELS due to ITP is stronger than immunity of patients who had EMS. Further research is needed to observe potential changes in patients' immune system in longer perspective after surgery, as well as after treatment with thrombopoetin agonists as second line therapy drugs.

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[114]

### **Laparoscopic partial splenectomy in focal lesions as efficient method to save the spleen.**

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**Trustee of the paper:** Anna Zub- Pokrowiecka M.D., Ph. D.

**Introduction:** The immunological role of the spleen is crucial. Organ preserving procedures are postulated to maintain its function. According to that laparoscopic partial splenectomy (LPS) is applied in treatment of focal splenic lesions. We ran research based on group including 31 patients after LPS treated in 2nd Department of General Surgery JU MC from 1998 to 2015.

**Aim of the study:** The aim of the study was to assess complications after LPS in focal splenic lesions.

**Material and methods:** Study enrolled 31 patients (mean age 36,7 years) operated from 1998 to 2015.

The group included 20 (64,5%) women and 11 (35,5%) men. Surgical procedure was performed for following conditions: cysts (n=21), tumors (n=10). Complication during hospitalization and rehospitalizations were analysed. The late follow-up based on questionnaire completed 14 patients. Questions regarded: developed infections, recurrence of cyst, use of analgesics, results of control examinations (USG, blood tests), hospitalizations, use of preventive antibiotics, vaccinations against the most common pathogens (*S. pneumoniae*, *H. influenzae*, *N. meningitis*) causing overwhelming postsplenectomy infections (OPSI) and travels to exotic countries.

**Results:** The mean length of hospital stay was 5,97 days (range 3-10). Mean operative time for all patients was 112 min. In all patient as hemostatic technique argon plasma coagulation was introduced. There was no complications during hospitalization. Only one patient required rehospitalization due to abdominal pain and constipation. Long term observation (average 6,52 years; range 6 months- 17,5 years) revealed that one patient suffered from recurrence of the cyst. In one case it was need to remove remnant of the spleen 8 months after LPS. One patient had stroke but it may be connected with comorbidities. Despite the fact that vaccination and antibiotic prophylaxis was no routinely administered no patient developed serious infectious complication. Follow up completed by all patients would give more precise information about late complications.

**Conclusions:** Complications of LPS in patients with focal splenic lesions are relatively rare. The function of splenic remnant is maintained during long period of time what allows to prevent postsplenectomy infections. It is worth to make every effort to preserve spleen.

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[115]

### **Deep bone radiotherapy panaritium**

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**Trustee of the paper:**

**Introduction:** Bone felon is a common disease. Felon can cause severe problems that persist even after the infection has resolved, such as loss of tissues, skin, nerve and even bone. Thus early and aggressive treatment

of felon is essential. It typically requires one or more operations to remove infected tissue and many patients require weeks of intravenous antibiotics.

**Aim of the study:** we want to find out the effect of radiotherapy in treatment felon.

**Material and methods:** We analyzed the experience of deep radiotherapy in treatment of 58 patients with bone felon. Our comparison group consisted of 45 people. Both groups were compared by sex and age. Surgical intervention and antibiotic therapy was conducted by the general procedure in both groups. The complex treatment included radiotherapy orthovoltage at a voltage generation 150-200 kV, WSR 1.5 mm copper, LIP 15 cm. in the main group. The irradiation was performed rhythm 2 fractions for a week with a single dose of 0.25-0.35 Gy. The total dose was 2.3 Gy. depending on the clinical manifestations. Irradiation was carried out on the domestic installation RUM - 17.

**Results:** Good and excellent results were obtained in 83% of patients in the main group (the comparison group - 58%) after 6-8 sessions, we observed a clear radiological evidence of bone regeneration. Bacteriological control showed increased sensitivity of pathogenic organisms on the background radiation therapy to antibiotics. The period of inability to work was reduced by 1.6 times. Side effects of this technique were observed when we use it.

**Conclusions:** Thus the application of radiological methods is rational in complex treatment of bone felon, especially in patients with widespread antibiotic resistance.

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[116]

### **The role of preoperative high – sensitivity Troponin T (hs-TnT) blood level in risk stratification among patients undergoing major vascular surgeries.**

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**Trustee of the paper:** Assoc. Prof. Wojciech Szczeklik, MD, PhD; Jacek Górka, MD

**Introduction:** Every year more than 400 000 noncardiac surgeries are performed in Poland. Surgical procedures are associated with a substantial complication rate of 1-2%, particularly cardiovascular events. Commonly used cardiac risk prediction tools such as Revised Cardiac Risk Index (RCRI) and more recent National Surgical Quality Improvement Program (NSQIP) Surgical Risk Calculator aid in preoperative risk estimation, however it has been proved that in vascular surgeries accuracy of these tools is significantly diminished. Hs-TnT as an indicator of myocardial injury may provide essential information about myocardial muscle tissue damage and contribute to improved preoperative risk prediction.

**Aim of the study:** The aim of our study was to evaluate the predictive value of preoperative hs-TnT blood level in addition to NSQIP calculator score in patients undergoing vascular surgeries.

**Material and methods:** 896 patients, aged 45 years or older, undergoing vascular surgeries were enrolled in the study. Blood samples for hs-TnT measurement were collected before the surgery. Cardiac risk for each patient was stratified using NSQIP simplified calculator. Cautious observation in terms of adverse cardiovascular events was conducted in the perioperative period and 30 day after the surgery. Logistic regression analysis was performed to assess the predictive value of different statistical models, which was further verified using goodness of fit measures.

**Results:** Myocardial infarction/cardiac arrest in 30-day observation:

NSQIP (OR 1,57; 95%CI 1,25 –1,98; p<0,0001; AUC 0,63)

Hs-TnT preoperative measurement (OR 1,02; 95% 1,01 – 1,03; p<0,0001; AUC 0,68)

NSQIP+hsTnT (OR 1,42 and OR 1,01; p=0,004 and p=0,007 respectively; AUC 0,7; model calibration statistically significant with HL=0,470).

Death in 30-day observation:

NSQIP (OR 1,7; 95%CI 1,25–2,29; p=0,001; AUC 0,69)

hsTnT preoperative measurement (OR 1,02, 95%CI 1,01 – 1,03; p<0,0001; AUC=0,71; HL calibration score 0,622)

NSQIP+hsTnT (NSQIP not statistically significant in the model with p=0,332 and OR 0,81 - 1,9).

**Conclusions:** Preoperative measurement of hsTnT may substantially improve the risk prediction of major adverse cardiac events in noncardiac, vascular surgeries. Cardiac troponins could facilitate a better overall risk stratification in terms of an unfavourable outcome and death in 30-day period following the surgical procedure.

[117]

### Adherence to treatment in kidney transplant recipients.

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**Trustee of the paper:** Dr med. Jolanta Gozdowska

**Introduction:** One of the decisive factors in maintaining normal graft function in transplant recipients is patient adherence.

**Aim of the study:** The aim of the study was to evaluate factors contributing to adherence to treatment in kidney transplant recipients.

**Material and methods:** The study involved 89 patients after renal transplantation: 48 from a living donor (LD) and 41 from a deceased donor (DD). Basic sociodemographic characteristics, as well as laboratory parameters: creatinine-based eGFR, haemoglobin, fasting blood sugar, and proteinuria were collected. All subjects completed a questionnaire for the Information-Motivation-Behavioral Skills Model of adherence to therapy. IBM SPSS version 22 statistical software was used for the analysis (including Student's t-tests, as well as Pearson's r coefficient).

**Results:** In comparison to DD kidney recipients, LD kidney recipients were younger [49 vs 40 years ( $p < 0.01$ )]; both groups comprised mostly men (61% and 83.3%). The health status of the recipients assessed by indirect methods (history) and direct methods (laboratory tests results) was comparable in both groups. One major factor contributing to adherence to treatment was graft type. Greater motivation for treatment adherence was shown in the LD group vs the DD group ( $p = 0.01$ ). Non-first-time graft recipients showed significantly greater skills ( $p = 0.01$ ) and higher level of information ( $p = 0.001$ ), contributing to adherence to treatment. Women demonstrated more information on transplantation-related subjects, which also contributed to adherence ( $p = 0.02$ ). Other sociodemographic characteristics or the type of renal replacement therapy had no significant effect.

**Conclusions:** Greater motivation for treatment adherence was observed in LD kidney recipients vs DD kidney recipients, and in women from both groups. Non-first-time graft recipients showed higher motivation for adherence to treatment due to their greater knowledge and skills.

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[118]

### VASCULAR GRAFTS INFECTION: TACTICS AND METHODS OF SURGICAL TREATMENT

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**Trustee of the paper:**

**Introduction:** Vascular graft infection (VGI) is one of the most dangerous septic complications in vascular surgery. Optimal tactics of surgical treatment remains topical.

**Aim of the study:** Explore the tactics and methods of surgical treatment of VGI after reconstructive surgery on the abdominal aorta and arteries of the lower extremities

**Material and methods:** There was performed data analysis 39 patients with VGI, who have been treated in the Vascular Surgery Department of Lviv Regional Clinical Hospital in 1992-2007. Clinical signs of VGI appeared from 1 to 135 months after initial implantation vascular graft. To diagnose the state of anastomoses, colour duplex scan was used. Visual check and fistulography used to investigate the graft infection character. All patients were divided into 2 groups: I ( $n = 15$ ) - without lower extremity revascularization, II ( $n = 24$ ) - with the removal of the infected grafts and repeated reconstruction: 17 of them had infected allografts removal with next limb revascularization, 7 patients had revascularization of lower extremity and then removal of the VGI.

**Results:** Revascularization was performed "Ex situ" in 15 patients (62.5%) (11 - extraanatomical axillary-femoral allografting, 4 - cross suprapubical femoral-femoral autovenous bypass), in 9 patients (37.5%), with slow progress of infection - "in situ". Greater saphenous vein used for reconstruction in 5 cases (20,9%), femoral vein - in 4 (16.7%), in 2 (8.3%) - gelatin and rifampin impregnated synthetic prostheses and 3 patients (12.5%) with total infection of the functioning bifurcated graft, reconstruction was performed with the femoral veins.

**Conclusions:** 1. The choice of repeated reconstruction method depends on: patient's condition, the nature of infection, degree of arterial lesions 2. Methods used for surgical treatment can save the patient's life and limb function. 3. To prevent recurrence of infection "in situ" should be used autovenous material. 4. Extraanatomical reconstruction has to be performed outside infection area.

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[119]

### **Should immunosupresion after kidney transplantation be adjusted based on renal resistance(RR) during hypothermic machine perfusion(HMP)?**

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**Trustee of the paper:** Michał Wszola Assoc. Professor

**Introduction:** Kidney transplantation(KTx) is a widely accepted method of renal replacement therapy. Graft function and its survival depends on many immune and non-immune factors.

**Aim of the study:** was to analyze whether renal resistance(RR) during hypothermic machine perfusion(HMP) is useful in the prediction of graft survival and acute rejection(AR).

**Material and methods:** Data were collected from 190 kidney transplantations performed in our institution between January 2010 and December 2011 that were kept in LifePort prior to transplantation. Patients were retrospectively divided into two groups: those who received kidneys with RR during the fourth hour of perfusion lower than 0.25(Group 1(R1); n=146) and those who received kidneys with RR during the fourth hour of perfusion equal or higher than 0.25(Group 2(R2); n=44). Within the R2 group, we additionally analyzed two subgroups; patients who received kidneys with RR equal or higher 0.25 but below 0.4(group R3; n=38) and patients who received kidneys with RR above 0.4(Group R4; n=6). Within the R3 group, we additionally analyzed two subgroups: patients who received induction therapy(group IND +; N=8), and group of patients with no induction therapy(IND -; N=18). Patient and graft survival were analyzed in a 1-year post-transplant period. AR was diagnosed according to Banff 2009 criteria.

**Results:** There were no differences between recipients regarding: age, HLA mismatch, and immunosuppression therapy. Acute rejection (AR) in R1 group within one month post-transplantation was observed in 8.2% (12/146) vs. 20.5% (9/44) in R2 group, respectively ( $p=0.03$ ). There were no episodes of acute rejection (AR) in group IND+ within one month post-transplantation compared do the group IND-, where AR was observed in 27,8%(5/18). One-year graft survival was statistically higher in the R1 group in comparison to the R2 group and was 92.4% (135/146) vs. 81.8% (36/44) ( $p=0.048$ ), respectively. One-year graft survival of patients who received kidneys with RR during the fourth hour of perfusion above 0.4 was very low, 33% (2/6), compared to the group of patients who received kidneys with  $RR < 0.25$  (Group R1) - 92.4% (135/146;  $p=0.008$ ) and R3 ( $0.25 < RR < 0.4$ ) - 89.4% (34/38;  $p=0.0065$ ).

**Conclusions:** Immunosuppression treatment should be adjusted after transplantation in groups of patients who will receive kidneys with RR during the fourth hour of perfusion above 0.25. All kidneys that have a RR above 0.4 during the fourth hour of perfusion should be excluded from transplantation.

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[120]

### **Critical analysis of indications for urodynamic study in 2014**

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**Trustee of the paper:** Dybowski Bartosz, Radziszewski Piotr

**Introduction:** Urodynamics are a means of evaluating the pressure flow relationship between the bladder and the urethra for the purpose of defining the functional status of the lower urinary tract.

In recent years evidence has been growing against widespread use of urodynamics in diagnosing lower urinary tract dysfunctions. At the same time Polish authorities decided to reimburse anticholinergics only for patients with urodynamic diagnosis. Indications for this test are evolving. They are scattered in different recommendations and the way it is used depends also on clinician's experience and local habits.

**Aim of the study:** The aim of the study was to assess clinical utility of urodynamic studies performed in one urodynamic unit.

**Material and methods:** We retrospectively analysed the results of all urodynamics performed in 2014 in one department. In each case main indication, observations and final urodynamic diagnosis was identified. Experienced urologist separated clinically relevant studies from those which did not affect patient's management. P value has been counted using the chi-square test.

**Results:** We analysed a total of 194 studies, including 114 women and 80 men. In 91 cases (46,9%) test was found to be insignificant. UDS was more often found clinically significant in men (56 men, 70%) than in women (47 women, 41,2 %) p=0,0001

The most common indications were overactive bladder or urge urinary incontinence, stress urinary incontinence, benign prostate hiperplasia or voiding dysfunction, neurogenic dysfunction and urinary symptoms in patients before or after kidney transplant or lower urinary tract surgery.

**Conclusions:** The results have revealed that almost half of the tests did not provide new and important information for treatment planning. Due to the invasive nature of the study and the possible risk of urinary tract multidrug-resistant infection we should analyse and verify indications for this test, which applies in particular to patients with stress urinary incontinence and overactive bladder.

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[121]

#### **Assessment of immune parameters after splenectomy.**

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**Introduction:** Overwhelming post-splenectomy infections are life-threatening and the post-vaccination response among patients after splenectomy is considered as a low. There is just a few studies assessing the immune status of this group of patients. Knowledge about the differences in immune system between splenic and asplenic patients is significantly important in the treatment of this patients.

**Aim of the study:** Analysis of immune system parameters among patients after splenectomy.

**Material and methods:** A study group of 100 subjects, with an average age of 31.23±28.13 years, was recruited at the Department of Clinical Immunology and Immunotherapy of the Medical University of Lublin. 50 patients (50%) were splenectomised because of a blunt abdominal trauma with spleen injury and 50 patients (50%) because of idiopathic thrombocytopenic purpura (ITP). Control samples of peripheral blood (PB) were obtained from 20 healthy volunteers (age:34.82 ±31.12 years). Nobody of the splenectomised subjects in the study group and controls complained of ailments characteristic of the current infection. None of them was taking immunosuppressive or immunomodulative treatment within the last 12 months. The Local Ethical Committee at the Medical University of Lublin approved the research and patients gave their prior written consent. Three-colour immunofluorescence analyses were performed using a FACS Calibur flow cytometer (Becton Dickinson) equipped with 488 nm argon laser. Statistical analysis was performed using Statistica 6.0 (Stat Soft Inc.) software.

**Results:** Our study revealed that in the study group there were statistically significant higher serum levels of specific anti-*Streptococcus pneumoniae* antibodies (p=0.0016), B-lymphocytes (p=0.0043) and cells expressing CD25 marker, including Treg lymphocytes. Vaccination against *S. pneumoniae* was ineffective in considerable group of asplenic patients and differences in post-vaccination antibody titers were statistically significantly lower in the study group (p<0.05). Disturbed balance between Treg and Th17 cells in study group was also noticed.

**Conclusions:** Generally results of our study showed that post-vaccination response after splenectomy was significantly lower even though pre-vaccination B-lymphocytes count and antibodies serum levels were higher in this group. High amount of CD25+ cells and B-lymphocytes suggested constant antigenic stimulation. Inverted balance of Treg/Th17 cells can be responsible for suboptimal proinflammatory response.

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# Genetics & Molecular Biology

## Jury:

prof. dr hab. n. med. Jan Lubiński  
prof. dr hab. n. med. Jacek Malejczyk  
prof. dr hab. n. med. Rafał Płoski

## Coordinators:

Klaudia Klicka  
Albert Stachura

## Scientific Patronage:

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Polskie Towarzystwo Histochemików i Cytochemików  
Portal Laboratoria.net



**Date:**

Saturday, May 14th, 2016

**Location:**

Room 139, Didactics Center

**Regular:**

Ekaterina Karovaikina

Joanna Janowska

Milan Klacansky

Mateusz Jeżewski

Bálint Rehó

Katarzyna Pruszczyk

Dominik Tattera

Filip Garbicz

**Short:**

Marcin Kutek

Peter Dubovan

Piotr Gabryś

Wiktor Paskal

Karolina Kateusz

Dominik Tattera

[122]

### **Malt1 paracaspase activity is dispensable for in vitro survival of chronic lymphocytic leukemia cells**

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**Introduction:** Chronic lymphocytic leukemia (CLL) is an indolent neoplastic disorder with proliferation and accumulation of B cells in the blood and the secondary lymphoid organs. The cause of CLL is not clearly defined, although there is a genetic predisposition and recurrent mutations. The B-cell receptor (BCR) expressed on the CLL-cells provides signals for survival and proliferation through constitutively activating nuclear factor kB (NF-kB). Following BCR engagement cascade of kinases become activated, that lead to downstream events that activate protein kinase C, which results in Card11 recruiting Bcl10 being constitutively associated with Malt1. Hence the trimeric protein complex (CBM complex) is formed. When the BCR signal reaches the CBM complex, it results in phosphorylation of the IκB kinase complex allowing free NF-kB to translocate to the nucleus and modulate transcriptional targets.

**Aim of the study:** Our study is designed to determine the role of CBM complex in CLL pathogenesis and progression.

**Material and methods:** We use HEK293T cells to test functionality of the CBM complex components and Malt1 inhibitors. Therefore, we transfected HEK cells with CBM complex and treated with Malt inhibitors. To determine NFκB activity, we cotransfected NF-kB luciferase reporter plasmid and a renilla control vector for normalization of transfection efficiency. After 24h, we treated the cells with the peptide based Malt1 inhibitor VRPR or Meprazol and determined NF-kB activity after additional 24 hours with Dual-Glo Luciferase Assay.

To determine the role of paracaspase activity of Malt1 in CLL, we used primary CLL patients samples (>85% CD19+CD5+). These were treated with the Malt inhibiting peptide Z-VRPR-FMK at a final concentration of 50uM. Viability was assessed after 48h via flow cytometry using DAPI as a dead cell marker.

**Results:** As expected, we observed striking increase in NF-kB activity by CBM complex transfection of HEK cells. Treatment with Malt1-inhibitors showed a significant reduction of NF-kB activity compared with control. In striking contrast to our prediction, did not observe any apoptosis induction by Malt1 inhibition in primary CLL cells in culture.

**Conclusions:** Our HEK cell assays show, that CBM complex is crucial for NF-kB activation and Malt1 paracaspase activity enhances the signal. Nevertheless, we found that Malt1 paracaspase activity is completely dispensable for CLL cell survival, despite its relevance for NF-kB activity. Whether this effect is relevant in the presence of microenvironmental components remains to be determined.

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[123]

### **The role of mutation in MLL3 gene in progression and chemoresistance of hypopharyngeal cancer (Head and Neck Squamous Cell Carcinoma (HNSCC)).**

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**Introduction:** Head and Neck Squamous Cell Carcinoma (HNSCC) is the sixth leading cancer by incidence worldwide with poor prognosis and lack of targeted treatment. HNSCC may have different localizations such as the oral cavity, the oropharynx, the larynx or the hypopharynx. Currently, the preferable treatment is surgery, chemotherapy or radiotherapy. Recent whole genome studies from TCGA consortium revealed mutations in such genes as TP53, CDKN2A, NOTCH, PIK3CA, EGFR but there are few less frequent mutations which can impact cancer progression and outcomes. Our studies using next-generation sequencing revealed mutation in Mixed Lineage Leukaemia 3 (MLL3) gene also known as KMT2C (Lysine (K)-Specific Methyltransferase 2C) in tumor samples from patients with hypopharyngeal carcinoma – one of the HNSCC with the worst prognosis.

**Aim of the study:** The aim of the study was to investigate whether mutation in MLL3 gene influences chemoresistance and proliferation potential of FaDu cell line in vitro model of hypopharyngeal carcinoma.

**Material and methods:** All experiments were performed with human hypopharyngeal carcinoma cell line (FaDu), which was previously checked to have wild-type MLL3. Expression of MLL3 gene in FaDu cell line was assessed by qPCR. MLL3 expression was downregulated with siRNA injected into cells by liposome transduction and re-assessed by qPCR. Cytotoxicity tests with cisplatin were performed. Using XTT method viability of the cells after transduction of targeted siRNA was compared to control. The clonogenic assay estimating proliferation potential of both experimental and control cells was also conducted. The same experiments assessing role of two other histone methyltransferases - MLL2 (KMT2D) and NSD1, mutated in our samples are in progress.

**Results:** Performing transduction of targeted siRNA to the cells we obtained more than 50% reduction of MLL3 expression. MLL3 downregulation resulted in decreased sensitivity of FaDu cells to cisplatin.

**Conclusions:** Mutation in MLL3 gene in hypopharyngeal carcinoma may be one of the factors involved in resistance to cisplatin which is still frontline therapy in this type of cancer. Lack of functional histone methyltransferase MLL3 may deregulate expression of multiple genes involved in proliferation, apoptosis and cell repairing which allow cells to survive, repair the DNA damages caused by cisplatin and proliferate more effectively.

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[124]

### **Homocysteine affects the epigenetic regulation of gene expression in human glial cells**

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#### **Trustee of the paper:**

**Introduction:** Homocysteine (Hcy) is an intermediate of the S-adenosylmethionine cycle, which sustains methylation reactions in cells. The methylation of proteins participates in the regulation of their function and stability, while the methylation of DNA and histones is involved in the epigenetic regulation of gene expression. Disturbances in the metabolism of Hcy lead to its accumulation, which is linked with the onset and progression of neurodegenerative diseases. Hcy acts as a neurotoxic and gliotoxic agent, even though the detailed pathomechanism of neurodegeneration associated with elevated levels of Hcy is still unclear. On the molecular level, Hcy is able to inhibit methylation reactions by negative feedback regulation.

**Aim of the study:** With this study we intend to evaluate the hypothesis that Hcy may alter the epigenetic regulation of the gene expression in human glial cells by affecting the methylation status of histone H3.

**Material and methods:** We used the T98G glioblastoma cell line as study model. The cells were incubated in a medium supplemented with Hcy (100  $\mu$ M) for 48 or 72 hours. The methylation status of histone H3 at Lys 4 and the levels of p53, BAX and caspase-3 were estimated by immunoblotting methods. The specific enzymatic activity of lactate dehydrogenase (LDH) was determined by biochemical assays.

**Results:** The incubation with Hcy for 48 hours suppressed the methylation of histone H3 and reduced the levels of p53 and BAX in the cells, but stimulated the expression of caspase-3. The activity of LDH was also decreased. After 72-hour, the level of histone H3 methylation, p53 and BAX returned to the control values, while the level of caspase-3 remained increased.

**Conclusions:** Our results confirm that Hcy inhibits the methylation of histone H3, which is a key epigenetic mark. This correlates with the altered expression of pro-apoptotic proteins and LDH. The modifications in gene expression induced by Hcy may play a role in the etiopathogenesis of neurodegeneration.

This work was supported by the projects VEGA 1/0242/13

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[125]

### Activaton of Erk, Akt and mTOR pathways in paediatric ependymoma

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**Introduction:** Ependymoma is the third most common malignant brain tumour in paediatric patients. Up to date, the most effective therapy consists of radical surgical resection combined with adjuvant radiotherapy, but still, due to possible unresectable localisation and/or metastases, it cures only up to 65 per cent of patients. Furthermore, application of radiotherapy to the developing central nervous system may result in neurocognitive and neuroendocrine dysfunction. Thus, chemotherapy may be cure for those, in whom neurosurgical procedure cannot be applied or remains insufficient. Targets for innovative pharmaceuticals should be sought in cell signalling pathways, which become altered in neoplastic cells. This approach is believed to convey improved treatment outcome and reduction of adverse effects.

**Aim of the study:** Aim of this study was to investigate activation of Erk, Akt and mTOR pathways in ependymoma sampled from paediatric patients. Cascade of these signal conduction systems is well known to be involved in cell growth and further survival and may be a target for chemotherapeutics acting as inhibitors of their members in tumour cells.

**Material and methods:** Eighteen ependymoma samples of various grades, including three ependymomas G2, two partial myxopapillary ependymomas G1, six partial anaplastic ependymomas G2/3 and seven anaplastic ependymomas G3, collected from paediatric patients were used in this study. Samples were analysed for expression of members of Erk, Akt, mTOR pathways using Western blotting. Membranes were incubated in primary antibodies against Erk pathway members: Raf, MEK and Erk; Akt pathway members: PDK1 and Akt; mTOR pathway members: Rheb and S6-rp. Outcomes were compared with samples of normal human brain and medulloblastoma.

**Results:** Analysis has shown evident overexpression of proteins of each signal conduction pathway in ependymoma samples, regardless of its grade, in comparison with normal human brain. Besides, resemblance between overexpressed proteins in ependymoma and medulloblastoma samples was revealed. Collected data demonstrate activation of investigated pathways in ependymoma.

**Conclusions:** In paediatric ependymoma, both Erk and Akt pathways appear to be engaged in activation of mTOR kinase, whose downstream products are responsible for tumour development. Inhibiting these pathways by appropriate pharmaceuticals may lead to desirable treatment outcome.

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[126]

### Investigation interactions between RAR and RXR nuclear receptors using modern biophysical methods

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**Trustee of the paper:** György Vámosi PhD

**Introduction:** Nuclear receptors are transcription factors that are able to regulate gene expression in a ligand dependent manner. They play a central role in cell differentiation, growth, and death. We investigated interactions and dynamics of retinoic acid receptor (RAR) and retinoic X receptor (RXR) acting in a dimer in living cells. Their operation is described by the nuclear receptor molecular switch model. In the absence of ligand receptors are bound to DNA associated with a corepressor complex, and repress transcription. In the presence of agonist receptors change their conformation, and the corepressor complex is replaced by coactivator complexes resulting in gene transcription. Nowadays, this model is being changed for a more dynamic one due to intense investigations in the field.

**Aim of the study:** In our studies we wanted to determine the affinity of the receptors to chromatin and to each other in the absence and the presence of ligand.

**Material and methods:** We transfected HeLa cells with nuclear receptors marked by fluorescent proteins (GFP, mCherry). We monitored changes in mobility by fluorescence correlation spectroscopy (FCS). The changes in the dimerization of these molecules is determined by fluorescence resonance energy transfer (FRET). Both method capable of following the dynamics of fluorescent molecules with high sensitivity in living cells.

**Results:** We revealed that agonist treatment decreased the mobility of GFP-RAR or GFP-RXR molecules transfected alone. Our new results show that co-transfection of the two receptors decreases their mobility even in the absence of ligand. This is probably due to the increased affinity of the RAR-RXR complex to the chromatin as compared to that of the monomers. FRET results are showed that the heterodimerization is increased in the presence of RAR ligand.

**Conclusions:** Our FCS studies combined with FRET measurements are described a complex system and prove the central role of the RXR in the activation of nuclear receptors.

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[127]

### **Aberrant mechanisms of telomere maintenance in chronic myeloid leukemia - the potential role of POT1 and RAP1**

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**Trustee of the paper:** Maciej Wnuk PhD<sup>2</sup> and Tomasz Stokłosa MD PhD<sup>1</sup>

**Introduction:** Chronic Myeloid Leukemia (CML) is the first human neoplasm linked to a particular genetic abnormality (Philadelphia chromosome, a result of reciprocal translocation t(9;22)(q34;q11)) and first successfully treated with targeted therapy. Tyrosine kinase inhibitors (TKIs), such as imatinib, target the BCR-ABL1 fusion protein, an oncogenic tyrosine kinase, and enable many patients to achieve complete cytogenetic or even major molecular response. However, cure of CML is still unlikely- leukemic stem cells (LSCs) are insensitive to TKIs. During disease course LSCs accumulate genetic aberrations due to genomic instability, which may lead to TKI-resistance and disease progression, classified by phases: chronic (CP), accelerated (AP) and terminal blast crisis (BC).

Genomic instability has many sources, among others shortening of telomeres, nucleoprotein complexes located at the ends of chromosomes. Neoplastic cells have aberrant mechanisms of telomere maintenance: their telomeres are shortened, no longer preventing chromosome end-to end fusion and recombination, but they are not short enough to lead to cell senescence. Both telomerase and shelterin complexes are involved in telomere homeostasis.

**Aim of the study:** Molecular analysis of deregulated mechanisms of telomere length maintenance in CML cells.

**Material and methods:** Blood samples were obtained from CML patients after informed consent. Enzymatic activity of telomerase was measured immunoenzymatically, while length of telomeres was determined by Southern blotting and expression of subunits of telomerase and shelterin complexes was examined by RT-qPCR (real-time quantitative polymerase chain reaction).

**Results:** We observed a significant shortening in telomere length between leukemic cells from CP (6 samples) and BC (5 samples). No significant changes in the expression of subunits of the telomerase complex and its enzymatic activity were observed. Expression of two members of the shelterin complex, POT1 and RAP1, was significantly upregulated ( $p < 0.05$ ) in BC (10 samples) as compared to CP (15 samples); it was also positively correlated with BCR-ABL1 expression. No significant changes in expression of other members of the shelterin complex were observed.

**Conclusions:** We found that changes in telomere length between CML phases are correlated with overexpression of selected shelterin complex subunits, namely POT1 and RAP1. We hypothesize that it could be related to activation of alternative mechanisms of telomere lengthening during CML progression.

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[128]

### Identifying genes associated with ethanol sensitivity in mice using a forward genetic approach

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**Introduction:** Alcohol use disorders (AUDs) consist of alcohol dependence, alcohol abuse or harmful use. Although AUDs has been shown to be at least partly genetic in nature, it has been difficult to reliably pinpoint particular genes associated with the condition. Initial sensitivity to alcohol intoxication has been determined as a major risk factor for the development of alcoholism and is also genetically mediated. Mice, in principle, offer a powerful tool for elucidating the genetic basis of behavioral and physiological traits relevant to AUDs; yet conventional experimental crosses derived from inbred strains have only been able to identify large chromosomal regions rather than specific genes. Here, we used the newly developed JAX Diversity Outbred (DO) mouse population to identify genes that are associated with ethanol sensitivity in mice as a model for understanding AUDs in humans.

**Aim of the study:** We used DO mice to fine-map quantitative trait loci (QTLs) associated with naturally occurring variation in ethanol sensitivity traits.

**Material and methods:** To date we have tested 608 male mice for three phenotypic traits of ethanol sensitivity: ethanol-induced ataxia, ethanol-induced hypothermia (EIH) and ethanol-induced loss of righting reflex. We genotyped a subset of these mice at ~78,000 SNP markers across the genome and performed high precision QTL mapping.

**Results:** The behavioral assays effectively induced alcohol-related symptoms. We observed a large variation of behavior and significant changes in behavior due to ethanol in all tests. We identified suggestive QTLs associated with CF on several unique chromosomes in a preliminary analysis (LOD > 5;  $p < 0.05$ ). We also identified one significant QTL on chromosome 11 (LOD > 8;  $p < 0.05$ ) for EIH.

**Conclusions:** Ethanol sensitivity-associated SNPs discovered in mice using forward genetic approach hold tremendous translational potential in identifying genetic predispositions for AUDs. We plan to expand our test and QTL mapping samples to obtain appropriate statistical power and mapping resolution. We will also perform RNA sequencing in order to look at differences in gene expression that are associated with behavior and genotype. By linking genetic variation and expression to neuronal function and behavior in mice, we predict it may be possible to target specific molecules to prevent and treat AUDs in humans.

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[129]

### Global microRNA profiling of human pituitary adenomas identifies potential candidate genes involved in local invasion

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**Introduction:** Pituitary adenomas originate from the anterior lobe of the pituitary gland. They are the third most common intracranial neoplasm after gliomas and meningiomas. Atypical adenomas represent an intermediate group between typical adenomas and pituitary carcinomas. They are often aggressive and have a high risk of recurrence. Current diagnostic criteria for atypical adenomas are still imperfect and include Ki-67 and p53 staining as well as enhanced mitotic activity.

**Aim of the study:** The aim of our study was to compare the global microRNA expression profiles of invasive and non-invasive pituitary adenomas and to identify potential oncogenic microRNAs involved in tumor invasiveness.

**Material and methods:** We used TaqMan Low Density Array cards to analyze the expression of 756 microRNAs in 6 invasive and 6 non-invasive pituitary adenomas. Both groups consisted of a selected subset of tumors secreting a variety of hormones (ACTH, GH, PRL, FSH, LH) as well as a null cell adenoma. The invasiveness was assessed according to Knosp's scale. Further confirmation was carried out using RNA extracted from 13 formalin-fixed paraffin-embedded (FFPE) ACTH-immunopositive adenomas (5 extremely invasive tumors with Crooke cell morphology and 8 standard invasive ones).

**Results:** MicroRNA expression profiles in both invasive and non-invasive adenomas were highly similar with the most prominent differences observed in ACTHomas. A statistical analysis revealed a set of 21 genes upregulated in invasive tumors. A pathway enrichment analysis suggested a potential role of those microRNAs in regulating the expression of PI3K/Akt elements. Based on literature search, for further experiments we have selected 9 genes identified in other types of cancer as oncogenes possibly regulating the activity of this signaling pathway. We examined the expression of those 9 selected microRNAs in 13 FFPE ACTHoma samples and found that the aggressive Crooke cell adenomas had a significantly higher level of mir-25-3p (8.6 fold;  $p=0.003$ ) and mir-93-3p (2.5 fold;  $p=0.01$ ) than the standard ones.

**Conclusions:** The results indicate that the invasiveness of pituitary adenomas may be regulated by an aberrant microRNA expression. The two most deregulated genes, mir-25 and mir-93, both share the same genomic location within intron 13 of MCM7, which expression has been recently described as a prognostic factor in adenomas with aggressive features. Further studies are needed to establish the possible role of the two microRNAs in the biology and diagnostics of pituitary tumors.

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[130]

### Polymorphism of CYP27B1 gene in breast cancer

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**Trustee of the paper:** Elżbieta Kostyra

**Introduction:** Vitamin D metabolism has been shown to regulate various metabolic pathways in breast cancer cells. That metabolism is dependent on the key enzymes from cytochrome P450 family that regulate the activity of vitamin D by hydroxylation at various positions. Those enzymes were previously studied for polymorphisms, but no significant associations were found. Here we examine the polymorphism in CYP27B1 (rs10877012) in order to determine the correlation between various genotypes and breast cancer occurrence.

**Aim of the study:** The aim of this study was to determine the association between CYP27B1 (rs10877012) polymorphism and the occurrence of breast cancer.

**Material and methods:** Study population ( $n=145$ ) consisted of patients diagnosed with breast cancer ( $n=45$ ) and control group ( $n=100$ ).

DNA was isolated from peripheral blood cells and genotyped for CYP27B1 (rs10877012) polymorphisms using PCR-RFLP method.

Statistical analyses were performed using GraphPad Prism software with  $P$ -value  $p \leq 0.01$  considered as significant. Pearson's chi-square test was used to analyze the allele frequencies for Hardy-Weinberg equilibrium (HWE). Allele frequencies were compared using the Fisher's test.

**Results:** The data we obtained indicate the positive association between the TT polymorphism and occurrence of breast cancer compared to control group [OR=4.74 (CI=2.58-8.70),  $p < 0.0001$ ].

**Conclusions:** Our data presents the association between the TT polymorphism in CYP27B1 (rs10877012) and breast cancer occurrence. Moreover the data suggest the importance of vitamin D metabolism in breast cancer cells and the impact genetic variations have on the key enzymes affecting the pharmacological properties of vitamin D.

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[131]

### Gene polymorphism rs703842 in CYP27B1 gene is associated with susceptibility of Multiple Sclerosis in Slovak population

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**Introduction:** Active form of vitamin D is involved in physiological regulation of immune system response. To exert its function, vitamin D is transformed into its active form that binds to the nuclear vitamin D receptor and fulfils its role as an immunological modulator. It is known that deficiency of vitamin D may be the risk factor in the development of Multiple Sclerosis (MS) or deterioration of clinical course of MS. In current study we focused on the genetics of hydroxylation pathway of vitamin D in human organism. The product of expression of the

CYP27B1 gene, 25-hydroxyvitamin D-1 $\alpha$ -hydroxylase, is an enzyme involved in the conversion of inactive form of vitamin D to its active form. Gene polymorphism rs703842 in CYP27B1 gene can potentially alter this activation and thus also its proposed immunomodulatory effects in MS.

**Aim of the study:** We hypothesized whether single nucleotide polymorphism (SNP) rs703842 can alter the actions of the product of the CYP27B1 gene and subsequently the risk of MS. Therefore, the aim of our study was to uncover potential role of SNP rs703842 in CYP27B1 gene in MS susceptibility and disease progression.

**Material and methods:** In our study we genotyped 267 clinically diagnosed MS patients and 291 healthy controls from Slovakia. The relapsing – remitting form of MS was present in 85,02% cases and the secondary progressive form in 14,98% cases. DNA was isolated from peripheral white blood cells. Genotype analysis was performed by PCR and restriction analysis.

**Results:** We found significantly decreased frequency of allele C in MS patients when compared to controls (28,46 % vs. 36,25 %,  $p = 0,0055$ ). The incidence of homozygotes CC was also significantly decreased in MS patients (8,24 %) when compared to healthy individuals (16,15 %) ( $p = 0,0045$ ).

**Conclusions:** In our study, we observed significant differences in distribution of alleles and genotypes in MS patients when compared to healthy individuals. Significantly lower frequencies of allele C and genotype CC of rs703842 in CYP27B1 gene suggest for their potential protective role against MS development. Further, we did not observe any significant association of this SNP in MS progression.

This work was supported by grants VEGA 1/0213/12, 2012/30-UKMA-7 Biological and molecular markers of MS.

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[132]

### **The role of the HMGCoA reductase inhibitors in repression of neoplastic potencial by regulating the expression of cyclins D1/D2.**

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Jagiellonian University Medical College, Krakow, POLAND, Tutor: Dulińska-Litewka Joanna, PhD, Chair of Medical Biochemistry, Jagiellonian University, ul. Kopernika 7; 31-034 Krakow, Poland; joanna.dulinska-litewka@uj.edu.pl

**Trustee of the paper:** THIS WORK WAS SUPPORTED BY MNISZW GRANT: K/ZDS/005888; UJCM, KRAKÓW

**Introduction:** The prostate cancer (PC) is one of the most essential oncological issue nowadays. Our knowledge lets us define many factors leading to its progression. Among the most important is mevalonate pathway, containing many enzymes involved such as the HMGCoA reductase, which is the vital one. It leads to the synthesis of cholesterol - a precursor of the androgens. One of them is dihydrotestosterone (DHT), the main ligand for AR in normal function of prostate gland as well in PC progression. Moreover, androgens by affecting the androgen receptor (AR) are responsible for the increase expression of cell cycle regulators and activation of the kinases, what is critical to carcinogenesis in PC. The expression of AR is influenced by cyclin D, which correlates with hormone-dependent processes in prostate cells and controls dynamics of the transcription. This significant factor creates widespread effects on androgen-related cell reaction such as suppression of AR activity and restriction of AR residence at endogenous loci.

**Aim of the study:** The aim of our study was to investigate the inhibition of the PC progression by regulating the expression of the D1/D2 and consequently the expression of the AR by applicating the Simvastatin and Fluvastatin. They are drugs that inhibit 3-hydroxy-3-methylglutaryl-coenzyme A reductase, the regulatory enzyme of intracellular cholesterol synthesis.

**Material and methods:** Study was accomplished with human normal and prostate cancer cell lines. Cell proliferation assay, cytotoxicity analysis, Western blotting and RT-PCR were used to investigate the impact of statins on the metabolism and protein expression of the cells. Invasion potential of cells was measured in Boyden chambers but zymography was used to analyze the cells' secretion of metalloproteinases.

**Results:** In our work we observed that application of Simvastatin and Fluvastatin may result in decrease in AR cyclin D1 expression. Both time- and dose-dependent effect of statins on the metabolism of the cells. AR and cyclin D expression was compared in cells at different stages of prostate cancer progression.

**Conclusions:** Exploring the mechanism of the HMGCoA inhibitors working as regulators of the cancirogenesis in prostate gland create an opportunity to type the new tumor markers.

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[133]

**Diagnostic potential of miRNA -96, -134, -181, -200b in prostate cancer – precise analysis in archival samples.**

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**Trustee of the paper:** prof. Paweł K. Włodarski

**Introduction:** Prostate cancer (PC) is one of three most commonly diagnosed malignancies among males in Europe. Early and accurate diagnosis increases survival rate and even gives a chance for complete cure of the disease. Thus, finding new markers of prostate cancer that would stratify the risks of metastasis became a matter of highest interest. MicroRNA are single-stranded, 18-25 bp long ribonucleotides, which regulate gene expression of responsive mRNAs. Altered levels of specific miRNAs are often related to carcinogenesis or metastasis. Their stability and detectability even in formalin fixed (FFPE) tissues are important features as a cancer biomarkers. High histological heterogeneity poses a challenge while exploring its biology. Laser microdissection (LMD) it enables to evaluate miRNA expression only within precisely dissected fragments of the samples.

**Aim of the study:** The aim of the study was to determine miRNA expression in cancer and benign lesions of the archival formalin fixed paraffin embedded (FFPE) prostate cancer samples.

**Material and methods:** 23 FFPE samples of human PC and 6 benign prostate hyperplasia (BPH), were cut into 10µm slices and HE stained. PC samples were evaluated with Gleason scale. Then, region of samples were selected as healthy adjacent or neoplastic and were dissected with laser (LMD Zeiss). Both were collected separately. miRNAs from laser captured tissue fragments were extracted (Ambion). Finally, comparative qRT-PCR (Taqman) was performed to elicit miRNA expression changes within dissected tissues. According to the literature 4 miRNA were chosen for the study: mir-96, -134, -181, -200b.

**Results:** Neoplastic cells (vs adjacent) exhibited significantly decreased expression of mir -134 and -181 (1,36 and 3,43 folds; p=0,04 and p=0,03). Moreover, mir-96 and mir-134 correlated negatively with Gleason score of a sample (r=-0,53 and -0,49). However, mir-96 and mir-200b expression showed no significant differences but mir-200b expression was over 9 times higher in both tissues vs BPH (p<0,001).

**Conclusions:** Expression of mir -134 and 181 may be a marker of carcinogenesis process in PC and then pose an anchor point for molecular redefinition of surgical margins. Lacking differences of mir-96 and -200b expression between tumor and adjacent tissue may suggest ongoing neoplastic process in morphologically healthy tissue. Finally, mir-200b turned out to be a particle which dysregulation may be used as a differentiating factor between PC and BPH.

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[134]

**New perspectives in ovarian cancer chemotherapy- effects of conventional and new drugs combinations in vitro**

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**Trustee of the paper:** Lasek Witold

**Introduction:** In Poland, ovarian cancer is currently the fifth most common tumor among women resulting in 3587 cases and 2500 deaths in 2010. In accordance with this data, there is a need for new approaches to the medical management of this disease.

**Aim of the study:** The aim of the study was to find a new combinations of medicines, including currently used chemotherapeutics, which could give a synergistic killing effects on ovarian cancer cells in vitro with a potential application in vivo.

**Material and methods:** Drugs: scriptaid, bortezomib, paclitaxel, doxorubicin, carboplatin and etoposide were diluted in DMSO and then in growth medium. Two ovarian cancer cell lines were studied: SKOV-3 and OVP-10. Cytotoxic was tested in a MTT assay. Harvested cells were placed in 96-well dishes at a concentration of 12000 or 6000 cells per well and drugs or solvent control were added. Next, the cells were incubated for 72 hours. Scriptaid was combined with each other drug individually. The killing effects of drugs combinations were compared with effects of single agents and control.

**Results:** MTT assays were performed in cultured cell lines with variable results. The SKOV-3 cells appeared sensitive to all agents. The combinations of bortezomib (1500, 150, 15 [nM]) and scriptaid (0,5; 1; 2; 4; 8; 16 [nM]) were the most effective and presented synergistic effects, with ranges of viable cells between 0% and

39,87%, compared to the bortezomib alone (1,38%-53,76%) and the scriptaid alone (47,3%-77,49%). Also doxorubicin(1000nM) combined with scriptaid(4,8,16[nM]) increased cell apoptosis and suggested synergism, with ranges of viable cells between 2,88% and 41,9%, compared to the doxorubicin alone(65,38%) and the scriptaid alone (43,3-68,57%). Similarly, the OVP-10 cell line appeared to be sensitive to all agents. Combinations of bortezomib(1500 nM) and scriptaid(16,8[nM]) were very effective (6,22%-15,86%) compared to the agents alone(bortezomib: 44,53%, scriptaid:57,22%-90,71%). Doxorubicin (1000, 100[nM]) combined with scriptaid(16nM) showed synergistic effect (8,2% and 25,93%). To compare, doxorubicin alone(91,77% and 92,37%) and scriptaid alone (47,87%). Analyses of synergism were done using CompuSyn software.

**Conclusions:** The results of the study show that combinations of some agents are more effective in killing ovarian cancer cells than when used alone. It gives a new perspectives to prolong survival of ovarian cancer patients, decrease the number of deaths or to improve conditions of palliative care.

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[135]

### **Preliminary QTL Mapping Suggests Candidate Regions for Conditioned Fear in the Diversity Outbred Mouse Population - Implications for Posttraumatic Stress Disorder in Humans**

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#### **Trustee of the paper:**

**Introduction:** Posttraumatic stress disorder (PTSD) is one of the more prevalent anxiety disorders. Although it is caused by a precipitating traumatic event, genetic factors have been shown to also play a role. Mice offer a powerful tool for elucidating the genetic basis of traits relevant to PTSD; yet conventional experimental crosses derived from inbred strains have only been able to identify large chromosomal regions rather than specific genes. Here, we used a conditioned fear (CF) paradigm in the newly developed JAX Diversity Outbred (DO) mouse population to model PTSD in humans.

**Aim of the study:** We used DO mice to fine-map quantitative trait loci (QTLs) associated with naturally occurring variation in CF acquisition, extinction and renewal.

**Material and methods:** To date we have tested 507 male mice for CF. We employed a 3 day model in which an aversive unconditioned stimulus is paired with neutral conditioned stimulus and a recall of fearful memory is measured by freezing. We genotyped a subset of these mice at ~150,000 SNP markers across the genome and performed high precision QTL mapping.

**Results:** We observed a large variation of freezing behavior (FB) on three testing days. A repeated-measures ANOVA showed a significant increase of FB on Day 1 indicating correct pairing of stimuli  $F(1.8, 892.9)=799.503, p<0.0001, n_2p= 0.612$ , a significant decrease of FB on Day 2 indicating extinction  $F(5.9, 2973.2)=177.986, p< 0.0001, n_2p= 0.260$ . A significantly higher FB during renewal than baseline on Day 3 was observed  $t(506) = 28.561, p < 0.0001$ .

We identified several suggestive QTLs associated with CF on three unique chromosomes in a preliminary analysis (LODs > 6;  $p < 0.05$ ) containing small number of candidate genes.

**Conclusions:** These preliminary QTL results identifying regions containing small numbers of candidate genes show that DO is a promising mapping population for CF genetic studies. We plan to test additional mice for a total of 576 and perform RNA sequencing in order to observe the relationship between behavior and neural gene expression. Linking genetic variation with gene expression and behavior in mice can open new ways for pharmaceutical therapeutics that can target specific biomolecular pathways involved in PTSD in humans.

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[136]

**Single nucleotide polymorphisms C1354T (rs6314) in the 2A serotonin receptor gene may have a protective impact on alcohol addiction development: a prospective study in populations of alcohol-dependent patients and healthy controls.**

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**Trustee of the paper:** Elżbieta Kostyra

**Introduction:** Single nucleotide polymorphism (SNP) C1354T (rs6314) in the 2A serotonin receptor (5-HT<sub>2A</sub>) associate T allele with a decreased 5-HT<sub>2A</sub>-mediated intracellular signaling. This SNP has been studied in the etiology of neuropsychiatric disorders, but studies on association of the rs6414 SNP are limited to just few reports.

**Aim of the study:** Aim of these study was to explore association of the C1354T single nucleotide polymorphism in the 5HT<sub>2A</sub> receptor in population of alcohol-dependent patients (AD) and healthy control group, and to investigate this association with other yet unreported neuropsychiatric disorders.

**Material and methods:** Study population (n=241) included AD, n=112 and healthy controls n=129. All patients met DSM IV criteria for alcohol dependence. All participants filled 25-item questionnaire. Genomic DNA was extracted from peripheral leukocytes and analyzed for the C1354T polymorphism using PCR-RFLP method. The allele distribution was analyzed for Hardy-Weinberg equilibrium (HWE) using the chi-square test, and allele frequencies were compared by Fisher's test. Odds ratios (ORs) and 95% confidence intervals (CIs) were calculated using logistic regression analysis. Statistical analyses were conducted using GraphPad Prism software with  $\leq 0.01$  P-value considered statistically significant.

**Results:** To date we have found T allele in the 5-HT<sub>2A</sub> polymorphism in alcohol-dependent patients as less frequent comparing to control group [OR= 1.98 (95%CI=1.18 - 3.31), p=0.009]. The low T allele frequency has been also associated with depressive disorders with correlation in both AD and control populations.

**Conclusions:** We have found that allele T of the HTR<sub>2A</sub> single nucleotide polymorphism rs6314 has a protective effect on alcohol addiction development as well as other yet unreported psychiatric disorders.

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# Infectious Diseases

## Jury:

prof. dr hab. n. med. Janusz Cianciara  
dr n. med. Andrzej Gietka  
dr hab. n. med. Andrzej Horban  
prof. dr hab. n. med. Grażyna Młynarczyk  
dr hab. n. med. Urszula Ołdakowska-Jedynak  
prof. dr hab. n. med. Marek Radkowski  
dr hab. n. med. Marta Wróblewska

## Coordinator:

Dorota Magdoń

## Scientific Patronage:

National Consultant in Infectious Diseases Asst. Prof. Andrzej Horban MD PhD

Polskie Towarzystwo Parazytologiczne  
Polskie Towarzystwo Zakażeń Szpitalnych  
Polskie Towarzystwo Naukowe AIDS



**Date:**

Saturday, May 14th, 2016

**Location:**

Room 233+234, Didactics Center

**Regular:**

Helēna Dauvarte

Jakub Kosiński

Nina Dragunova

Magdalena Czerwińska

Adeem Yousif

Asha Thomas

Aleksandra Różyk

Paulina Peplowska

[137]

### **Rabies current issues in Kharkov region of Ukraine**

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**Introduction:** Epizootic situation on rabies in Ukraine deteriorated significantly. The active centres of natural type are located at the whole territory. The main natural reservoirs are foxes and wolfs (41.4%), in urban focuses—cats (21.8%), dogs (15.3%), cows, horses and pigs (20.2%).

**Aim of the study:** To analyse epidemiological situation on rabies in Kharkov region.

**Material and methods:** Statistical and epidemiological data.

**Results:** Amount of rabies cases in animals and amount of victims among humans in Kharkov region were by year: 2005—186/182, 2006—38/39, 2007—140/160, 2008 —187/227, 2009—121/151, 2010—127/168, 2011—63/88, 2012—64/82, 2013—78/129, 2014—50/69, 2015(8 months)—26/37. Specific gravity of rabid animals in the Kharkov region during that period was: cats—38.9%, foxes—25.5%, dogs—20.5%, cattle—9.7%, small cattle—1.7%, bats—0.1%. Distribution of victims from rabid animal's bites was by wild animals—2.0%, by stray—31.3%, by domestic—66.7%. There are several factors for urban focuses formation in Kharkov region: rise in the settlements of homeless dogs and cat's amount, incomplete animal's prophylaxis, violation of rules maintenance of animals handling. Moreover, all registered cases of human rabies in Kharkov region were related to non-appealing for medical help or abandonment from realization of PEP. Human rabies cases that were registered are: 1) 2000—53-y.o. man bitten by a cat, 2) 2005—34-y.o. man bitten by a fox, 3) 2008—26-y.o. man bitten by a dog, 4) 2010—58-y.o. man bitten by a dog, 5) 2013—43-y.o. man bitten by a fox, 6) 2015—16-y.o. man bitten by a cat.

**Conclusions:** Epizootic rabies lasts in the region, and the domestic animals play an important role. In the last decade, the Kharkov region significantly increased the incidence of human rabies. The lack of anti-rabies drugs increases the risk of rabies among the population. The human rabies in Kharkov region is due to the non-turning for PEP, which requires the intensification of preventive work among the population. It is required to improve the work of the veterinary service regarding domestic animals vaccination and control of their proper keeping, as well as public services performance on the fight against homeless animals.

[138]

### **The pattern of bacterial pathogens and their antibiotic susceptibility profile from lower respiratory tract specimens in a rural tertiary care centre**

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**Trustee of the paper:**

**Introduction:** Lower Respiratory Tract Infections (LRTIs) is one of the leading infective health problems worldwide. The inappropriate use of antibiotics for these infections has led to a dramatic increase in antibiotic resistance among the respiratory pathogens. There is only limited options of antibiotics for the treatment of LRTIs

**Aim of the study:** 1. To isolate the bacterial pathogens from the lower respiratory tract specimens, identify them and elaborate their antibiotic susceptibility profile using disc diffusion method.

2. To summarise the data obtained and to establish the profile of bacterial pathogens and their antibiotic susceptibility in this institution.

**Material and methods:** It was a cross sectional study done during 8th May to 7th July, 2015. 54 respiratory samples including sputum and endotracheal secretion sample were processed by standard microbiological methods. Of these, 31 samples were culture positive. The isolates were identified by standard biochemical reactions and their susceptibility testing done by Kirby-Bauer method. The results were interpreted as per CLSI (Clinical Laboratory Standards Institute) guidelines. The data was entered in to Excel spreadsheet and analysed using SPSS software. Frequency and percentages were obtained for each organism and for susceptibility and resistance of the common antibiotics.

**Results:** Out of the 54 samples processed, 31 yielded significant growth (57.4%). Only gram negative bacterial pathogens were obtained during the study. The most common bacterial pathogen isolated was *Pseudomonas aeruginosa* (32.43%), and *Klebsiella pneumoniae* (27.03%) ranking second. 59.45% of the bacteria isolated were multidrug resistant. The overall susceptibility of the gram negative isolates were highest for colistin (94.11%)

followed by tigecycline(71.40%) and cotrimoxazole(64.70%). High levels of resistance were observed for carbapenems.

**Conclusions:** The study yielded only gram negative bacterial isolates, susceptibility being highest for colistin. The problem of emergence of resistance among the respiratory pathogens even to the 'antibiotics of last reserve' has to be given proper attention. Regular determination of the type of bacterial pathogens and their antibiotic resistance trends must be followed in every institution to aid in better patient management by helping the clinician in the judicious use of antibiotics

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[139]

#### **ANTIBIOTIC SUSCEPTIBILITY AND TREATMENT OF MOST COMMONLY ISOLATED ESBL PRODUCING BACTERIA FROM BLOOD: A SINGLE CENTER STUDY**

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**Trustee of the paper:** Aleksejs Derovs

**Introduction:** Extended spectrum  $\beta$ -lactamases (ESBL) determine resistance to  $\beta$ -lactam antibiotics and represent a major threat among multidrug-resistant bacteria. ESBL producing microorganism incidence and thereby antimicrobial resistance is increasing rapidly worldwide. Infections with ESBL producing bacteria can be life threatening. Therefore, empiric antibacterial therapy should be started early and based on local antibacterial resistance patterns.

**Aim of the study:** To find the most common ESBL producing bacteria strain in blood material, to determine antimicrobial susceptibility of the isolated bacteria strains and to compare empirical treatment with the antimicrobial susceptibility found during the study.

**Material and methods:** All adult patients hospitalized in Riga East Clinical University Hospital from September 2013 to March 2014, who had a positive clinical culture for an ESBL producing microorganism. Patient demographical, bacterial and antimicrobial therapy data were gathered from medical charts and entered in database, using originally created study protocol. SPSS 20.0 were used for statistical analysis.

**Results:** A total of 14 isolates of Enterobacteriaceae family were found in blood material. Most commonly isolated bacteria were *Klebsiella pneumoniae* (71.4%), *Escherichia coli* (14.3%) and *Enterobacter cloacae* (7.1%). *K. pneumoniae* was sensitive to imipenem (100%), meropenem (90%), ertapenem (80%) and trimethoprim/sulfamethoxazole (50%), but resistant to ceftriaxone, ceftazidime (100%), ampicillin (90%), ciprofloxacin (70%). *E. coli* was sensitive to imipenem, ertapenem (100%), amoxicillin/clavulonic acid, ciprofloxacin, gentamicin and meropenem (50%), but resistant to cefepime (100%), ciprofloxacin, ceftriaxone (50%). *E. cloacae* was sensitive to imipenem, amikacin, ertapenem (100%), but resistant to ampicillin, amoxicillin/clavulonic, ciprofloxacin, ceftriaxone, gentamicin (100%). Most commonly used antibiotics against *K.pneumoniae* were metronidazole, ceftriaxone (70.0%) and ciprofloxacin (40.0%), against *E.coli* – piperacillin/tazobactam (100%), metronidazole, meropenem and imipenem/cilastatin (50.0%), against *E. cloacae* – ciprofloxacin, metronidazole and vancomycin (100%).

**Conclusions:** Most commonly isolated bacteria from abdominal cavity are *K. pneumoniae*, *E. coli* and *E. cloacae*. Our study revealed that most suitable antibiotics for *K. pneumoniae* should be carbapenems, for *E. coli* - carbapenems and gentamicin, for *E. cloacae* – carbapenems. In general, empirical antimicrobial therapy was not suitable and should be revised.

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[140]

#### **Do medical students pose a danger to patients? The estimation of prevalence of methicillin- (MRSA) and mupirocin- (MupRSA) resistant *Staphylococcus aureus* carriage in 3rd year students' population.**

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**Trustee of the paper:** dr n. med. Ksenia Szymanek-Majchrzak, prof. dr hab. n. med. Grażyna Młynarczyk

**Introduction:** *Staphylococcus aureus* (SA) is one of the most virulent human pathogens, causing several life-threatening infections and being able to colonize asymptotically the nasal vestibule (12–30% of population). Methicillin resistant SA (determined by *mecA/C* genes) is considered to be a significant human pathogen, especially healthcare associated HA-MRSA variants, which are resistant to majority of beta-lactams and usually

many other antibiotics. Reports show, that even 75-80% of SA infections among carriers are caused by the endogenous flora. If it comes to the colonization of healthcare workers or medical students, there is also a high risk of transmission of SA strains to hospitalized patients. The most commonly used topical agent for MRSA carriage eradication is mupirocin (Mup). The question appears what can be done, if the colonization is caused by bacteria, which is characterized as both MR- and MupR-SA?

**Aim of the study:** The aim of the study was to perform screening test for MRSA and mupirocin-resistant SA carriage in medical students' population to assess a potential threat to patients.

**Material and methods:** The material was collected from 466 third year students (1st and 2nd Faculty of Medicine) between 2015-16. Swab samples obtained from nasal vestibule were subjected to inoculation on Chapman agar plates. The latex slide agglutination test Pastorex Staph Plus (BioRad) was performed for cultured bacteria and in some cases an automated identification system based on mass spectrometry technology - Matrix Assisted Laser Desorption Ionization Time-of-Flight, VITEK MS (bioMerieux) - was used. The pattern of antibacterial sensitivity was determined by disk diffusion method (cefoxitin 30 µg, MUP 200 µg) and VITEK II system (AST P644 cassettes), according to EUCAST guidelines. Resistance to methicillin was confirmed by PCR technique with MecA-F and MecA-R primers.

**Results:** Among 466 students, 139 (29,9%) were SA carriers. One colonizing strain (0,72%) was resistant to cefoxitin and carried mecA gene (PCR product 99 bp). Two isolates (1,44%) manifested high level (HL) of mupirocin resistance (6 mm in diameter of susceptibility zone). The above MRSA strain was also HL-MupRSA and had resistance to seven other antibiotics.

**Conclusions:** The nasal carriage of HA-MRSA and HL-MupRSA strains among young, generally healthy individuals, is very rare, but possible. The routine empiric decolonizing therapy with mupirocin will be in this case ineffective. This makes student's microbiome a significant source of danger pathogens.

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[141]

### Study of Tuberculosis infection in children of refugees and migrants

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**Trustee of the paper:** Tatiana Myakisheva, MD, PhD

**Introduction:** Because of several political conflicts and crises, now in Russia and particularly in the border region, for example in Smolensk, there is a great number of refugees and migrant. Many of these countries are the countries with a high burden of tuberculosis, so the migration growth can adversely affect the epidemic situation of tuberculosis in Russia. Children from families of refugees and migrants go to schools and kindergartens along with children of Russian residents, so early detection of latent tuberculosis infection and active tuberculosis care for those families is an urgent problem.

**Aim of the study:** was to diagnose TB infection in children from refugee and migrant families and evaluate the prevalence of latent TB infection and active TB.

**Material and methods:** The study involved 614 children 0-18 years from families of migrants who arrived in Russia in 2014-2015 and were sent for TB examination by the Federal Migration Service. Data on social history and medical examination (Mantoux's tuberculin skin test with 2 TE Diaskintest, chest X-ray) were obtained. A significant predominance of Ukrainian refugees (52.2%,  $p < 0.005$ ) was revealed

Children who did not attend any organization for children dominated - 285 people. (46.4%), 264 (43%) attended secondary schools, kindergarten - 61 (9.9%). 2.7% of children had contacts with TB patients. .

BCG-vaccinated were 74% of migrant children, 26% have not been vaccinated or had insufficient post-vaccination mark.

**Results:** All children had tuberculin: Mantoux test with 2 TE and Diaskintest. A positive result was obtained in 9.3%, these children performed chest radiography. According to a survey of the diagnosis of active TB is installed in two children (0.3%): Tuberculosis of intrathoracic lymph nodes, and infiltrative pulmonary tuberculosis; latent TB infection - in 55 (9%), of which the primary infection - in 11 (1.8%). Children with a diagnosis of tuberculosis received a full course of chemotherapy and were cured. Preventive treatment was shown to 19 children. Full course got 10 (52.3%) discontinued treatment prematurely 2 (10.5%) refused to be treated 7 (37.2%).

**Conclusions:** The problem of tuberculosis in children from migrant families is important. Poor BCG vaccination of children and cases of latent infection and active tuberculosis in this group were identified; all children from migrant families should have tuberculin skin test (Mantoux, Diaskintest) and X-ray examination or early diagnostics of latent TB infection -

[142]

### Characteristics of alert pathogens isolated from inpatients of a Department of Transplantation and Nephrology at one of Warsaw hospitals in 2013–2014.

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**Trustee of the paper:** Jolanta Gozdowska<sup>2</sup>, MD, PhD

**Introduction:** Inpatients are particularly susceptible to colonization and infection with multidrug-resistant bacterial strains that have undergone selection in hospital settings. Multidrug-resistant microorganisms spread easily, especially among immunosuppressed patients.

**Aim of the study:** The aim of the study was to evaluate frequencies of alert pathogens in particular organ transplant recipients.

**Material and methods:** A total of 636 bacterial isolates were obtained from positive cultures of blood, urine, sputum, fluid from body cavities, throat and rectal swabs (screening for carriers) from 111 patients (F=57, M=54) hospitalized between October 2013 and October 2014. These were organ transplant recipients: kidney (n=70), liver (n=17), kidney-pancreas (n=3), and heart (n=2), as well as patients with chronic kidney disease (CKD) stage 5D (n=12) and CKD stage <5 (n=7). For further analysis, 186 isolates were selected based on their resistance to at least 2 drug classes and presence of the following important mechanisms of resistance: ESBL, VRE, MRCNS, MBL, HLAR, MRSA, AmpC, MLSb.

**Results:** The most commonly isolated multidrug-resistant strains were extended-spectrum beta-lactamase (ESBL)-producing Enterobacteriaceae (n=78), which constituted 12.26% of all the 636 original isolates. Other multidrug-resistant pathogens included vancomycin-resistant enterococci (VRE) n=20 (3.4%), methicillin-resistant coagulase-negative staphylococci (MRCNS) n=8 (1.26%), *Pseudomonas aeruginosa* and metallo-beta-lactamase (MBL)-producing Gram-negative Enterobacteriaceae n=7 (1.1%), HLAR n=6 (0.94%), AmpC n=2 (0.31%), MRSA n=2 (0.31%), and MLSb n=1 (0.16%). No KPC, NDM-1 or OXA-48-producing pathogens were isolated in the analysed time period. A significant proportion of multidrug-resistant pathogens was isolated from carriers (n=49; 7.7%).

**Conclusions:** The high prevalence of ESBL and MBL-producing bacilli as well as VRE in rectal swabs from transplantation ward patients suggests high carrier rates and demands thorough epidemiologic surveillance in order to eliminate foci of infection.

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[143]

### Assessment of risk factors of recurrent erysipelas

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**Trustee of the paper:** dr Tomasz Mikuła

**Introduction:** Erysipelas, a form of superficial cellulitis, is typically caused by beta-hemolytic group A streptococci. The most common complication of this infection is its recurrence.

**Aim of the study:** We tried to assess risk factors of recurrent erysipelas among patients in the Department of Infectious and Tropical Diseases and Hepatology in Warsaw.

**Material and methods:** We collected and analyzed clinical and laboratory data of 137 patients admitted to the Department from 2013 to 2015 due to erysipelas. In our study group 94 patients had a first episode of erysipelas and 43 had a recurrence. We compared clinical presentation, laboratory and ultrasonographic findings of those two groups with statistical tests appropriate for each variable (t-tests, chi squared with Yates modification, Fisher's exact tests).

**Results:** Neither age (mean age 60,0 and 60,5) nor sex (approximately 48% for each group) distribution differed between the patients with single episode and recurrent erysipelas ( $p>0,05$ ).

In our study group, the difference in the site of skin lesions was not statistically significant between the two groups (for first-time erysipelas and recurrence respectively: trunk 3,23%, 0%; lower extremity 81,72%, 86,3%; upper extremity 4,30%, 6,82%; head 10,75%, 6,82%).

The incidence of following coexisting conditions: hypertension, diabetes mellitus, liver disease, heart disease, chronic kidney disease, history of mastectomy, being overweight or obese was not significantly different either ( $p>0,05$  for all comparisons).

Onset to hospital arrival time and length of hospital stay were similar in single episode and recurrent erysipelas (first time erysipelas: 10,3 days and 15,1 days respectively; recurrent erysipelas: 6,1 and 16,3 days respectively).

We found no differences in the following laboratory values: WBC, CRP, PCT, PLT, D-dimers, BUN, creatinine and glucose level between the two groups (for each comparison  $p>0,05$ ).

The following were investigated in the ultrasonography of the lower extremity: venous thrombosis (89,7% in first-time erysipelas; 75,0% in recurrent erysipelas), lymphedema (58,6% and 75,0%), venous insufficiency (89,7% and 68,7%), enlarged inguinal lymph nodes (41,4% and 37,5%). The incidence of those factors was similar in both groups ( $p>0,05$ ).

**Conclusions:** The lack of significant differences between patients with single episode and recurrent erysipelas may be due to a too small sample size in our study. The issue of recurrent erysipelas needs further investigation.

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[144]

### Is the infection control among medicine students an important issue?

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**Trustee of the paper:** Tadeusz Zielonka MD, PhD

**Introduction:** Hospital-acquired infections (HAIs) are one of the most likely complications of hospital admission. HAIs cannot be completely eradicated, but can be better prevented. Studies have proved that pathogenic bacteria are present on the hands of Healthcare workers (HCWs) but the majority can potentially be removed by proper hand hygiene. Nowadays potential risks such as mobile phones and jewelry of HCWs enable the transmission of infections. Hand hygiene is considered as one of the most effective interventions to limit the transmission of HAIs. Despite the awareness of the importance of the infection control issues and guidelines, the compliance is very poor.

**Aim of the study:** The purpose of this research is to test the infection control awareness among medical students and the accessibility to hand washing and disinfection points in the clinical hospitals. The aim was also to check the motivation to observance hand hygiene guidelines.

**Material and methods:** The study was conducted among domestic students with clinical experience at the Medical University in Warsaw. An anonymous original survey contained questions about beliefs and practices of hygiene and infection control. There were 156 of students included.

**Results:** The most important source of information about hygiene for 56% of the students is from upbringing followed by medical education and clinical classes (both 36,8%). When it comes to personal issues only 1% of the respondents disinfect mobile phones after each use while 55% never perform it. 37% of women use nail decorations. Motivations marked as the most important for observance of infection control guidelines are: protecting self (84%), family (69%) and preventing transmission of infectious diseases between patients (56%). 53% of the students wash their coat once a week, 81% always change their shoes. All the students who have personal disinfection gel always perform hand disinfection between physical examinations. There is a correlation between accessibility of points of hand washing and disinfection before entering and leaving the ward and performing hand hygiene.

**Conclusions:** The awareness of spreading bacteria through personal items is poor among medical students and should be increased. Bringing personal gel leads to performing hand disinfection more often. Points to wash hands are less accessible than disinfection therefore this gap should be corrected. It is important to highlight the significance of careful education of good infection control habits during the education process in medical schools.

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# Internal Case Report

## Jury:

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dr hab. n. med. Marianna Bąk  
prof. dr hab. n. med. Leszek Czupryniak  
prof. dr hab. n. med. Magdalena Durlik  
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Polskie Towarzystwo Reumatologiczne  
Towarzystwo Internistów Polskich



**Date:**

Sunday, May 15th, 2016

**Location:**

Room 233+234, Didactics Center

**Case Report:**

Linda Kundzina

Zbigniew Grad

Aleksandra Warchoł

Katarzyna Baran

Anna Wolska

Daria Kalińska

Piotr Wasilewski

Artūrs Rūtiņš

Anna Shishkina

Monika Król

Monika Król

Sylwia Gajda

Alicja Wesołowska

Artur Kośnik

Miłosz Matałowski

Rafał Sawicki

Magdalena Zdziebko

[145]

### **KLIPPEL – TRENAUNAY SYNDROME PRESENTED WITH HEPATOSPLENOMEGALY**

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**Trustee of the paper:** Prof. Sandra Lejniece

**Background:** Klippel – Trenaunay syndrome (KTS) defined as rare and sporadic disorder is characterized by a triad of cutaneous capillary malformation ("port-wine stain"), lymphatic anomalies, and varicose veins in association with variable overgrowth of soft tissue and bone that is present at birth. KTS is diagnosed based on physical signs and symptoms and CT, MRI and Doppler studies may be useful in determining the extent of the condition and how best to manage it.

**Case:** A 39-year-old man with anamnesis of Klippel – Trenaunay -Weber syndrome since the birth was admitted with iron deficiency anemia (Hb-9g/dL). Patient' complaints about episodes of hematuria and weakness. In physical examination remarkable findings are: "port-wine stains" and varicose veins affect limbs and part of a torso, hypertrophy of both low extremities – status after amputation of left foot' digits and soft tissue resection of plantar surface with auto-skin plastic. CAT scan in 1998 showed phleboliths in pelvis around colon and bladder. MRI in 10.12.2015 showed splenomegaly, multiple hemangiomas in spleen and liver and varicose mesenteric veins. Also Doppler studies showed hepatosplenomegaly with multiple hemangiomas in spleen and liver in 9.12.2015. Laboratory results displays normochromic normocytic anemia, neutropenia, thrombocytopenia, elevated uric acid in blood (573µmol/L) decreased vitamin D, fibrinogen and calcium levels. Hypoalbuminemia, hyperlipidemia and proteinuria (6,85g/L) describes main criteria for nephrotic syndrome. Received medication during the hospitalization consisted of multiple transfusion of RBC mass, allopurinol and D3 vitamin.

**Conclusions:** Signs like: "Port-wine stains", varicose veins and hypertrophy of low extremities are the same for Klippel-Trenaunay and Parkes-Weber syndrome. All diagnostic criteria including clinical presentation, CAT scan, MRI, Doppler studies and laboratory examination showed remarkable significance of diagnosing Klippel-Trenaunay syndrome. This case showed considerable atypical relevance of KTS and hepatosplenomegaly. There are very few published studies of this connection between hepatosplenomegaly and Klippel-Trenaunay syndrome. Deeper analyses including other of Klippel – Trenaunay syndrome patients would be important to study the connection between elevated spleen and liver sizes and KTS.

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[146]

### **Chronic Thromboembolic Pulmonary Hypertension – after recurrent acute pulmonary embolism**

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**Trustee of the paper:** Michał Cieurzyński MD, PhD, FESC

**Background:** Pulmonary hypertension (PH) is a pathophysiological disorder that may involve multiple clinical conditions and can complicate many of cardiovascular and respiratory diseases. Chronic thromboembolic pulmonary hypertension (CTEPH) is a disease of the obstructive pulmonary arteries (PA) remodelling as an effect of major vessel thromboembolism. CTEPH has been reported with a cumulative incidence of 0.1–9.1% in the first 2 years after asymptomatic Pulmonary Embolism (PE) event. It is a major problem for patients with a venous thromboembolic disease who have a multiple history of PE—one of the most misdiagnosed diseases in cardiology.

**Case:** A 67-year-old woman with a history of two incidents of PE, one a myocardial infarction, a chronic obstructive pulmonary disease, chronic renal failure and permanent atrial fibrillation, was admitted to the Intensive Care Unit due to the exacerbation of heart failure. At admission she was in a bad clinical condition with HR 90/min, RR 106/50 mmHg and tachypnoe. Moreover, clinical examination revealed central cyanosis, conjunctives hyperaemia, systolic murmurs at the apex and right lower sternal border, liver enlargement, hepato-jugular reflux and postthrombotic syndrome. Performed laboratory tests showed mixed acidosis, troponin I level was 0,048 ng/ml, creatinine level 1,6 mg/dl and hemoglobin 17,2 g/dl. ECG examination showed atrial fibrillation with HR 75/min and right ventricle hypertrophy. Echocardiography indicated PH features (RV 38mm,TRPG 120 mmHg,AcT 60 ms,IVC 20 mm). Computed tomographic pulmonary angiography showed pulmonary arteries block, bands and webs and intimal irregularities. To confirm CTEPH the haemodynamic

examination was needed. The right ventricle catheterization and pulmonary arteries arteriography have been assessed and showed mPAP 37 mmHg, PAWP 11 mmHg. The patient has been qualified for pulmonary thrombarterectomy which is the treatment of choice for CTEPH. In case of disqualification for surgery a balloon pulmonary angioplasty (BPA) should be considered as well as pharmacological treatment with riociguat.

**Conclusions:** The severity of symptoms of a heart failure in a patient with a history of pulmonary embolism may suggest CTEPH. Regarding such patients, doctors should provide the CTEPH's diagnosis including the cardiac catheterization. If CTEPH is confirmed and qualifies for surgery, then a treatment of choice should be carried out.

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[147]

### **Shades of Congenital Adrenal Hyperplasia**

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**Trustee of the paper:** Urszula Ambroziak PhD

**Background:** Congenital Adrenal Hyperplasia is a group of inherited autosomal recessive syndromes caused by mutations in five genes which encode the enzymes required for cortisol and aldosterone production, each resulting in distinctive biochemical consequences and clinical features. The most frequent is steroid 21-hydroxylase deficiency, accounting for more than 90 percent of cases with an overall prevalence of 1:14,000 live births within Caucasians.

**Case:** A 52-year-old male was admitted to the 1st Department of Cardiology, Medical University of Warsaw due to the suspicion of an acute coronary syndrome. He presented with epigastric pain and nausea since the past few days. The patient had a history of type 2 diabetes mellitus (DM). Improper treatment of DM resulted in partly compensated metabolic acidosis. ECG on admission showed sinus tachycardia and right bundle branch block (RBBB). A coronarography was performed in order to exclude cardiac origin of the mentioned complaints. The examination did not reveal any abnormalities in the coronary arteries. However, the abdominal- CT revealed significant, bilateral enlargement of the adrenal glands. Laboratory results revealed hypertriglyceridemia, increased ACTH blood levels (189 pg/ml) and an abnormal response to the Dexamethasone Suppression Test. These findings suggested Cushing's Syndrome. The patient denied skeletal muscle weakness and easy bruising. Also facial plethora, "moon face" and striae were absent. After the endocrinology consultation, the patient was referred to Department of Endocrinology to continue the investigation. Detailed past medical history revealed rapid growth during childhood, precocious puberty, inappropriately small testes and phallic enlargement. In the past, the patient also required treatment for infertility. Further laboratory tests showed low levels of FSH and LH, significantly increased DHEA-S, and testosterone within normal limits. The Synacthen test and genetic testing are still under analysis. The performed investigation excluded Cushing's Syndrome, but provide the diagnosis of CAH.

**Conclusions:** To conclude, thoroughly obtained medical history is essential to make a proper diagnosis and avoid serious consequences of low adrenal reserve. Screening for CYP21 deficiency (measurement of plasma 17-hydroxyprogesterone levels) offers the potential to reduce mortality in newborn males, and prevent wrong assignment of male sex to affected female infants.

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[148]

### **Disseminated aspergillosis in patient after liver transplantation due to Amanita phalloides poisoning**

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**Background:** Aspergillosis is a fungal infection caused by an opportunistic microorganism *Aspergillus* spp. The most common location of this infection are the lungs. Disseminated infections of this etiology develop mostly in immunocompromised patients i.e. HIV positive, with diabetes mellitus, after long-term antibiotic therapy and during immunosuppressive therapy. *Aspergillus* spp. infection is burdened with a high risk of death with necessity of early diagnosis and treatment.

**Case:** 65-year-old man, 2 months after liver transplantation due to *Amanita phalloides* poisoning, was admitted to the Liver and Internal Medicine Unit with nonspecific abdominal pain and vomiting, sometimes

hematemesis, but with no diarrhea. Physical examination revealed white coated tongue, slightly increased body temperature-up to 37 °C and the heart murmur. During hospitalization, the patient developed endocarditis, gastroesophageal reflux disease and hyperthyroidism. The HRCT study showed a single nodule in the lung of unknown etiology. Transesophageal ECHO sonography was performed and visualized large subvalvular mitral vegetation and plurality of small lesions mostly in the left ventricle. Then patient underwent subarachnoid hemorrhage followed by massive bleeding to the left hemisphere of the brain. CT scans revealed also the presence of single mycelium. The evacuation of hematoma was performed and patient was transferred to ICU, where during the tracheostomy multiple abscesses in the thyroid were visualized. The levels of immunosuppressive agents throughout the period of hospitalization were within the normal limits. The final diagnosis was based on the results of the microbiological and serological examination of blood. Despite treatment with two chemotherapeutic agents – first empiric therapy with echinocandin and next targeted with voriconazole, patient died after two and half months.

**Conclusions:** Patients after liver transplantations are in the the group of high risk of disseminated infections caused by oppurtunistic microorganisms due to immunosuppressive agents which diminished T-cell response. Nonspecific symptoms of the infection need our vigilance and fungal infection should be taken into consideration in the differential diagnosis.

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[149]

**Pulmonary embolism as a side effect of high dose intravenous methylprednisolone pulse therapy in patients with active, severe Graves' orbitopathy.**

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**Trustee of the paper:** dr n.med. Piotr Miśkiewicz

**Background:** Cushing's syndrome is associated with risk of hypercoagulability and thromboembolic complications. Chronic exposure of excess of glucocorticoids can cause disorders of all components of the Virchow triad. However, the risk of a hypercoagulable state during intravenous pulse glucocorticoid therapy remains unknown. We describe a case of a patient with pulmonary embolism (PE) as a severe side effect of Graves' orbitopathy (GO) treatment with intravenous methylprednisolone (ivMP).

**Case:** A 67-year-old man, heavy smoker, with the history of Graves' disease, hypertension, chronic obstructive pulmonary disease, glucose intolerance and obesity was admitted to hospital because of active, severe GO. The therapy with thiamazole had been started 6 months earlier and the patient had been in euthyroidism for 5 months. The patient was qualified to the treatment with high doses of ivMP pulses in every week schedule, recommended by European Group of Graves' orbitopathy (six pulses with 500mg and six pulses with 250mg). At the beginning patient had a normal D-dimer level.

On the very next day after the 9th pulse with ivMP (cumulative dose-3750mg) patient developed aggravating dyspnea, with no chest pain, haemoptysis, fever or cough. Furthermore, 3 weeks before admission to the hospital the patient was travelling by car for 7 hours. A physical examination revealed no cardiac arrhythmias or hypotension. The biochemical evaluation showed increased levels of D-Dimers (7983 ng/ml, normal: <500), NT-proBNP(133 pg/ml, normal: <125) and hypoxia in arterial blood gas analysis (pO<sub>2</sub>- 69.9 mmHg, satO<sub>2</sub>- 94.2%), the level of troponin I was in normal range - PE was considered.

ECG and echocardiography did not reveal any abnormalities. Doppler ultrasound showed deep vein thrombosis of right calf. Considering contraindications for other diagnostic imaging methods, perfusion SPECT/CT, scintigraphy was performed. Lung scintigraphy revealed multiple, peripheral located triangular perfusion defect without anatomical changes in CT as a sign of, according to EANM guidelines 2009, high risk of PE. Further therapy with ivMP was stopped and anticoagulant therapy was administered.

**Conclusions:** The main conclusions are: (i)high dose ivMP pulse therapy in patients with GO may be associated with a hypercoagulable state which can cause PE; (ii) cumulative doses probably increase the risk of PE in patients treated with ivMP; (iii) it is worth considering thromboprophylaxis when additional risk factors occur.

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[150]

### **Tumor of iliac bone in a young woman suspected of malignant disease, that turned out to be a sign of primary hyperparathyroidism**

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**Background:** Detection of bone tumor in a young adult gives rise to suspicion of neoplastic disease.

After imaging tests are performed, the final diagnosis depends on the pathological result of surgical tumor biopsy.

**Case:** A 22-year-old woman was admitted to the Department of Soft Tissue/ Bone Sarcoma and Melanoma to have a surgical biopsy of a tumor in her left iliac bone. She felt pain in the left hip that had started 4 months before. One month prior to hospitalization she noticed a lump in the sacroiliac area. The patient reported 10 kg weight loss for no apparent reason when she was 18. Then loss of appetite, frequent nausea and excessive thirst occurred. She sought medical help but did not meet with understanding. Later she felt vague pain in joints and bones of inconstant location. The patient's BMI at admission was 13,8 kg/m<sup>2</sup>. There was a palpable mass in the proximity of the left sacroiliac joint. Magnetic resonance of the pelvis showed an osteolytic lesion of 7.5 cm in the left iliac bone. Differential diagnosis between aneurysmal bone cyst and giant cell tumor was suggested by the radiologist. Blood tests, dynamic bone scintigraphy and surgical probe-guided biopsy of the tumor were performed. Hypercalcemia (4.11mmol/l) and the result of bone scan, which showed numerous foci of pathological radioisotope uptake, were the reason to check serum PTH level. Laboratory results pointed to the primary hyperparathyroidism (PHPT). Neck ultrasound revealed hypoechoic focal lesion in the right lobe of the thyroid. The patient was referred to the Department of Endocrine Oncology where parathyroidectomy was performed. Serum PTH decrease (PTH <6,0 pg/ml) on the day following surgery reflected successful treatment. Adenoma of the inferior right parathyroid gland was found in pathology. The result of the bone tumor biopsy was consistent with brown tumor of PHPT. Postoperatively cholecalciferol, alfacalcidol, calcium and magnesium were introduced, as the signs of hungry bone syndrome developed. The patient was discharged home with a recommendation of further endocrinological treatment and orthopedic consultation.

**Conclusions:** PHPT is frequently recognized in postmenopausal women and only rarely in adolescents. While largely asymptomatic at diagnosis in adults, in most of the young patients signs of target organs damage lead to the diagnosis. Nonspecific symptoms of hypercalcemia and lack of routine serum calcium control in young patients make an early diagnosis of PHPT difficult.

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[151]

### **Acromegaly - multiple complications associated with a late diagnosis**

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**Background:** Acromegaly is a rare, chronic disease caused by increased secretion of the growth hormone (GH). In the most of the cases, it is related to a pituitary tumour. It leads to an excessive synthesis of insulin-like growth factor (IGF-1), which acts directly on tissues, causing their growth. Among others, it manifests itself as a change of facial features, enlargement of mandible, hands and feet. This disorder contributes to a number of systemic complications that lead to a reduced quality of life and its shortening. The purpose of this presentation is to draw attention to the multiplicity and variety of clinical symptoms, which impede early diagnosis of acromegaly.

**Case:** 70-year-old man with progressive multisystemic symptoms and a long history of hospitalization was admitted to the Department of Endocrinology for diagnosis of acromegaly.

The patient stopped wearing his wedding ring 20 years ago due to enlargement of the hands. Moreover, the shape of his face changed. The patient has been suffering from hypertension and diabetes mellitus type 2 for the last 15 years. He was treated by a cardiologist due to congestive heart failure, mitral and aortic regurgitation and cardiac arrhythmia which required implantation of cardioverter-defibrillator. Patient also complained of osteo-articular pain cured with NSAIDs. Furthermore, he underwent right nephrolithotomy due to recurrent

attacks of renal colic. What is more, he suffered from obstructive sleep apnea caused by macroglossia, which was treated by plastic surgery of the tongue, however no improvement was achieved. The patient was operated twice due to colorectal cancer, previously he had colorectal polyps removed repeatedly. He was also diagnosed with a toxic multinodular goitre.

Magnetic resonance imaging showed a large tumour (30mm) of the pituitary gland. Laboratory tests revealed increased levels of GH: 20 ng/ml and IGF-1: 1550 ng/ml. These results indicate acromegaly. The size of the tumour was a contraindication to surgery. Therapy with the use of long acting analogues of somatostatine was commissioned.

**Conclusions:** Acromegaly is manifested by a wide spectrum of clinical symptoms. This is why undiagnosed patients are treated by various specialists only for complications, but not for the main cause of the illness. It should be remembered that several coexisting symptoms may arise from a single reason. In patients with treatment-resistant diseases, alternative diagnosis should be taken into consideration.

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[152]

### **Idiopathic opsoclonus-myoclonus syndrome in an adult**

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**Background:** Opsoclonus myoclonus ataxia (OMA) is a syndrome that includes opsoclonus along with diffuse or focal body myoclonus and truncal titubation with or without ataxia and other cerebellar signs. Although OMA can be paraneoplastic in origin, it can also result from infections, metabolic disorders and metastases [Candler et al., 2006]. Many cases of non-paraneoplastic OMA are idiopathic and often assumed to be parainfectious [Bataller et al., 2001].

**Case:** A 39-year-old Latvian Caucasian woman was admitted to hospital on September 6, 2015 with complaints of tingling in her right arm, persistent dizziness, imbalance and nausea accompanied by vomiting episodes. Additional neurological examination revealed a prominent rotary nystagmus, opsoclonus, craniocervical myoclonus and limb ataxia. The conclusive diagnosis of opsoclonus-myoclonus syndrome was set after a month, based on the patient's clinical signs which progressively worsened over the time. A plenty of laboratory and imaging studies were performed, including assessment of paraneoplastic antibodies to determine the cause of this syndrome origin. Cerebrospinal fluid analysis revealed mild lymphocytic pleocytosis-23/μL, slightly elevated glucose 4.11 mmol/L and elevated IgG 55.1 mg/L. Patient's brain MRI scan revealed selective cerebellar atrophy. The therapy of glucocorticoids and plasmapheresis was initiated. It was followed by intravenous immunoglobulins administration which resulted in a significant clinical improvement.

**Conclusions:** Patient was discharged from Neurology department on October 16th with diagnosis idiopathic opsoclonus-myoclonus syndrome. Total hospital stay was 35 days. The main aim of hospitalization was to determine the cause of this syndrome. As the literature reveals the majority of idiopathic OMS have parainfectious autoimmune causes but perhaps this syndrome is an early manifestation of yet undetermined localization developing cancer.

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[153]

### **Takayasu arteritis type III with unique angiographic findings in a young Caucasian female**

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**Background:** Takayasu arteritis (TA) is a chronic, idiopathic large vessel vasculitis predominantly affecting young females. Inflammatory changes characteristically involve aorta and its branches, resulting in stenosis, occlusion and aneurysm. Prevalent symptoms are limb claudication, vascular pain, hypertension, abnormalities in peripheral pulses, vascular bruits and differences in blood pressure in arms exceeding 10 mmHg. TA is classified into five types based on the angiographic findings.

**Case:** A 23 year-old female with history of headache, pain in the neck and left arm, with elevated ESR 100 mm/h for four years. In September 2014 patient delivered a healthy child, after which symptoms aggravated. In November 2015 she was admitted to the hospital with suspicion of TA. On physical examination no radial artery

pulse and no blood pressure (BP) could be detected on the left arm. Right arm BP 180/40 mmHg and pulse 100 b/min. A murmur over the left common carotid artery was heard. Laboratory results: anemia, thrombocytosis, leukocytosis; elevated ESR 115 mm/h, CRP 73 mg/L, alfa-2 globulin. Rheumatoid Factor, Anti-neutrophil cytoplasmic antibody, Anti-nuclear antibody were negative.

On angio-computed tomography changes involved ascending aorta down to the level of L2/L3 vertebrae. Luminal diameters measured: ascending aorta 27-28 mm, aortic arch 20 mm, descending aorta 17mm, DA at the level of diaphragm 13mm, abdominal aorta above and below the renal arteries (RA) 10 mm. Below the level of inferior mesenteric artery no inflammatory changes.

Critical stenosis of 4 cm in length, wall thickness (WT) 5,5-6mm is seen 1,5 cm from the origin of the left subclavian artery. Left vertebral and left common carotid arteries: WT 3,5 mm and stenosis. WT of brachiocephalic trunk is increased without stenosis. Inflammation also involves proximal part of celiac trunk and superior mesenteric artery, but without stenoses. Double renal arteries on the right side, originating at the same level and the left renal artery show increased WT (2,5mm) in proximal segments. The patient meets the criteria for TA type III. Treatment with Prednisone 60 mg/day resulted in normalization of ESR 22mm/h and CRP 0,5mg/L. Later, due to Prednisone dose reduction, Methotrexate 15 mg/week and folic acid were added.

**Conclusions:** This is a case with extensive inflammatory involvement of arteries and critical stenoses, despite of which our patient presented with mild and non-specific symptoms, that were exaggerated postpartum.

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[154]

### **Echinococcosis of liver and brain in a seronegative patient**

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**Trustee of the paper:** Prof. Joanna Zajkowska MD, PhD

**Background:** Echinococcosis, also called hydatid disease, most commonly affects the liver and the lungs. Brain involvement in hydatid disease is less frequent and may be classified as either primary or secondary. The diagnosis is usually made using imaging techniques and supported by positive serological tests. However, patients with older, calcified or dead hydatid cysts are often found to be seronegative. Biopsy is generally considered a risky procedure, due to the possibility of cyst leakage and rupture that may cause anaphylaxis or spreading of the disease.

**Case:** A 46-year-old female with a long-term history of migraines was admitted to the Department of Infectious Diseases and Neuroinfections with a suspicion of a parasitic cyst in the brain. Head magnetic resonance imaging performed on an ambulatory basis had revealed cystic lesions in right frontal area (20x13mm) and right temporal area (10x9mm) of the brain with a mild surrounding oedema. Physical examination showed enlarged liver. Laboratory studies did not reveal any abnormalities. Serological tests for echinococcosis and cysticercosis were negative. Abdominal ultrasound detected area of heterogenous echogenicity with irregular fluid filled areas in liver segment VI/VII. Abdominal computed tomography (CT) revealed enlarged liver with a well-demarcated focal lesion suggestive of parasitic cyst. Because of unclear clinical picture and seronegativity for parasitic infections, positron emission tomography (PET)/CT was ordered. Patient was consulted by the neurosurgeon and general surgeon. Cysts in the brain turned out to be inoperable. After assessment of the imaging studies and whole clinical picture the decision about the administration of albendazole was made. Patient was discharged home with a recommendation of completing a 4 weeks course of anti-parasitic medication and a follow-up visit with the general surgeon. PET/CT results revealed inactive cysts in brain and liver.

**Conclusions:** Although echinococcosis is a rare disease, it should be considered in patients with cystic lesions in organs. Patients are often asymptomatic for a long time and if the symptoms occur, they are usually non-specific. Seronegativity does not exclude the possibility of the disease. PET/CT can be used to assess parasite metabolic activity. Treatment depends on the type and characteristics of the hydatid cyst.

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[155]

### **Herpes simplex encephalitis relapse with presence of anti-AMPA2 receptor antibodies**

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**Trustee of the paper:** Prof. Joanna Zajkowska MD, PhD

**Background:** Relapse post herpes simplex encephalitis (HSE) can be a result of either viral reactivation or an immune-mediated process. Recent studies suggest that HSE may be a trigger of an anti-glutamate receptor encephalitis. Most commonly recognized cause of an autoimmune encephalitis after HSE is anti-N-methyl-D-aspartate (NMDA) receptor encephalitis.

**Case:** A 40-year-old male was admitted to the Department of Infectious Diseases and Neuroinfections with suspicion of meningitis. Initial symptoms, including headache and fever had occurred a week before hospitalization. On the day before the hospitalization he experienced hallucinations. On admission meningeal signs were present. Cerebrospinal fluid (CSF) obtained through lumbar puncture (LP) showed lymphocytic meningitis. Intravenous acyclovir was administered. Head magnetic resonance imaging revealed lesions in the right temporal lobe consistent with HSE. CSF polymerase chain reaction (PCR) for herpes simplex virus (HSV)-1 was positive. Psychiatric evaluation did not reveal any abnormalities. CSF obtained after treatment showed tendency of normalization and CSF PCR for HSV was negative. Patient was discharged home without any neurological deficits. After five months from the first hospitalization he was admitted again with a suspicion of meningitis, complaining of headaches, memory gaps and problems with orientation. Blood tests and LP revealed no abnormalities. CSF PCR for HSV was negative. Treatment with cerebrolysin was administered. Patient was discharged home in good general condition, although with memory and orientation impairment. Retrospective analysis of CSF samples was performed with a cell-based immunofluorescence test (Euroimmun, Germany). Results revealed anti-AMPA2 receptor antibodies. NMDA, AMPA1, LGI1, CASPR2, GABAB receptors antibodies, which are known to be associated with autoimmune encephalitis, were absent.

**Conclusions:** Knowledge of the anti-AMPA2 receptor antibodies association with post-HSE relapses is limited. Presence of anti-AMPA2 receptor antibodies in a patient with post-HSE relapse suggests a possible involvement of immune-mediated process. Anti-NMDA receptor encephalitides following HSE have been previously reported in the literature, however there is lack of information about anti-AMPA2 receptor antibodies in patients with post-HSE relapses.

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[156]

### **Perifollicular rectangular structures in trichoscopy – characteristic image for multiple myeloma paraneoplastic syndrome.**

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**Trustee of the paper:** Adriana Rakowska MD PhD

**Background:** Abnormal monoclonal paraprotein can be excreted by follicles in the course of multiple myeloma. In the case of excessive concentrations, it can be clinically noted as hyperkeratotic perifollicular spicules, especially on the skin of nose, neck and extremities. Trichoscopy is non-invasive examination of hair and scalp, which is currently a gold standard in diagnosing alopecia and inflammatory changes on scalp.

**Case:** 62-years-old patient with multiple myeloma (from IgG kappa chains) presented to Dermatology Clinic with scalp pruritus. She was diagnosed with multiple myeloma 6 months earlier and was treated haematologically according to therapeutic regimen with melphalan, dexamethasone and thalidomide. Trichoscopy showed perifollicular casts in form of rectangular, transparent white structures. In differential diagnosis follicular lichen planus was considered which typically presents with strong pruritus and burning of the scalp along with cicatricial alopecia. Trichoscopic characteristics of follicular lichen planus are perifollicular scales entangling hair shafts localized around areas of cicatricial alopecia.

Finally, our patient's pruritus and perifollicular casts seen during trichoscopy were the effect of excreted paraproteins from hair follicles and it was associated with disease progression (which was confirmed by haematologist).

**Conclusions:** Pseudohyperkeratotic perifollicular changes are rare, but highly specific presentation of multiple myeloma. Clinically they are seen on scalp when high amounts of paraproteins are excreted by hair follicles. Trichoscopy enables to observe this abnormality before clinical symptoms. More studies need to be done in order to establish whether there is a correlation of trichoscopy images with type of monoclonal protein chain and its concentration.

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[157]

**A case of alopecia due to Leydig cell ovarian tumour in a postmenopausal woman.**

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**Trustee of the paper:** dr n. med. Katarzyna Szlendak- Sauer

**Background:** Hyperandrogenism in females usually results from ovarian or adrenal pathology. A rapid progression of clinical manifestations, such as hirsutism, male-pattern hair loss and clitoromegaly can strongly suggest androgen-secreting neoplasm.

**Case:** We describe a case of a 64-year old woman, menopause at the age of 38, presented with advanced male-pattern baldness and progressive hirsutism arising over 3 years.

The patient suffered from obesity, diabetes mellitus type 2, hypertension, ischemic heart disease, asthma, atrial fibrillation treated with acenocumarol, hyperuricemia and non-alcoholic fatty liver disease. Physical examination showed body mass index (BMI) 34,6 kg/m<sup>2</sup>, hirsutism (Ferriman-Gallwey score 26) and diffuse male-pattern alopecia.

Hormonal tests revealed high total levels of testosterone 10,75 ng/ml (normal range 0,1-0,58 ng/ml) and estradiol 59,0 pg/ml (normal range <10 pg/ml) and normal values of androstenedione, cortisol, DHEAS, prolactin and TSH. Transvaginal ultrasound showed no pathology of uterus or ovaries.

Pelvic magnetic resonance imaging (MRI) disclosed: left ovary 20x10 mm and right ovary 21x17 mm with a focus diameter of 10 mm after the administration of contrast. Total abdominal hysterectomy, bilateral salpingo-oophorectomy and partial omentectomy were performed. Histology revealed a 2,5cm right ovary containing a 1,8cm sized beige-yellow tumour, located at central part of the gonad, surrounded by unchanged stroma, identified as Leydig cell ovarian tumor with positive result of immunohistochemical test for inhibin.

**Conclusions:** The differentiation of the causes of alopecia in postmenopausal women should be considered for hormone-producing ovarian and adrenal tumors. Androgen-secreting ovarian tumors, especially Leydig cell tumors are extremely uncommon. The mainstay of treatment is surgery, usually hysterectomy and bilateral oophorectomy.

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[158]

**Diagnostic dilemma: cholangitis in patient with hypereosinophilic syndrome and high level of c-ANCA in serum**

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**Background:** The etiology of biliary stricture can be a diagnostic problem and is necessary to provide appropriate treatment. Both benign and malignant causes must be considered as many benign lesions can mimic cholangiocarcinoma (CCA). Eosinophilic cholangiopathy is a rare cause of biliary obstruction and it can masquerade as primary sclerosing cholangitis (PSC) or cholangiocarcinoma (CCA).

**Case:** A 30-year-old man with hypereosinophilic syndrome was referred to our clinic because of the recurring cholangitis of unknown etiology. He presented submandibular and axillary lymphadenopathy and annular erythema on extensor surface of legs. Laboratory tests showed eosinophilia, hypertransaminasemia, features of cholestasis, hypergammaglobulinemia and high level of c-ANCA in blood serum. CT, MRCP and ECPW revealed biliary strictures similar to primary sclerosing cholangitis (PSC). A biliary stent was inserted past the stricture. Brush cytology was negative for malignancy. Definitive diagnosis was difficult, but we suspected autoimmune disease. Percutaneous liver biopsy was performed and demonstrated dense portal infiltration of eosinophils and revealed eosinophilic cholangitis.

**Conclusions:** Despite its rarity, eosinophilic cholangitis should be considered as a differential in causes when imaging modalities demonstrate a biliary stricture, especially in the setting of peripheral eosinophilia and the absence of cardinal symptoms of malignancy.

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[159]

### **Multiple endocrine neoplasia type IIa (MEN2a) – complicated way to a final diagnosis**

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**Trustee of the paper:** Urszula Ambroziak MD, PhD

**Background:** MEN2a (Sipple syndrome) is an autosomal dominant disease with a high penetrance predisposing patients for endocrine tumors involving medullary thyroid cancer (90-100%), bilateral pheochromocytoma (40-50%), hyperparathyroidism (up to 35%) and some others. It results from mutation of RET proto-oncogen. Complex examination contains: 1) biochemical tests: plasma and urine level of thyroid and adrenal hormones and their metabolites 2) imaging studies like computed tomography (CT), magnetic resonance imaging (MRI), positron emission tomography (PET), 3) molecular examination of RET proto-oncogen.

**Case:** We present a case of 36-years old man who was referred to the Clinic of Endocrinology in 2009 with nonspecific symptoms. He complained on trembling limbs, fainting, episodes of palpitations and hypertension. His generally health condition was good. Ultrasound examination of the neck showed changes in the thyroid gland which were recognized by fine needle aspiration biopsy as medullary thyroid cancer (MTC). Further radiological examinations including CT of the abdomen demonstrated bilateral changes in the adrenal glands. The biochemical tests revealed elevated level of urine metanepines what suggested bilateral pheochromocytoma (PCC). MTC together with PCC oriented diagnostic process toward MEN2a. Subsequently, a PET scan was performed which allowed location and character of tumors. Metastases were not found. Patient was directed for bilateral adrenalectomy and next for total thyroidectomy. After this procedures symptoms ceased.

Histopathological report confirmed earlier suspicions about nature of tumors, and molecular examination revealed mutation of RET proto-oncogen what made it possible to put a final diagnosis – MEN2a.

**Conclusions:** MEN2a is a rare disease therefore it can be easily missed. The signs of Sipple syndrome appear late and they are nonspecific what is complicating diagnostic process. In patients with medullary thyroid cancer we should check the condition of the adrenal glands for possible changes. Pheochromocytoma should be always removed before thyroidectomy.

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[160]

### **Right heart failure in the course of non-operable Chronic Thromboembolic Pulmonary Hypertension, diagnostics and Balloon Pulmonary Angioplasty - an emerging therapeutic method in CTEPH.**

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**Background:** Pulmonary hypertension (PH) is defined as mean pulmonary arterial pressure exceeding 25mmHg. PH may be a result of several clinical conditions, primarily cardiovascular and respiratory diseases. 0,5-2% of acute pulmonary embolisms are complicated by chronic thromboembolic pulmonary hypertension (CTEPH). Prevalence of CTEPH is 3.2 cases per million.

**Case:** A 64-year-old patient hospitalized in Dermatology Clinic due to non-healing leg ulcers was admitted to the Intensive Cardiac Care Unit due to heart failure (NYHA IV). After a pulmonary thrombosis episode in 2001, patient has been treated for CTEPH (mPAP 54mmHg) with sildenafil, home oxygen therapy and chronic acenocoumarol administration. At admission he was in cardiogenic shock: BP 70/50mmHg, irregular heart rhythm 160', tachypnea 30', SaO<sub>2</sub> 82%, massive peripheral oedema and ascites. ECG showed atrial fibrillation 160/min, right bundle branch block, dextrogram and an unassessable ST segment. Laboratory tests revealed elevated troponin levels (0,043-0,054 ng/ml), hyponatremia (128mmol/l) with hyperkalaemia (5,7mmol/l), substantial abnormalities in coagulogram (INR 16,8; PT 159,1s). Arterial blood gas showed metabolic acidosis in arterial blood gas (pH 7,24; HCO<sub>3</sub> 12,9; BE -15). In echocardiogram signs of PH were present: massively enlarged right ventricle (70mm), dilatation of superior vena cava, large tricuspid insufficiency (regurgitant volume 36ml,

peak velocity 1,1m/s, TRPG 82 mmHg). Left ventricle ejection fraction was 50%. Pharmacological therapy with i.v. furosemide, spironolactone, dopamine led to a 16kg weight reduction and normalization of laboratory test's values. Right heart catheterization (RHC) showed mPAP to be 50mmHg. Due to severe comorbidities and peripheral localisation of pulmonary arteries stenosis patient was disqualified from a pulmonary thrombendarterectomy and was short-listed to Balloon Pulmonary Angioplasty (BPA). After two effective BPA procedures mPAP decreased from 50 mmHg to 42 mmHg. Patient reports a reduction in dyspnea episodes and improvement of exercise tolerance (6MWD 640m, NYHA class from III to II).

**Conclusions:** CTEPH is a disease hard to treat and should be taken into consideration after pulmonary embolism episodes. BPA may be considered in patients who are technically inoperable or carry an unfavourable risk-benefit ratio of pulmonary endarterectomy. BPA reduces pulmonary artery hypertension in patients with CTEPH and is associated with long-term improvement in NYHA class.

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[161]

### **Differentiation between Charcot neuroarthropathy and osteomyelitis a key to proper diagnosis and treatment in Diabetic Foot Syndrome – is amputation obligatory?**

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**Background:** Differentiation between alternations developed during bone and bone marrow inflammations and Charcot neuroarthropathy is a troublesome task which requires insightful interpretation of clinical data and sensitive and specific imaging methods. Both clinical conditions, if present in a diabetic patient, increase not only amputation risk but also mortality rate. The purpose of this study is to depict limitations of imaging methods in osteomyelitis accompanied by neuroarthropathy which can lead to an inappropriate diagnosis and lower limb amputation. Case study based observation.

**Case:** : A 38-yo female patient suffering from decompensated type 1 diabetes mellitus with bilateral neuroarthropathy (inactive chronic phase in the left foot and acute active phase in the right) was referred to the Clinic with generalized inflammation (fever, significantly increased CRP concentration, leukocytosis and anemia), right lower limb edema and deep ulceration penetrating to midfoot bones. Osteomyelitis was detected in RTG, while MRI revealed right tarsus, calcaneus and talus destruction, including bone marrow edema and lysis of bone structures. Disintegration of tarsus was also found, accompanied by widespread purulence reaching from Chopart joint to Achilles tendon, including tendons of peroneal and flexor muscles. Within the opposite (left) foot, osteomyelitis, tarsal destruction and inflammatory infiltration were noticed, but no clinical signs of inflammation were visible. Blood-flow in both lower limbs was undisturbed according to Doppler ultrasound procedure. During treatment (debridement of ulceration, antibioticotherapy – firstly empiric then targeted, offloading) constant recovery of patient's health status was observed (normalization of inflammation indicators – normalization of body temperature and CRP), but with persistent swelling and anemia. As the clinical picture was unclear, the patient was consulted by a surgeon and a joints drainages were performed. Content of the joints exudate was bloody, bacteriological examination was positive only with the presence of *Staphylococcus capitis*. After 6-week long antibioticotherapy treatment the patient was referred to orthopedic ward for surgical reconstruction procedure.

**Conclusions:** In complicated cases with parallel presence of osteomyelitis with overlapping neuroarthropathy, one should perform a biopsy to exclude serious inflammation and bone destruction before performing amputation.

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[162]

### **Conservative treatment of penetrating ulcer of ascending aorta.**

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**Trustee of the paper:** Olga Możeńska, MD, Dariusz A.Kosior, MD, PhD

**Background:** Penetrating aortic ulcer (PAU) is an ulceration of an aortic atherosclerotic plaque penetrating through the internal lamina into the media. There are 2 types of PAU: type A- in the ascending aorta and type B- in the descending thoracic aorta.

**Case:** We present a case of 56-year-old man admitted for follow-up of chest pain. On admission, he complained about headaches and high blood pressure (BP). He had history of aortic stenosis (AS) and regurgitation (AR) with mitral regurgitation (MR), arterial hypertension, ischemic heart disease and tobacco-smoking.

Physical examination revealed elevated BP, systolic heart murmur above aortic valve. Transthoracic echocardiography (TTE) showed: left ventricle ejection fraction LVEF 65%, AS, AR, MR, suspicion of BAV, aortic dilatation aortic bulb (AoB) 44mm, aortic arch 40mm, extended descending aorta (AoD). Stress echocardiography was stopped because of tightness in the chest. Patient was discharged after intensification of antihypertensive drugs, initiation of atorvastatin, acetylsalicylic acid. Coronary angiography showed paramural plaques, PAU in the aortic arch was suspected. Computed tomography (CT) showed ulceration near left subclavian artery with atherosclerotic plaque (type A PAU) and BAV. After treatment modification, patient had satisfactory BP control, was chest pain free, so conservative treatment was chosen.

Two months later, transesophageal echocardiography (TEE) showed: BAV, expanded ascending aorta, atherosclerotic plaques in aortic arch with ulceration (diameter 5-6mm, depth 3-4mm). Conservative treatment was continued.

After 1 year TTE showed: LVEF 65%, aorta (Ao) 26mm, AoA 46mm, BAV, AS, AR, MR, AoB 45mm, aortic arch 36mm, proximal segment of AoD 29mm. Moreover, TEE revealed: AoA as in previous examination, large plaques in AoD, in aortic arch near left subclavian artery smaller atherosclerotic plaque with ulceration (diameter 3mm, depth 2,5mm). Result of CT was similar to the previous study.

After 2 years, TTE results were comparable with previous examination, CT-findings showed new thrombi in the area of previous ulceration. Conservative treatment was continued.

**Conclusions:** In making diagnosis of PAU CT is the method of choice. However, in this case, coronarography with aortography was crucial to raise suspicion of PAU. In type A PAU, patients are usually treated surgically unless intractable comorbidities are present. We demonstrated that type A PAU can be successfully treated conservatively.

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[163]

### **Wernicke's encephalopathy as a result of hyperemesis gravidarum - a case report**

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**Trustee of the paper:** Małgorzata Radoń-Pokracka MD, PhD

**Background:** Hyperemesis gravidarum (HG) is a severe condition of excessive nausea and vomiting that affects about 1 percent of pregnant women. It contributes to the volume depletion, nutritional deficiencies, electrolytes and acid-base imbalances and can lead to long-term complications such as liver or kidney failure. We present a case of Wernicke's encephalopathy (WE), a rare and potentially fatal complication of HG that results from vitamin-B deficiency.

**Case:** 23-year-old woman in 16 week of her second pregnancy has been admitted to our tertiary care unit because of severe nausea and vomiting since 10 weeks and suspicion of intrahepatic cholestasis of pregnancy. Previous intravenous fluid replacement and antiemetic treatment had been unsuccessful. The physical examination revealed hypertension. The pregnancy development was not altered by the patient's condition. Laboratory tests showed anaemia, hypoalbuminemia, hypokalaemia, hyperbilirubinemia, elevated levels of transaminases, glycosuria and ketonuria. Viral hepatitis and cholestasis has been excluded. Antiemetic, nutritional and antihypertensive treatment has been implemented. In 18 wks. the patient manifested confusion,

drowsiness, limb weakness, deteriorating vision and bilateral nystagmus. While CT scans was within normal limits, MRI of the brain showed changes, which in the clinical context raised a suspicion of WE. Although thiamine was administered temporal loss of consciousness and convulsions have been reported. Patient was hospitalised until significant improvement of neurological functions and resolution of gastrointestinal symptoms in obstetrical and then neurological unit and was discharged in 23 wks. Periodic nystagmus was still present in 39 wks. when elective cesarean section was performed. Both mother and newborn were discharged three days after surgery.

**Conclusions:** This is one of a few dozen cases of HG complicated by WE described in the literature worldwide. Confusion and ocular symptoms in course of WE occur in 60% of patients, while 90% experience nystagmus. Coma, lethargy, stupor and other disturbances of consciousness affect more than a half of cases. Course of disease in our patient fits into described clinical picture. We conclude that in all patients with altered nutrition status and irregularities in blood tests in course of HG, thiamine supplementation should be consider as a prevention of long-term neurological complications due to WE. If neurological symptoms develop, MRI is a preferable diagnostic tool.

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[164]

### **Delayed delivery in a triplet pregnancy: a case report**

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**Background:** The number of multiple pregnancies has increased in last decades as a result of advanced assisted reproductive technology. The main complication of multiple pregnancies is preterm labor and prematurity of the newborn. In some cases of multiple pregnancies, the management of obstetric complications oversteps generally accepted standards.

**Case:** 36-year-old woman at 23rd week of triple gestation was admitted to Department of Obstetrics and Perinatology CMUJ due to signs of threatened preterm labor. Prenatal steroid-therapy to stimulate intrauterine lungs maturation and treatment to inhibit preterm uterine contractions were administered. Additionally, the vaginal discharge was collected. Laboratory tests showed no aberrations. USG confirmed proper development and wellbeing of fetuses. In fourth day of hospitalization preterm rupture of first fetus' membranes was observed. Despite the implementation of tocolytic therapy, the preterm delivery of first fetus occurred. The neonate died in third day of his life due to extreme prematurity. After the delivery there was no uterine contraction and the cervix was closed. Decision to continue the gestation was made as a non-standard management based on few cases from literature. Broad spectrum antibiotics were administered and tocolytic therapy was continued. That management allowed to prolong pregnancy for another week. The cesarean section was performed at 25th week of pregnancy due to signs of preterm delivery. The second and third triplet were born weighing 780g and 770g, respectively. Both newborns were transferred to Neonatal Intensive Care Unit CMUJ for further treatment. The patient's puerperium proceeded without complications and she was discharged home in fourth day after the cesarean section. Neonates survived developing symptoms characteristic for prematurity.

**Conclusions:** After the birth of the first fetus delayed delivery in multiple pregnancies can be successful in selected cases. They advocate it only in well prepared perinatal centers for physically and psychologically balanced patients, who are well informed about the risks and benefits of this trial.

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[165]

**The lull before the storm- liver dysfunction during the Graves' orbitopathy treatment.**

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**Background:** Graves' orbitopathy (GO) is an autoimmune inflammatory disorder affecting the orbits. It is the extrathyroidal manifestation of Graves' disease. Females are four times more likely to develop GO. GO is diagnosed clinically by the presenting ocular symptoms. Positive tests for specific antibodies and abnormalities in thyroid hormone levels help to confirm the diagnosis. Intravenous methylprednisolone (IVMP) pulse therapy is the first-line treatment for an active phase of moderate to severe GO. Widely used IVMP exceed oral steroids in effectiveness and tolerance.

**Case:** We report a case of an acute autoimmune hepatitis (AIH) that occurred in a 65-year-old woman during IVMP pulse therapy for GO. The patient in state of euthyrosis, with the history of double strumectomy, was admitted to the clinic with biochemical features of liver injury before the fourth dose of IVMP pulse therapy. The GO was previously treated with low doses of prednisone. Also, in the past history there were the left orbit decompression with ethmoidectomy, surgical correction of both eyelids and cataract treatment implemented. After the first symptoms of double vision the ophthalmologic examination revealed no signs of neuropathy. The antireceptor antibodies level remained normal. The CT scan showed the mass (22x15x47mm) in the left musculus rectus superior. Bilaterally in the orbital area the NMR test revealed an infiltration and enlarged extraocular muscles whereas PET/CT scan showed increased marker accumulation. The left musculus rectus superior lymphoma, autoimmune disease and neuropathy were excluded. Before the fourth dose of IVMP, the patient's condition deteriorated. In addition to fatigue and fever, the laboratory tests showed markedly elevated liver function enzymes, bilirubine and C-reactive protein. Blood and urine cultures excluded bacteriological infection. Immunologic tests excluded virus contagion. After the initial recovery, the parameters of liver function have fluctuated. Finally another laboratory tests showed an increased ASMA (anti smooth-muscle) antibodies level. All the clinical and laboratory findings determined the diagnosis of AIH.

**Conclusions:** The etiology of AIH in the course of GO has not been established. We presume it may develop in patients with multiple autoimmunity and may be precipitated by an immune rebound (i.e. after cessation of or between immunosuppressive treatment cycles).

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[166]

**Donor cell leukemia – rare complication of allogeneic bone marrow transplantation**

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**Background:** Donor cell leukemia is a very rare complication of allogeneic hematopoietic stem cell transplantation (alloHSCT). Pathogenesis and risk factors of DCL development remain unknown, as well as risk of leukemia occurrence in donors. Due to small number of cases hypotheses are difficult to confirm. There are also no guidelines, thus each situation requires individual approach.

**Case:** We present case report of 54-year old woman diagnosed with acute myeloid leukemia (AML) in February 2010 (70% of blasts in myelogram). She underwent standard induction chemotherapy followed by 3 consolidation cycles. Complete remission (CR) was achieved in May 2010. Since the risk of disease relapse was considered to be high, search for allogeneic stem cell donor was initiated. Her 64-year old brother appeared to be a fully matched candidate. His screening revealed no contraindications to be a donor.

In October 2010 patient underwent alloHSCT after myeloablative FluBu conditioning, followed by standard immunosuppression. About 1 year after first alloHSCT, she unexpectedly developed pancytopenia. BM biopsy revealed infiltration by myeloblasts (16%) – AML relapse was diagnosed.

The phenotype of myeloblasts did not correspond to the previous one. The cytogenetic and FISH analysis revealed that 100% of cells beared Y chromosome, suggesting that they are of donor origin. The chimerism analysis by STR method revealed a 100% donor chimerism. These results suggested that the leukemia was not a relapse, but of the donor origin. At the same time patient's brother was healthy, with no signs of myelodysplastic

syndrome in BM sample. Patient was treated with induction chemotherapy without achieving CR, thus she was qualified to second alloHSCT from matched unrelated donor after reinduction treatment. After the procedure, she experienced a primary graft insufficiency and finally died of brain stroke. Two years after stem cell donation, her brother developed AML.

**Conclusions:** DCL is a rare but serious complication of alloHSCT. The exact mechanism of its development is unknown; probably relies on existence of preleukemic cell clone in the donor, which further evolves in the stem cell recipient enabled by immune suppression and possible genetic and epigenetic events after transplantation. Since the donor was healthy at the time of donation, it was not possible to prevent development of DCL. The factor which should be considered is donors' age, since it may be associated with increased risk of neoplastic disorders.

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# Internal Medicine

## Jury:

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mgr inż. Bartosz Kaczyński  
prof. dr hab. n. med. Andrzej Rydzewski  
prof. dr hab. n. med. Katarzyna Życińska

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Polskie Towarzystwo Reumatologiczne  
Towarzystwo Internistów Polskich



**Date:**

Saturday, May 14th, 2016

**Location:**

Room 231+232, Didactics Center

**Regular:**

Ewelina Jędrych  
Chukwuebuka Okoye  
Aleksandra Gonera  
Helēna Dauvarte  
Iga Ruškowska  
Szymon Ciuk  
Paweł Siwiński  
Anna Pasierb

**Short:**

Adebayo Bamisile  
Mairita Mazule  
Nicholas Kormos  
Anna Zielińska

[167]

### Comparison of metabolic syndrome rates in living-donor and deceased-donor kidney recipients – a three-year follow-up

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**Trustee of the paper:** Jolanta Gozdowska

**Introduction:** Metabolic syndrome (MS) is characterized by coexistent pro-atherogenic disorders and insulin resistance. MS also increases cardiovascular risk.

**Aim of the study:** The aim of the study was to compare the prevalence of MS in transplant recipients living-donor (LD) and deceased-donor (DD) depending on the time of transplantation and other parameters.

**Material and methods:** A total of 112 living-donor (n=54) and deceased-donor (n=58) kidney transplant recipients were evaluated for metabolic syndrome (MS) in months 6, 12, and 36. The National Cholesterol Education Program – Adult Treatment Panel III (NCEP-ATP III) criteria were used. Both groups were compared in terms of MS rates. Moreover, correlations between MS and other parameters (age, gender, dialysis type and duration, donor type, immunosuppressant drugs, acute rejection episodes, smoking, levels of triglycerides, uric acid, creatinine, MDRD eGFR, and proteinuria) were evaluated. The chi-square, McNemar's test, Student's t test, Welch's t test, Mann-Whitney U test, Fisher's test, and Shapiro-Wilk test were used in the statistical analysis.

**Results:** MS rates following living-donor (LD) and deceased-donor (DD) kidney transplantation (KTx) in months 6, 12, and 36 were 0.148 vs 0.276; 0.173 vs 0.316; 0.235 vs 0.182, respectively. MS rates in LD KTx recipients were lower than those in DD KTx recipients in months 6 and 12, especially in males (0.14 vs 0.379; p=0.0251), but they increased systematically in subsequent months of follow-up. MS was more commonly diagnosed in older recipients (p=0.019), with lower MDRD eGFR values (p=0.009), who received more anti-hypertensive drugs (p=0.046). The dialysis type, donor type and the number of transplantations had no effect. The logistic regression model indicated that the factors contributing to MS were elevated uric acid levels and proteinuria.

**Conclusions:** 1. MS rates in LD KTx recipients in month 6 and 12 following transplantation are lower than those in DD KTx recipients.

2. MS rates in LD KTx recipients tended to progressively increase during follow-up.

3. MS was more common in older patients with poorer kidney function, higher uric acid levels and proteinuria.

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[168]

### THE MICROSCOPIC CHANGES IN THE URINARY BLADDER, CAUSED BY SUBACUTE INFLUENCE OF HEAVY METAL SALTS.

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**Trustee of the paper:** OKOYE CHUKWUEBUKA DANIEL

**Introduction:** Urinary bladder is odd hollow muscular organ, that is located in the pelvic cavity and serves as a reservoir for storage of urine produced by the kidneys. It takes part of urine excretion from the body, which is why even minor violations of its functions can damage the entire urinary system.

Every year our planet is influenced by harmful emissions from industry, transport, accidents at plants and factories, what leads to significant environmental pollution and exceeding of acceptable health standards. Significant place among the exogenic factors occupy by heavy metals salts, which are hazardous due to their toxicity and spreading. Increasing the number of heavy metals salts in organism leads to their accumulation in organs, among which the urinary bladder takes not the last place.

**Aim of the study:** Our aim was to research the histological changes in the urinary bladder of rats after the subacute influence of heavy metal salts.

**Material and methods:** The research was conducted on 24 mature male rats, which were divided into two groups - control and experimental. The control group was given to drink standard drinking water. The experimental group was given to drink water with combination of heavy metal salts (copper, iron, manganese, zinc and chromium) for 30 days.

Histological specimens were stained with hematoxylin and eosin, which were analyzed by using a light microscope.

**Results:** 30 days later the research of experimental rats urinary bladder revealed significant change in microstructural levels comparing with the control group. At the histological investigated of experimental rats, which were drinking water with heavy metal salts (copper, iron, manganese, zinc and chromium) observed edema of all layers of the urinary bladder wall and disorganization of muscle and connective tissue, degenerative changes of urothelium, phenomenon of epithelial desquamation at mucous membrane. The cytoplasm of transitional epithelium cells was pale-pink color. In the current study were present effects of mixed-cell inflammatory reaction of epithelial and subepithelial layers, also signs of venous plethora and stasis of blood vessels.

**Conclusions:** Thus, the subacute intoxicated by heavy metal salts leads to significant changes and dystrophic processes in the epithelial wall of the urinary bladder, which then can cause urinary bladder dysfunction.

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[169]

#### **Malnutrition in hemodialysis patients- dietary audit.**

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**Introduction:** About 40% of maintenance hemodialysis patients suffer from malnutrition. One of the methods for assessing nutritional status is the measurement of Body Cell Mass Index (BCMI). Improper dietary habits, together with the dialysis process and subclinical inflammation, are significant risk factors for malnutrition.

**Aim of the study:** Aim of the study was to identify possible dietary mistakes contributing to malnutrition of chronic hemodialysis patients.

**Material and methods:** 56 from 105 eligible chronic hemodialysis patients (pts) were qualified for the study. Each patient was asked to complete feeding diary from 3 days, with results of weighting meals and drinks. Weight of each ingredient was checked and noted before consumption using digital kitchen scale. The diet was analyzed using a database (USDA) and dietary tables issued by Polish Institute of Nutrition and Food. By using tetra-polar body impedance analysis body composition before HD was recorded. Moreover patients filled questionnaires asking about nutritional knowledge and habits. Patients were categorized under two groups: malnourished and well-nourished.

**Results:** Finally, only 25 pts returned completely filled feeding diary. Data from this 25 (mean age =59 ± 18 years, 12 females, 13 males) chronic HD pts was finally analyzed. Patients with malnutrition (n=10) comparing to well-nourished (n=15) tend to have higher age (65.3 vs 54 years old; p=0.07) and showed lower BMI (mean 20.9 vs 27, p=0.01). Analysis of provided menu revealed that both malnourished and well-nourished pts consumed similarly caloric meals in total (1876 and 1765 kcal, respectively, p=0.5) with similar content fat and carbohydrates and protein. When energy intake was calculated per kilogram of body weight per day markedly higher intake was found in malnourished pts than in well-nourished (33.2 vs 23.4 kcal; p=0.01). The same trend was in protein (1.17 vs 0.88 g; p=0.03) and potassium (40.5 vs 30.8 g; p=0.027) intake per kg of body weight. Results from the survey asking about knowledge of proper HD diet revealed that 100% of malnourished patients claim that they exactly know the proper nutrition in contrast to 60% patients without malnutrition (p=0.02).

**Conclusions:** Seemingly, malnourished patients ate more caloric meals than well-fed patients what may suggest possible absorption problems or higher caloric demand (more losses, stress, inflammation). All hemodialysis patients should receive continuous dietary education.

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[170]

### ESBL PRODUCING BACTERIA INFECTION MORE COMMON IN PATIENTS WITH DIGESTIVE SYSTEM DISEASES: A SINGLE CENTER STUDY

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**Trustee of the paper:** Aleksejs Derovs

**Introduction:** Infections caused by extended-spectrum beta-lactamase (ESBL) producing bacteria are associated with higher rates of morbidity and mortality, longer hospital stay and increased treatment expenses. Because of the high antimicrobial resistance, it is difficult to choose the suitable antibacterial agent for the infection treatment.

**Aim of the study:** To determine digestive system disease association with ESBL genes and hospitalization course in patients with ESBL producing bacteria infections.

**Material and methods:** Infection cases with ESBL producing bacteria collected in Riga East Clinical University Hospital during 8 month period were analyzed using an originally created study protocol. Bacterial analysis was performed according to EUCAST guidelines. PCR method was used to detect CTX-M, TEM, SHV gene presence. Diseases grouped according to IDC 10. Data were analyzed using SPSS 20.0 software package, using non-parametric Mann–Whitney U test and Chi-square tests.

**Results:** 136 positive ESBL infection isolates were obtained. 132 (97.06%) ESBL isolates were positive for CTX-M gene, 97 (71.32%) – positive for TEM gene, 87 (63.97%) – positive for SHV gene. ESBL producing bacteria sepsis cases ( $p=0.018$ ) and shock reports ( $p=0.021$ ) more often were found in patients who suffered from digestive system diseases, comparing to patients who suffered from other system diseases. Study also shows that ICU admissions due to ESBL producing microorganism infection more often were observed in patients with digestive system diseases ( $r=0.34$ ;  $p=0.002$ ). Positive TEM gene in ESBL producing bacteria isolates more often was observed in patients with digestive tract diseases, comparing to other disease groups ( $p=0.018$ ). TEM gene presence was more often associated also with endocrine, nutritional and metabolic diseases ( $p=0.006$ ), including diabetes mellitus ( $p=0.005$ ). TEM gene presence was also associated with increased mortality – 89.29% of all patients who died had positive TEM gene in their bacteria isolates, comparing to other gene expression ( $p=0.018$ ).

**Conclusions:** ESBL producing bacteria infection cases in patients with digestive system diseases are associated with more frequent development of sepsis, shock and more frequent patient admission to the ICU. Authors suggest that digestive system diseases may act as a risk factor for worse hospitalization course. Digestive system diseases are related to TEM gene, which is associated with worse prognosis and increased mortality.

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[171]

### Retrograde access method in percutaneous transluminal angioplasty in lower limb ischemia

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**Introduction:** In the endovascular treatment of arteries (PTA) in the lower limbs ischemia a common problem is a difficulty to recanalise vessel in the direction of blood flow (antegrade). The main obstacle arise in the course of Peripheral Artery Occlusive Disease (PAOD). An alternative method is recanalization by the retrograde access in the pedal, calf or femoral arteries.

**Aim of the study:** Evaluation of usefulness, efficacy and complications of retrograde puncture method in PTA of lower limbs arteries in 1 month follow-up.

**Material and methods:** In 89 patients who underwent PTA with retrograde access due to difficulty of arteries, all procedure elements, used tools, effects and complications were examined according to the protocol of observation. Moreover, clinical status of the treated leg was evaluated basing on Rutherford scale as well as ABI and TBI before PTA, in the first day after procedure and 30 days.

**Results:** All Patients were in 3 to 6 in Rutherford scale, in which 81 (91%) in a critical stages. In 77 cases (86.5%) arteries were successfully recanalised by retrograde method. In the final angiography in 60 cases there was increased blood flow through the axial arteries, in 15 by collateral circulation and in 14 there was no change in the inflow. There were no cases of influx deterioration. Average values of ABI and TBI increased significantly in the first and 30th day and after PTA. 8 complications occurred (8.9%) such as 1 dissection, 3 occlusions, 3

perforations and 1 arteriovenous fistula, which were supplied during the procedure. In one case stentgraft was implanted, 2 additional PTA was performed and 5 times pressure dressing was applied. Within 30 days of follow-up 7 patients required reintervention and 4 patients had amputated limbs but there was no causation with the technique of retrograde puncture. The clinical condition (Rutherford scale) of the limbs after 30 days in 62 cases (69.6%) has improved, in 21 (23.5%) unchanged and in 6 (6.7%) deteriorated.

**Conclusions:** The technique of retrograde puncture in lower limb arteries is an effective, alternative method of revascularization which allows a significant improvement of hemodynamic parameters like blood flow rate and limb clinical condition. Few complications which were observed during the procedure did not affect the final result and were suppleable perioperatively.

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[172]

### **Do the clinical courses of alcohol-related and non-alcoholic liver cirrhosis differ?**

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**Introduction:** Liver cirrhosis is a process of liver tissue fibrosis and creation of regenerative nodules. It leads to the decrease of metabolically active liver parenchyma and appearance of specific symptoms. The cirrhosis is most commonly caused by alcohol abuse and viral hepatitis. Other causes are: autoimmune, toxic, metabolic diseases, primary and secondary biliary insufficiency, idiopathic and others.

**Aim of the study:** The aim of the study was to compare the frequency of different complications in patients with alcoholic and non-alcoholic types of liver cirrhosis.

**Material and methods:** The study group consisted of 120 people, 51 female and 69 male, average age of 56,35 years (standard deviation 11,1) who were patients of Department of Gastroenterology, Hepatology and Infectious Diseases, University Hospital in Cracow.

The first group was formed of 59 (15 female and 44 male) patients with alcoholic cirrhosis, whereas the second included 61 (36 female and 25 male) patients with non-alcoholic cirrhosis (primary and secondary biliary, toxic and idiopathic).

All the data was collected from hospital database and processed with Statistica 12 software.

The following complications were taken into consideration: gastrointestinal bleeding, jaundice, haemorrhagic diathesis, renal, respiratory and cardiovascular insufficiency, erosions and inflammation of the oesophagus, oesophageal varices, encephalopathy, secondary thrombocytopenia, anaemia, diabetes, splenomegaly, ascites, and liver steatosis. Also the level of total bilirubin was compared. The parameters were related to the patient's condition on admission.

**Results:** It was observed that frequency of anaemia ( $p=0,01747$ ) and encephalopathy ( $p=0,0059$ ) was significantly higher in patients with alcoholic liver cirrhosis than in other types. The median of total bilirubin level was different in assessed groups ( $p=0,0002$ ); significantly higher in alcoholic cirrhosis patients group.

**Conclusions:** Current research has shown association between type of liver cirrhosis and prevalence of anaemia, encephalopathy and level of total bilirubin. Other studied symptoms do not exhibit dependence on the type of cirrhosis.

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[173]

### **The incidence rate of surgical interventions in IBD patients during therapy with anti-TNF-alpha biologics.**

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**Trustee of the paper:** dr n.med. Maria Wiśniewska-Jarosińska, dr hab.n.med. Krsytyna Stec-Michalska

**Introduction:** Anti-tumour necrosis factor alpha (anti-TNF-alpha) therapy effectively reduces the risk of surgical procedures in Crohn's disease (CD) patients. Unfortunately, the unsatisfactory response to anti-TNF- $\alpha$  agents still constitutes a great percentage of complications among individuals with CD. Simultaneously, possible predictive factors for severe flares during the biological treatment are still uncertain.

**Aim of the study:** The aim of this study was to investigate the incidence rate of intestinal resection during the biological treatment. Additionally, we searched for predicting factors for flares demanding a surgical intervention.

**Material and methods:** A total 76 patients qualified for anti-TNF- alpha treatment at the Department of Gastroenterology, Medical University of Lodz, between 2008 and 2014 were enrolled. The medical data was

retrospectively retrieved from hospital records consisting of patients' age, disease duration and laboratory results, before the first drug administration and after 14 weeks of biological therapy. The association between these parameters and loss of response (LOR) to biological therapy demanding a surgical intervention was evaluated.

**Results:** In our study the unsatisfactory response to the anti-TNF-alpha therapy was observed in 10/68 patients (14,7%), who underwent surgical intervention. Mean disease duration at initiation of biological therapy was statistically longer in operated patients ( $8,8y \pm 1,46y$  vs.  $4.93 \pm 1,16y$ ;  $p < 0,001$ ). Analysis of laboratory parameters revealed significantly higher values of CRP in the group that required surgical treatment measured after 14 weeks if compared to group with sustained response ( $20,28 \pm 10,6$  mg/l vs.  $9.72 \pm 4,57$  mg/l;  $p = 0,043$  respectively). Other analyzed laboratory parameters revealed no statistical relevance.

**Conclusions:** CRP values, as an expression of inflammation severity, and the disease duration itself may serve as predictive factors for LOR to biological therapy and possibly play crucial role in individual treatment modification.

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[174]

### **Bone turnovers markers and obesity: a new connection in metabolic disorders?**

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**Trustee of the paper:** Zbigniew Bartoszewicz PhD; Piotr Miśkiewicz MD, PhD; Agnieszka Kondracka PhD

**Introduction:** Osteocalcin, which is produced specifically by osteoblasts, is one of the most abundant non collagen proteins in bone matrix. Its measurement has been used as a marker of bone formation and bone turnover. Also, C-terminal telopeptide collagen crosslinks and N-terminal propeptide of type I collagen are respectively the formation and resorption markers recommended to use. Recent studies suggest that this three bone turnover markers may also be involved in the regulation of energy metabolism.

**Aim of the study:** This study aimed to validate the relationship between serum bone turnover markers and indices of obesity and lipid parameters.

**Material and methods:** . The analysis included 31 male patients ( $60.87 \pm 11.19$  years) admitted to the Departments of Internal Medicine: Diabetology and Endocrinology, Medical University of Warsaw. Data on subjects' weight, height, body mass index (BMI), waist and hip circumference were collected. Waist-hip ratio (WHR) was calculated as waist divided by hip measurement. Obesity was defined as BMI  $> 30$  kg/m<sup>2</sup>. The concentrations of serum: osteocalcin (OC), C-terminal telopeptide collagen crosslinks (CTX), N-terminal propeptide of type I collagen (tPINP) were measured by electrochemiluminescence method-(ECLIA) using the Roche diagnostics tests dedicated to Elecsys and Cobas automatic analyzers. Total cholesterol (TCh), high density lipoprotein (HDL), low density lipoprotein (LDL) fractions and triglycerides (TG) level was measured from blood samples by a standard methods.

**Results:** The prevalence of obesity in men was 55.1 %. There was a significant correlation between BMI and OC ( $r = -0.392$ ,  $p = 0.029$ ), CTX ( $r = -0.492$ ,  $p = 0.005$ ), tP1NP ( $r = -0.426$ ,  $p = 0.017$ ). We found a significant association between weight and OC ( $r = -0.408$ ,  $p = 0.023$ ), CTX ( $r = -0.61$ ,  $p = 0.0003$ ), tP1NP ( $r = -0.621$ ,  $p = 0.0002$ ). We did not find any correlation between WHR ratio and OC, CTX or tP1NP and no significant association between osteocalcin and TCh, HDL, LDL or TG levels.

**Conclusions:** In conclusion, this current study showed that bone turnover markers are significantly associated with obesity in men. This information highlighted that bone is not merely an endocrine target, but it may also exert control on metabolic phenotypes such as obesity.

[175]

### ASSOCIATION BETWEEN CARDIOVASCULAR MORTALITY IN PATIENTS WITH RHEUMATOID ARTHRITIS AND GENOTYPES FOR BCL1 POLYMORPHISM IN GLUCOCORTICOID RECEPTOR GENE

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#### **Introduction:**

**Aim of the study:** The objective is to study an association between Bcl1 polymorphism in the glucocorticoid receptor gene (GCR) and SCORE-calculated cardiovascular risks in patients with rheumatoid arthritis (RA).

**Material and methods:** 161 patients with RA were examined. The control group consisted of 96 apparently healthy adult individuals, which had no RA in their or their relatives history. RA was diagnosed according to ACR/EULAR Classification Criteria (2010). Cardiovascular risks in RA patients were determined by SCORE scale (Systemic Coronary Risk Evaluation) (Conroy R.M. et al., 2003). In order to obtain more accurate calculations, the scale was adapted to RA patients according to the EULAR recommendations (2010). Official online-calculator was used for the calculations. Bcl1 polymorphism in exon 2 was studied by means of polymerase chain reaction with subsequent analysis of restriction fragment length polymorphism by I. Fleury et al. Statistical analysis was performed using SPSS–17 program.

**Results:** We have found out that 52.7% of the RA patients had no mortal cardiovascular risks as determined by the SCORE; 23.3% had low risks; 5.3% presented with significant risks and 18.7% – with high risks of cardiovascular mortality. Analysis of genotypes distribution for Bcl1 polymorphism of GR gene in dependence on cardiovascular mortality, as determined by the scale, revealed the following results: among the patients with no cardiovascular risks there were 30 (37.9%) subjects homozygous for the C allele, 40 (50.6%) heterozygous (CG) patients and 9 (11.5%) individuals homozygous for the G allele; among the patients with low risks there were 12 (29.3%), 21 (51.2%) and 8 (19.5%) patients, respectively; among the patients with significant risks there were 1 (4.8%), 12 (57.1%) and 8 (38.1%), respectively; among those with high risks – 2 (10%), 6 (30%) and 12 (60%), respectively ( $\chi^2=27.58$ ;  $P=0.01$ ). Thus, G-allele homozygotes had almost 6 times higher risk of cardiovascular death as compared to C-allele homozygotes and 2 times higher as compared to heterozygotes.

**Conclusions:** Significant association was found between G/G genotype for BCL1 polymorphism in the glucocorticoid receptor gene and the total risks of SCORE-calculated cardiovascular mortality in patients with RA

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[176]

### TRIMETHYLAMINE-N-OXIDE LEVEL OF PATIENTS WITH METABOLIC SYNDROME

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**Introduction:** Elevated trimethylamine–N-oxide (TMAO) level in blood is related to increased cardiovascular risk and atherosclerosis. As it has been reported previously, diabetes mellitus, age and body mass index are related to elevated TMAO level.

**Aim of the study:** The aim of the study was to investigate relationship between metabolic syndrome and TMAO level in patients with increased cardiovascular risk.

**Material and methods:** The study included patients with increased cardiovascular risk who underwent coronary angiography procedure in the Latvian Centre of Cardiology. We collected data about cardiovascular risk factors, detected fasting blood glucose, TMAO and carnitine level of the patients. During the day of the visit and one day before patients were asked to exclude the fish products and products containing omega-3 fatty acids of their diet. Metabolic syndrome diagnosis was defined according to International Diabetes Federation criteria. The value of TMAO was logarithmically transformed in order to achieve normal distribution during statistical analysis.

**Results:** In total 68 patient cases were studied. Metabolic syndrome was detected in 49 cases and excluded in 14 cases. For five patients it was not possible to exclude the diagnosis of metabolic syndrome due to hypolipidemic therapy and missing initial lipid values before the treatment.

Patients with metabolic syndrome showed higher median TMAO value than patients without metabolic syndrome, respectively 2.34  $\mu\text{mol/l}$  [interquartile range 1.77-3.21] and 1.79 [1.24-3.17]  $\mu\text{mol/l}$  ( $p=0.139$ ). Fasting blood glucose showed no correlation with TMAO level ( $r=0.653$ ;  $p=0.232$ ).

**Conclusions:** Preliminary results show possible relation between metabolic syndrome and elevated TMAO level, independently of blood glucose level. It is necessary to increase the group of patients to provide sufficient statistical power of the study.

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[177]

### **SUCCESS AND FAILURE PREDICTORS OF ANORECTAL BIOFEEDBACK**

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**Introduction:** Anorectal biofeedback is a method used for the reeducation of the defecation. It is addressed to cases of terminal constipation or fecal incontinence not managed by other therapy. However, this method is controversial and the adherence is low.

**Aim of the study:** Our aim was to find a correlation between factors associated with success and failure in anorectal biofeedback.

**Material and methods:** A cohort study of patients submitted to anorectal biofeedback for both terminal constipation and fecal incontinence was undertaken. All patients have been previously evaluated by usual clinical and lab examination, also by colonoscopy and anorectal anometry. In constipated patients, the colonic transit time was measured by radioopaque markers and only terminal constipation cases were retained for the study. The patients were submitted to anorectal biofeedback sessions twice a week for up to 3 months, followed by monthly sessions for up to 6 months, by the same personnel in the same environment. Based on the form, consistency, frequency and individual satisfaction, success or failure indicators were evaluated. Patients were evaluated at the baseline, at the end of the biofeedback and 6 months after.

**Results:** Few patients adhered to the therapy and completed the protocol: 7 patients with fecal incontinence (2 M, 5 F, 46-71 years) and 12 patients with terminal constipation (6 M, 6F, 56-78 years). These 19 patients were selected from a group of 67 patients to whom biofeedback has been proposed. The results were: in terminal constipation 5/12 (42%) patients presented positive results; in fecal incontinence 5/7 (71%) patients presented positive results. Refuse reasons in the other 48 patients were: anal discomfort caused by the catheter manipulation during the biofeedback session ( $n=15$ ); distance from the home ( $n=30$ ); no explanation ( $n=3$ ). In terminal constipation, the average numbers of stool per week increased from 1/week to 3/week in responders, and results were maintained at 6 months. In incontinence, number of soiling episodes was reduced in average from 5/day to 2/day. Among the success factors were: higher level of education, degree of motivation, nonorganic condition; failure factors were: lack of motivation, organic etiology.

**Conclusions:** Anorectal biofeedback is still an uncommonly used therapy for defecation disorders. Adherence to therapy is poor. Patients adherent to therapy improve the defecation, better in incontinence than in constipation. Nonorganic conditions respond better than organic diseases.

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[178]

### **Anti-tumor necrosis factor alpha biosimilars– a new treatment option in inflammatory bowel diseases.**

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**Trustee of the paper:** Maria Wiśniewska- Jarosińska, Krystyna Stec- Michalska

**Introduction:** Infliximab (IFX), an anti-tumor necrosis factor (TNF) antibody is an effective but costly drug for Crohn's disease (CD). Reimbursement of anti-TNF treatment in Poland is restricted to severe inflammatory or fistulating disease when conventional treatment fails. Biosimilars have decreased costs. However, there are limited data on their efficacy in CD.

**Aim of the study:** The aim of the study was to investigate the association between the type of treatment and its effectiveness. A thorough analysis of both groups was performed including: their age, duration of the disease, previous use of biologics, indications to this type of therapy and C-reactive protein (CRP) levels at 0,2,6 and 14 week.

**Material and methods:** To evaluate the effectiveness of the originator and the biosimilars, consecutive adult CD patients starting anti-TNFs in 14 centers were included. Demographic characteristics, indications to treatment, concomitant drugs and 0, 2, 6 and 14 weeks CDAI and CRP levels were compared.

**Results:** 74 CD patients were analyzed. 58(78%) received the originator and 16(22%) the biosimilars. Luminal CD was indication to treatment in 55(74%) patients and fistulating in 19(26%). The patients receiving the originator were older ( $34.98\pm 11.26$  vs.  $28.87\pm 9.53$ ;  $p=0.037$ ). The percentage of responders at week 14 (CDAI decrease  $>100$ ) was 62.1% (36/58) in the originator group vs. 81.3%(13/16) in the biosimilars group ( $p=0.151$ ) and the percentage of patients in clinical remission (CDAI $<150$ ) was 43.1%(25/58) and 43.8% (7/16), respectively ( $p=0.963$ ). Mean CDAs at weeks 0, 2, 6 and 14 were  $341.9\pm 96.4$ ,  $212.9\pm 87.7$ ,  $178.8\pm 93.8$ , and  $142.8\pm 107.7$ , respectively in the originator group and  $334.2\pm 65.3$ ,  $186.1\pm 65.2$ ,  $73.3\pm 14.8$ , and  $151.8\pm 96.4$  in the biosimilars group. The only significant difference between the two, in favor of the biosimilars, was observed at week 2 ( $p=0.011$ ).

**Conclusions:** In a Polish cohort of adult CD patients receiving originator or the biosimilars, the response and remission rates in the two groups were similar during the first 14 weeks of treatment. However, patients receiving biosimilars presented sooner response to the therapy. This fact might be associated with different molecular structure of the medication and their distinct immunogenicity.

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# Laryngology

**Jury:**

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Instytut Fizjologii i Patologii Słuchu



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**Date:**

Friday, May 13th, 2016

**Location:**

Room 140, Didactics Center

**Regular:**

Zuzanna Gorski

Maksims Tjurins

Joanna Rajchel

Aleksandra Dąbkowska

Miłosz Folta

Ewa Tomanek

**Short:**

Gellert Attila Gyurka

Wojciech Pinkas

Karolina Bieńkowska

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[179]

### **A Review of Endoscopic Sinus Surgery in the Management of Chronic Rhinosinusitis and Nasal Polyposis in Pediatric Cystic Fibrosis Patients**

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**Introduction:** Cystic fibrosis (CF) is an autosomal recessive disease affecting the functioning of the cystic fibrosis transport regulator (CFTR) gene located on chromosome 7, responsible for chloride ion transport. The result is therefore dysfunction of the epithelial cells lining the airways and exocrine glands. Pediatric cystic fibrosis patients commonly present with several additional diagnoses, frequently including chronic rhinosinusitis (CRS) and nasal polyposis (NP).

**Aim of the study:** The aim of this study was to focus on patients admitted due to coexisting CRS and NP, who were in need of consultation or treatment from a team of otolaryngologists. The study focuses on the demographics, presenting symptoms and methods of management of children with CF with coexisting CRS and NP, and how these data correlate with previous literature.

**Material and methods:** A retrospective study of 26 pediatric patients previously diagnosed with CF who were admitted to the Department of Otolaryngology at Marszałkowska Children's Hospital between 2010 and 2015 was carried out. Patient histories were carefully reviewed. Patient age, gender, presenting symptoms and coexisting diagnoses to CF were recorded. The number and type of procedures carried out on each patient were documented, including disqualifications from procedures and the basis behind them. There was further assessment of the exact localization of polyps in all NP positive patients.

**Results:** The study consisted of a total of 26 patients (15 males and 11 females), with a mean age of 9 years. 100% and 88.5% of patients presented with CRS and NP, respectively. 23 children underwent a total of 35 sinus surgeries due to CRS and NP. 6 patients required one or more revision surgeries, with an overall revision rate of 54.1%. Adenoidectomy (AT) was performed in 10 patients. 5 children were disqualified from surgery, due to varying reasons. The most common localizations of NP were the maxillary sinus, followed by the ethmoid sinus, sphenoid sinus, frontal sinus, and nasal cavity.

**Conclusions:** Due to a wide range of clinical findings in many organs and high variability in individual cases, there is currently no standardized treatment regimen for pediatric CF patients. Early intervention and a multidisciplinary approach are highly recommended, due to a positive correlation between an increase in patient age and the number of admissions and reoperations. Endoscopic sinus surgery should be highly considered in CF patients with refractory, chronic or severe acute forms of CRS and NP.

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[180]

### **Tracheal Stenosis Treatment Methods and Efficiency in Latvia**

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**Trustee of the paper:** Maksims Tjurins

**Introduction:** Stenosis of trachea represents a serious problem not only in Latvia, but also worldwide. There is no clear understanding of the pathological processes leading to stenosis, so there is no consensus about the optimal treatment strategy. Up to this day no data regarding tracheal stenosis and outcomes of its management have been collected in Latvia.

**Aim of the study:** To evaluate the tracheal stenosis treatment methods and efficiency in Latvia.

**Material and methods:** Retrospective research. The database was created from the patients' medical records that were collected in four hospitals, namely, Riga Eastern Clinical University Hospital Clinics: Latvian Oncology Centre, "Gaiļezers", Tuberculosis and Lung Disease Center and P.Stradins Clinical Hospital. The total number of participants was 61 unique cases and 206 episodes during the 2010th – 2014th years. Data were analyzed using statistical software Statistica-7.

**Results:** 79% of cases of benign tracheal stenosis are caused by intubation and tracheostomy. 83% of cases of malignant tracheal stenosis are caused by primary tumors (17% - metastasis). Statistically significant evidence indicates that malignant causes of tracheal stenosis are associated with a greater degree of narrowing than are benign causes ( $p=0,0057$ ). For tracheal stenosis treatment, most commonly used stent implantation 53% (metal stent – 33%; silicone stent – 20%) No statistically significant difference between the complication rates of

different therapeutic methods used in management of benign tracheal stenosis was found. In malignant tracheal stenosis, the most effective treatment modality is surgical treatment because of relatively later complication development compared to other approaches ( $p < 0,05$ ).

**Conclusions:** It was found that in the Latvian population benign tracheal stenosis is being diagnosed more frequently than malignant stenosis. The most common causes of benign tracheal stenosis are intubation and tracheostomy. The majority of cases of malignant tracheal stenosis are caused by primary tumors. The most widely employed treatment method of tracheal stenosis is implantation of tracheobronchial endoprotheses - metal and silicon ones. Preference is given to metal stents, since silicon stents frequently migrate. The analysis of metal and silicone stent-related complications found that both types of stents cause restenosis. Surgery is the most effective therapy for malignant tracheal stenosis

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[181]

### **Sudden Sensorineural Hearing Loss in children**

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**Introduction:** Sudden Sensorineural Hearing Loss (SSNHL) is defined as an abrupt decrease of more than 30 dB affecting at least three contiguous frequencies and occurring within less than 3 days. There is scanty literature considering SSNHL etiology and treatment outcomes among children.

**Aim of the study:** To present a preliminary data on pediatric SSNHL.

**Material and methods:** Medical history of 107 patients hospitalized between 2014 and 2015 due to their SSNHL suspicion in the Institute of Physiology and Pathology of Hearing underwent analysis. Patients aged below 18 years were included into the study. We provided data on age, gender, possible etiology and duration of SSNHL, side of the affected ear, audiometric evaluations, additional symptoms, hospitalization time, treatment type and outcome.

**Results:** Average hospitalization time was 7 days. In most cases (50%) there were no known causes of SSNHL which was predominantly unilateral, affecting in 14% right and 86% left ear. No child complained about dizziness or otalgia. Physical examination, tympanometry and MRI revealed no abnormalities in children. The majority of patients were treated with steroids (87%) and hyperbaric oxygen therapy (71%). According to pre- and post-treatment audiometric evaluations no patient recovered completely. In children's subjective opinion 57% of them experienced significant improvement of hearing.

**Conclusions:** SSNHL is a rare condition among children. Preliminary data suggests that steroid administration combined with hyperbaric oxygen therapy can lead to audiometric and subjective improvement in patients' hearing.

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[182]

### **Impact of hypoglycemia on hearing function in type 1 and type 2 diabetic subjects**

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**Introduction:** Diabetes mellitus (DM) type 1 and 2 is a chronic metabolic disorder characterized by hyperglycemia, low levels of insulin and decreased cellular sensitivity to insulin. An elevated blood glucose level may lead to development of numerous late complications, such as neuropathy, macroangiopathy, retinopathy, nephropathy as well as auditory organ dysfunction. Sensorineural hearing loss is significantly more prevalent among diabetic patients in comparison with a general population. Any analysis has been performed on patients with DM and frequent episodes of hypoglycemia.

**Aim of the study:** The purpose of the study is to analyze impact of hypoglycemia on hearing function in type 1 and type 2 diabetic subjects. The impact of DM duration and metabolic control on hearing function was also analyzed.

**Material and methods:** Our research focuses on comparison of hearing results between 2 groups. The first one consists of 20 patients with DM type 1 or 2 and proven episodes of hypoglycemia. The control group contains 20 controls with DM type 1 or 2. Diabetes status was determined by report of physician-diagnosing diabetes. Individuals were evaluated by disease duration, vital signs, laboratory tests, sex and age. All the patients underwent pure tone audiometry screening test on Sensory Platform.

**Results:** Comparison of the hearing results of control subjects and group with DM and frequent episodes of hypoglycemia shows correlation with higher risk of deeper hearing loss. A significant difference was found in the average hearing thresholds between two groups. Patients with episodes of hypoglycemia have worse hearing results especially at low and mid frequencies. A positive correlation was also found between frequency of hypoglycemic episodes and deeper hearing impairment.

**Conclusions:** The results suggest that presence of frequent episodes of hypoglycemia may lead to worse auditory results. Degree of hearing impairment correlates positively with frequency of those episodes. Our study shows risk group of hearing loss, which should undergo regular hearing evaluation.

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[183]

### **Labial gland biopsy results in patients with suspected Sjogren's syndrome-a case series study.**

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**Trustee of the paper:** dr Ewa Walczak

**Introduction:** Sjogren's syndrome is a chronic autoimmune disease leading to destruction of patient's salivary and lacrimal glands. One of the most important diagnostic criteria in this condition is a result of labial gland biopsy.

**Aim of the study:** The aim of our study was to analyze results of all labial gland biopsies from National Institute of Geriatrics, Rheumatology and Rehabilitation in 2010-2014 period, and compare group diagnosed with Sjogren's syndrome to rest of the patients.

**Material and methods:** We retrospectively reviewed 2108 lip biopsy reports from National Institute of Geriatrics, Rheumatology and Rehabilitation from years 2010-2014 and gathered data on age, sex and histological findings: Focus Score, prevalence of sialadenitis, interstitial fibrosis, lymphoid infiltration of blood vessels, atrophied or extended ducts, replacement of ducts with adipose tissue, squamous metaplasia and other rarer findings. The comparison was made between patients diagnosed and not diagnosed with Sjogren syndrome.

**Results:** There were 2108 patients overall, 1917 females and 187 males. Age ranged between 7 and 84 years. Sjogren's syndrome was diagnosed in 687 patients, 627 of them were females. The median age was 51 years in males and 54 years in females with Sjogren's syndrome, and exactly the same in the rest. Squamous metaplasia was found in 5 patients with Sjogren's Syndrome, and in 15 healthy. Fisher's exact test shows no correlation, between Sjogren's syndrome and squamous metaplasia ( $p=0.6329$ ). In the male group 10 (16,7%) patients were diagnosed with Focus Score greater than 2, in comparison to 100 (15,9%) in females. 53% men had Focus Score 1 and 28% Focus Score 2, where in women's group ratio was 58% to 26%. Duct atrophy was reported in overall 578 cases, 410 of which were healthy individuals and 168 diagnosed with Sjogren's Syndrome. There is a weak, but statistically significant ( $p=0,0372$ ) negative correlation between Sjogren's Syndrome and duct atrophy.

**Conclusions:**

- Sjogren's syndrome is much more common in females than in males (91,12% to 8,88%)
- Both in female and male group most patients diagnosed with Sjogren's syndrome were in 50-69 age range
- There is no correlation between squamous metaplasia and Sjogren's Syndrome in this group of patients
- Only in about 30% of biopsies taken from patients with suspected Sjogren's Syndrome the diagnosis was confirmed
- Atrophy of ducts and replacement with adipose tissue is negatively correlated with Sjogren's Syndrome, but is positively correlated with patients age.

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[184]

#### **Audiometric results after stapedotomy with platinum prosthesis.**

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**Trustee of the paper:** Ass. Prof. Piotr H. Skarzynski MD PhD MSc

**Introduction:** Otosclerosis is middle ear disease which occurred with conductive or mixed hearing loss often with tinnitus. Crucial issue is stapes fixation.

**Aim of the study:** Purpose of our study was to assess hearing results and complications after stapedotomy when platinum wire prosthesis was used.

**Material and methods:** From over 16 000 stapes surgeries, performed by prof. Skarzynski team, operations performed in 2011 year at World Hearing Center of Institute of Physiology and Pathology of Hearing in Warsaw Material were analysed. Our group consisted of patients (58 women and 22 men, mean age 45 (range 9-76. Patients were analyzed retrospectively. Medical histories, surgery protocols and hearing examination outcomes at frequencies: 0,25, 0,5, 1,2,4 kHz were particularly reviewed.

**Results:** All our subjects presented progressive hearing loss, over 70% of them tinnitus and about 10% vertigo. After surgery the mean bone and air conduction decreased, and air bone gap also decreased. For frequencies range 0,25-2 kHz data were statistically significant ( $p < 0,05$ ). Mean gap reduction was from 21,6dB for 0,5kHz to 12,9dB for 2kHz.

**Conclusions:** Stapedotomy is good and effective otosclerosis treatment method. Complications are rare, and hearing effect is satisfactory, even some patients put away hearing aid. Growing social awareness about otosclerosis treatment is beneficial for patients.

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[185]

#### **Structural aspects and statistical data on the pathology of the tonsils**

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**Introduction:** The incidence of tonsillitis among young people is frequent, considering environmental and hereditary factors favoring it. The seasonal exacerbations of tonsillitis induce the necessity of an appropriate medication in order to remit the acute exacerbation. The recurrences lead, of course, to the practice of surgical tonsilectomy.

The practiced medical conduct is in conformity with the pathological form of tonsillitis. From this point of view, there are known as pultacee tonsillitis, phlegmonous tonsillitis, tonsillitis gangrenosum. Each of these forms of tonsillitis has features that compels a certain medical attitude in order to improve patient's symptoms in case of a flare and to eliminate inflammatory outbreak to ensure an attainable health standard of the individual.

**Aim of the study:** The present study aims the medical evaluation of 10 patients diagnosed with different forms of tonsillitis. The study seeks statistical issues related to the selected patients referring to age, sex, residence. These data will be displayed graphically.

The second objective of the study is to present the structural aspects of the postoperatively excised parts of the tonsils.

**Material and methods:** For this purpose the preparations were processed by classical histological technique and stained with Hematoxylin-Eosin staining and then observed with an optical microscope.

The pathological forms of tonsillitis were compared with the histologic appearance of the tonsils, using the same method of examination and a Nikon microscope with objectives x 10 and x 40.

**Results:** According to the statistics of the ten studied cases, 8 patients were female and two male. Of the 10 patients, 7 were from urban areas and only 3 from countryside.

All patients were aged under 18.

The microscopic slides show the palatine tonsils with inflammatory areas, with outbreaks of necrosis, with cryptic deposits and fibroconjunctive postinflammatory changes as well as postinflammatory scar modifications.

**Conclusions:** The statistical and the morphological data concerning this study provide an overview of the batch of the studied patients. From this point of view, we propose prospective extension of the present study on a larger group of patients for better statistical and morphological analysis of a group of population from a given region, not only a lot of patients selected from our emergency medical service data base.

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[186]

### **Hearing screening in school age children in Poland and Africa**

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**Trustee of the paper:** Ass. Prof. Piotr H. Skarzynski MD PhD MSc (Dr hab. n.med mgr zarz.)

**Introduction:** Hearing loss is one of the most common disabilities, which affects children in school age. The prevalence of hearing loss in children cases increases with an age and may involve different types of hearing problems that cannot be identified by the neonatal hearing screening. Hearing screening programs enable an early detection of different types of hearing disorders in chosen age group. Timely detection, together with appropriate intervention, is critical to speech, language and cognitive development in hearing-impaired children. Appropriate treatment has been shown to mitigate some of the deleterious effects of early hearing loss.

**Aim of the study:** Comparison of the results of hearing screening in cases of the school age children in Poland, Warmian-Masurian Voivodeship and two African countries: Senegal and Ivory Coast.

**Material and methods:** Hearing screening was performed in the group of 3692 school children in Poland, 191 in Senegal and 130 in Ivory Coast.

Pure tone audiometry was performed on Sensory Examination Platform® with audiometric headphones. The positive result of the screening test was defined as any hearing impairment greater than 25 dB HL in any ear, at any frequency from 500 to 8000 Hz.

**Results:** Poland, Warmian-Masurian Voivodeship - positive results of hearing screening tests occurred in 628 children from 3692 tested (17,1%).

Africa:

Senegal – positive results were found in 61 children from 191 tested (31.9%).

Ivory Coast- positive results were in 51 children from 130 tested (39,2%)

**Conclusions:** There are significant differences between regions in positive rates results. We can find nearly a ¼ more positive results in the African countries. Outcome suggest further researching in this region of the world. Thanks to the screening programs hearing impairment can be early diagnosed what is crucial to implement successful treatment.

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[187]

### **Olfactory before and after septoplasty and polypectomy.**

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**Introduction:** The sense of smell disorders are increasingly common clinical problem but mostly minimize in clinical assessment. Deviated nasal septum (DNS) and nasal polyps have influence on nasal air movement and might leads to decreased olfactory function affecting significantly reduce the quality of life.

**Aim of the study:** The aim of the study was to assess influence of rhinological surgery on olfactory function in patients with DNS and nasal polyps.

**Material and methods:** 35 patients aged 22 to 60 referred for rhinological surgery were examined using forced choice University of Pennsylvania Smell Identification Test (UPSIT) before and after septoplasty and polypectomy. Participants completed a questionnaire with information about name, gender, age, smoking habit, disease history and judgments about their own smell function and an odor familiarity survey was applied.

**Results:** The mean value for correctly identified odors was  $33.4 \pm 2.7$  before surgery and  $34.7 \pm 3.1$  10 days after surgery. The results were not statistically significant ( $p > 0.05$ ). We are expecting for the results from the next control. The worst identified odor was orange (<60%). There was no complications after surgery in our group. Patients are satisfied with the improvement of nasal air movement.

**Conclusions:** We expect further improvement of the sense of smell after full recovery after rhinological surgery. Results are expected in few weeks.

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[188]

#### **Influence of endoscopic sinus surgery on olfaction.**

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**Trustee of the paper:** Ass.Prof. Piotr H. Skarzynski MD PhD MSc

**Introduction:** Olfactory loss is a cardinal symptom of chronic rhinosinusitis (CRS) and affects 40% to 80% of patients. Endoscopic sinus surgery (ESS) is the treatment of choice for patients with CRS.

**Aim of the study:** The aim of this study was to assess the influence of sinus surgery on olfaction.

**Material and methods:** 40 patients aged 24 to 60 referred for sinus surgery were examined using forced choice The Brief Smell Identification Test (BSIT) before and after ESS. Participants completed a questionnaire with information about name, gender, age, smoking habit, disease history and judgments about their own smell function and an odor familiarity survey was applied.

**Results:** The mean value for correctly identified odors was  $7.4 \pm 1.9$  before surgery and  $8.2 \pm 2.1$  10 days after surgery. The results were statistically insignificant ( $p > 0.05$ ). We are expecting for the results from the next control. The worst identified odor was orange (<65%).

**Conclusions:** We expect further improvement of the sense of smell after full recovery after endoscopic sinus surgery.

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[189]

#### **Taste disorders in patients after stapedotomy surgery.**

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**Introduction:** Otosclerosis is disease caused by stapes fixation, occurring with conductive or mixed hearing loss and often tinnitus. Chorda tympani function can be negatively affected by middle ear surgery. Stapes surgery is procedure with bigger risk of worsening taste than in other types of ear operations.

**Aim of the study:** Purpose of our study was to assess taste disorders in patients after stapedotomy.

**Material and methods:** Material consisted of 20 patients (13 women and 7 men, mean age 41), who undergone stapes surgery from in 2015 at World Hearing Center of Institute of Physiology and Pathology of Hearing in Warsaw. Patients were analyzed with Burghart Mess Technik Taste Test pre and post operatively. Also hearing results, medical histories and surgery protocols were reviewed.

**Results:** One day after surgery results was worst, especially in sour and salty tastes. One week after surgery, after path removal results were similar, at last examination, 8 weeks after surgery only one patients complain on sour and salty taste disorder. All patients had hearing improvement (for frequencies 1,2,4kHz data were statistically significant ( $p < 0,05$ )). After surgery there were no complications,

**Conclusions:** Patients after stapedotomy has taste disorders most often in sour and salty taste, in most cases after 8 weeks taste recovery is satisfactory. Stapedotomy is effective otosclerosis treatment method. We develop our investigation on bigger group of patients.

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# Law & Medicine

## **Jury:**

dr hab. n. prawn. Leszek Bosek  
dr.hab n. o zdr. Joanna Gotlib  
dr hab. n. prawn. Beata Maria Janiszewska  
dr hab. n. prawn. Przemysław Artur Konieczniak  
prof. dr hab. Tomasz Pasierski

## **Coordinators:**

Aleksandra Kukla  
Rafał Sawicki

**Date:**

Saturday, May 14th, 2016

**Location:**

Room 119, Library - CBI

**Regular:**

Krzysztof Kurek

Dawid Kaźmierski

Krzysztof Olszak

Agnieszka Hołodrowicz

Zuzanna Stemplewska

Barbara Krzyżewska

Aleksandra Wąsowska

Anna Mleko

Nicole Mazur

[190]

**Crimes against sexual freedom in 2012-2015.**

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**Trustee of the paper:** Anna Smędra MD, PhD

**Introduction:** Crimes against sexual freedom in Poland subject to prosecution are listed in art. 197-200 of the Criminal Code. According to data provided by the Police Headquarters (current data as of 09.02.2016), in 2012 1,786 investigations relating to art. 197 of the Penal Code (rape) were initiated, finally crimes were found in 1,432 of the cases (83.3% detection) in 2013 as a result of 1,885 investigations initiated, 1,362 crimes were detected (84.1% detection), and in 2014, 2,444 and 1,254 respectively (78.2% detection).

**Aim of the study:** Rating forensic medical opinions issued by the doctors of the Medical University of Lodz Department of Forensic Medicine in terms of age, sex, knowledge of the perpetrator, place of the incident, injuries including those located in the genital area. Comparison of the results with the available publications.

**Material and methods:** A retrospective analysis of medico-legal opinions of the years 2012-2015, issued by the Medical University of Lodz Department of Forensic Medicine, concerning the cases where crimes against sexual freedom of the persons subjected to forensic medical examinations could have been suspected.

**Results:** We analyzed 2,796 medico-legal opinions issued at the Department of Forensic Medicine, Medical University of Lodz in 2012-2015. There were 42 cases in which committing crimes against sexual freedom was suspected. In 86% of cases they were reported by women, and in 14% by men. Most victims reported the crime later than 48 hours, but within 7 days after the event. In 17% of cases they were persons under 16 years of age.

**Conclusions:** Rape is a significant social problem, whose victims are mostly women. Both Polish government agencies and international institutions deal with the issue of crimes against sexual freedom. There are indications that a significant proportion of crimes against sexual freedom is not reported to law enforcement, therefore, the activities of State and non-governmental organizations, aimed at informing the public about their rights, should be emphasized.

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[191]

**Analysis of the structure of deaths caused by deliberate action of the perpetrators in the years 2007-2012 based on the assessment of autopsy reports from the Department of Forensic Medicine, Medical University of Lodz – final results.**

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**Trustee of the paper:** Anna Smędra, MD, Ph.D.

**Introduction:** The deaths caused by deliberate action of the perpetrator include those due to murders, fight injuries, fatal beatings and intentionally inflicted injuries with fatal outcome. A murder is an intentional crime involving deprivation of human life. In the case of a fight, or fatal beating, as well as intentionally inflicted injuries with fatal consequences, we do not deal with a murder because the fatal result is unintentional.

**Aim of the study:** The aim of the study was to analyze the structure of deaths due to deliberate action of the perpetrators on the basis of autopsy material of the Medical University of Lodz Department of Forensic Medicine from the years 2007-2012.

**Material and methods:** For the purposes of the study, all autopsy reports prepared in the Medical University of Lodz Department of Forensic Medicine in the years 2007-2012 were analyzed. The cases in which the results of autopsy clearly indicated deaths due to murders or fatal beatings were identified. The cases were characterized with respect to the age and gender of the victims, the type of injuries, the immediate cause and the place of death, sobriety status of the victims as well as the seasonal nature of the homicides.

**Results:** Among the analyzed autopsy reports, 205 deaths associated with deliberate action of the perpetrators, accounting for 5.7% of all autopsies performed during the analyzed period, were identified. Murders were less frequent than deaths as a result of fights and fatal beatings, as well as intentionally inflicted injuries with fatal outcome. Male victims were predominant (75.6%), and most of them belonged to the 50-60 age group (22.4%). The most frequent cause of death were craniocerebral injuries complicated with brain edema. Death most often occurred at the site of the incident (72.2%).

**Conclusions:** In all the analyzed years, deaths associated with deliberate action of the perpetrators most often occurred as a result of fights, fatal beatings and intentionally inflicted injuries with fatal outcome. During the analyzed period, an increase in the percentage of deaths due to bleeding from the wound inflicted with a sharp or pointed tool and a decrease in the number of deaths associated with the use of firearms was observed.

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[192]

### **The principle mater semper certa est in The Family and Guardianship Code**

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**Trustee of the paper:** prof. dr hab. Michał Romanowski

**Introduction:** As a result of the development of science the Roman-law principle "mater semper certa est" has already become obsolete, and paternity is easier to determine than maternity (sic), because the genetic father is always going to be a biological father. To order the elucidation, it should be specified that a biological mother is the one who gives birth to a child, a sociological mother is the one who adopts and raises and a genetic mother is an egg donor.

**Aim of the study:** To present problems (and possible solutions) that raise from lack of detailed regulation of the issue which de lege lata consists of only one provision (article 61(9) of the Family and Guardianship Code).

**Material and methods:** Laws, doctrine, judicial decisions; formal-dogmatic and legal-comparative method.

**Results:** The law is meant to protect the weaker participants in the legal relationship, in this case a child; Polish regulation of the issue is highly conservative which results in absolute invalidity of surrogacy agreement.

**Conclusions:** There are serious doubts if the rightest legislative solution of the sensitive title issue is the article 61(9) of the The Family and Guardianship Code, which categorically states that the mother of a child is the woman who gave birth to them.

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[193]

### **Analysis of fatal acute ethanol intoxications in the light of recent years.**

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**Trustee of the paper:** Anna Smędra M.D., Ph.D.

**Introduction:** Alcoholism, as a civilization disease, is a serious social problem. However, ethyl alcohol has not yet been regarded as a poison in public awareness. Acute ethanol intoxications are not infrequent and are still perceived as a current problem of forensic medicine.

**Aim of the study:** The aim of the study was to conduct an analysis of acute ethanol intoxications based on post-mortem examinations performed in the Department Forensic Medicine in Lodz in the consecutive years from 2009 to 2013.

**Material and methods:** The analysis was conducted on the basis of 3121 post-mortem examinations performed in the Department of Forensic Medicine in Lodz. The study involved cases with ethanol concentration in blood, urine or vitreous body over 3.0‰ excluding cases with other accompanying diseases or injuries that could have been an alternative death reason. Cases with advanced body decomposition changes at the time of autopsy were also excluded from the study.

**Results:** The analysis was based on 237 cases of fatal acute ethanol intoxications, which represented 7.6% of all autopsies performed in The Department of Forensic Medicine in the years 2009-2013. The studied group consisted predominantly of men, who accounted for 81% of the cases. The youngest person covered by the study was 20 years old and the oldest was 68 years old. Moreover, the analysis proved that the number of deaths increases with age and more than 50% of the deceased were over 45 years of age. The research included the calculation of Body Mass Index (BMI) of the deceased, which is presumed to reflect indirectly the nutrition level. The lowest BMI amounted to 14.7 (very severe underweight) and the highest was 39.7 (class II obesity). The highest ethyl alcohol concentration measured in blood amounted to 8.45‰, in urine 9.1‰ and in the vitreous body 9.93‰. Having taken into consideration the phases of alcohol metabolism in the human body, the majority of the deceased had died during the elimination phase.

**Conclusions:** The analysis demonstrates the importance of monitoring patients with symptoms of acute alcohol intoxication and high blood alcohol concentration, regardless of their age, nutrition level and overall health condition. Furthermore, patients in alcohol elimination phase should be treated with special attention and care. Acute alcohol intoxication concerns usually men over 45 years of age with normal level of nutrition. Moreover, the highest alcohol concentration in blood, urine and vitreous body was measured in this group as well.

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[194]

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**Introduction:** Continuously increasing rates of families wanting to refuse or delay the administration of mandatory vaccines to their children has created a legal dilemma as to the limits of individual autonomy and informed consent as a prerequisite to performing a medical procedure in relation to infant vaccines.

**Aim of the study:** The analysis of current statutory and administrative Polish law in order to establish to what extent the right of informed consent applies in cases of infant vaccines.

**Material and methods:** The results from available databases (PubMed, Administrative Courts Database) were analysed, including the following keywords or their combination: vaccine refusal, informed consent.

**Results:** The authority of the State to introduce mandatory immunization stems from the Constitution which states that "Public authorities shall combat epidemic illnesses" (art. 68 para 4). The Act on Preventing and Combating Human Infections and Infectious Diseases of 5 December 2008 art. 17 para 1 imposes a duty to comply with mandatory immunization programmes listed in subsequent Directives of the Ministry of Health. Although it fails to identify the exact type of vaccine to be administered, the decision of Voivodship Administrative Court in Białystok of 16 April 2013 confirmed that „all types of vaccines registered and available in Poland may be used". Thus, it is not possible to object to immunization because of certain vaccines' link to the cells of aborted fetuses or preservatives. Exemptions apply only in cases of contraindications identified by the physician. The law provides administrative coercive measures e.g. a fine, in order to persuade the parent to consent to the statutory duty to vaccinate. Persistent refusal constitutes an offence as provided by the Violations Code, and a parent may be liable to a fine of up to 1500 PLN or reprimand (art. 115 para 2). Furthermore, the refusal to undergo mandatory vaccination can be considered acting against best interest of a child, resulting in loss of parental authority, assignment of a probation officer or a Court order obliging the parents to vaccinate the child, as provided by art 109 of the Family Code. The 2008 Act states that it is permissible to override individual autonomy only in order to perform a procedure on a person suffering from a particularly dangerous and highly contagious disease constituting a direct threat to the health or life of others (art 36 para 1).

**Conclusions:** A physician must obtain parent's informed consent before administering a mandatory vaccine.

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[195]

#### Legal aspects of separation of conjoined twins - Jodie and Mary case

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**Case:** The conjoined twins, Jodie and Mary, were born on 8th August 2000. They were ischiopagus (i.e. joined at the ischium) tetrapus (i.e. having four lower limbs) conjoined twins. The bodies were fused from the umbilicus to the sacrum. Each perineum was rotated through ninety degrees and points laterally. There were more anatomical facts but for The UK Court of Appeal the absolutely crucial anatomical fact is that „Jodie's aorta feeds into Mary's aorta and the arterial circulation runs from Jodie to Mary. The venous return passes from Mary to Jodie through a united inferior vena cava and other venous channels in the united soft tissues." Jodie, the healthier of the two had an anatomically normal brain, heart, lungs, and liver. She shared a common bladder and a common aorta with Mary. Mary was severely abnormal in three aspects: brain, heart, and lungs. She had a very poor "primitive" brain. Her heart was vastly enlarged, very dilated, and poorly functioning. There was a virtual absence of functional lung tissue. Mary was not capable of independent survival. She lived on borrowed time, all of which was borrowed from Jodie.

There were three options:

1. Permanent union until the certain death of both twins probably within 3–6 months or at best in a few years.
2. Elective separation.
3. Urgent (emergency) separation.

According to the medical facts Jodie had had more chances for normal life. The opinion of the Court of Appeal was a long, nuanced and complex analysis of the application of English law to this case. On 22nd September 2000 a UK Appeal Court ruled on that 7-week-old conjoined twins, in which one healthy twin is keeping both twins alive, must be separated, even though the weaker twin will die. The judges have left the verdict open so that the parents can appeal the verdict in the House of Lords.

**Conclusions:** The case of Jodie and Mary was so hard to make a judgement because there was no clear, directly legal regulations. Law is secondary to medicine and that is obvious. Because of that we always have to analyse the whole legal system.

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[196]

### **Medical malpractice and the Alternative Dispute Resolution methods**

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**Trustee of the paper:** Maria Boratyńska

**Introduction:** Law and Medicine are crossing each other's paths everytime when medical malpractice case occurs. The point of bringing these cases before civil courts is to establish the doctor's (or hospital's) liability for medical injury and patient's right for compensation. Undoubtedly, the medical malpractice cases has become very frequent in judicial practice of recent years.

**Aim of the study:** The purpose of this paper is to give more attention to the alternative (extrajudicial) methods of disputes resolution that have recently started to gain popularity in medical arena. This paper is also to verify to what extent both parties of such a dispute can benefit from them and consider them a good alternative to standard civil litigation.

**Material and methods:** The paper includes a comparative analysis and an overview of extrajudicial dispute resolution methods in the medical cases as well as their implementation into Polish legal and medical reality - especially in the light of the latest amendment of Polish Code of civil procedure promoting alternative dispute resolution system in civil litigation, such as arbitration or mediation; and the introduction of the system of District Committees adjudicating on medical events.

**Results:** The development of alternative dispute resolution system is a common tendency in many European and American jurisdictions - used in medical malpractice cases as well. Its final shape is the result of mutual interaction of both fields (Law and Medicine), i.e. the specific character of medical malpractice cases as well as the nature and possibilities of legal instruments destined to resolve them.

As extrajudicial methods of medical cases resolution are based mainly on conciliation procedures (promote the settlement agreements) and mediation, they are less restrictive than civil litigation and for that reason respond to the interest and needs of both parties of medical dispute to a greater extent.

**Conclusions:** The raise of popularity of alternative dispute resolution system, observed in recent years, should be considered as the response to the flaws of the classical civil lawsuits and its partial unsuitability for medical malpractice cases. Although unable to replace a standard civil litigation, should play the role of the subsidiary system designed to create the efficient system of patients' compensation for medical malpractice.

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[197]

### **Supplementary Protection Certificates for medicinal products - how they work in Poland and could they work better?**

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**Trustee of the paper:**

**Introduction:** Supplementary protection certificates (SPCs) are a very unique form of intellectual property in European legislation. They provide additional monopoly

to patent holders which dedicate a lot of time and money waiting for market authorisation for their expensive innovative pharmaceutical product. Moreover, it is important to remember that European harmonisation law is very useful for all pharmaceutical industry entities from Europe. The simplicity and clarity of the rules in such a huge and complicated market is important for companies to cooperate and for new inventions.

**Aim of the study:** In my presentation I will show that despite European legislation being very specified and containing a lot of details there are a number of doubts about how to interpret each basic article, such as a rule about duration of SPC or what is the subject of SPC protection. The field of SPC protection has involved considerable jurisdiction of European Court of Justice and a lot of doubts have already clarified.

**Material and methods:** Draft of presentation:

1. Basic regulations
2. The scope and object of SPC protection
3. Conditions to obtain an SPC in Poland
4. Content and duration
5. SPC protection in Poland – problems, case studies.

**Results:** The statistics show that most SPCs were filed in France, Italy, the United Kingdom, Germany, Belgium, the Netherlands and Sweden. Poland is a country with a low number of SPCs in Europe, and there are just couple of countries with less SPCs applications such as Romania, Slovakia and Latvia.

**Conclusions:** Nonetheless, law expertise about patent protection shows that a process to obtain an SPC certificate in Poland is efficient and adroit, despite the fact that all documents have to be checked in detail by a Polish Patent Officer. It is likely that polish pharmaceutical will continue to develop as so will supplementary protection applications.

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[198]

### **Nurse prescribing. Attitudes of polish physicians towards extending competencies of nurses and midwives with respect to prescribing medicines.**

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**Trustee of the paper:** Joanna Gotlib

**Introduction:** Due to the amendment of the Nurse and Midwife professions Act, since 1st of January 2016 polish nurses and midwives with certain qualifications are able to prescribe medicines and referral for diagnostic tests. N&M who want to perform prescribing have to improve their qualifications by passing a training course in that kind of area.

**Aim of the study:** The purpose of the work is to rate the attitude of polish physicians towards extending competencies of N&M with respect to prescribing medicines.

**Material and methods:** In the study there were 436 participants who included 244 women and 192 man. The average age was 36,6 years old (min: 23, max: 87, median:31). There were 3 professors, 2 person with a post-doctoral degree, 50 doctors of medicine and 381 doctors who took part in our study. Authors prepared and validated own questionnaire, which contained statements assessed in Likert scale (1-5). Descriptive statistics have been performed.

**Results:** 53% of physicians think that new abilities will not expedite the care around the patients and 12% think it would help for sure. 55% of interviewee think it will not make it easier to get medical advice for patients. At the same time 49% is convinced that prescribing medicines by N&M will give more spare time for physicians. 60% of physicians agree that it will cause lack of control in their patients therapy and 10% do not give any opinion in that case. Only 9% agreed that new rights are important in polish medical law. 65% physicians said that N&M should not have ability to prescribe medicines, as also 81% think that they are not prepared for performing it.

**Conclusions:** 1) Most of polish physicians are skeptical regarding the new law as they concern of losing connection with their patients therapy progress. However a significant group of physicians think it would decrease their duties.

2) Polish physicians are concerned, that N&M are not prepared to prescribe medicines.

3) Transparent informational campaign about role and range of new competences of N&M shall be performed among polish physicians.

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# Neurology

## **Jury:**

prof. Kamil Detyniecki  
prof. dr hab. n. med. Urszula Fiszer  
prof. dr hab. n. med. Andrzej Friedman  
dr hab. n. med. Piotr Janik  
prof. dr hab. n. med. Anna Kamińska  
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Oddział Warszawski Polskiego Towarzystwa Neurologicznego



**POLSKIE  
TOWARZYSTWO NEUROLOGICZNE**

**Date:**

Saturday, May 14th, 2016

**Location:**

Room 23, Library - CBI

**Regular:**

Justyna Pordzik  
Monika Słowińska  
Małgorzata Łukawska  
Artur Kośnik  
Kamila Saramak  
Klaudia Klicka

**Short:**

Mustafa Alhaad  
Adriana Spocińska  
Oksana Sosnovskaya  
Cezary Maciejewski

[199]

### Association of frequent genetic variants in platelet activation pathway genes with large vessels ischemic stroke in Polish population

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**Trustee of the paper:** dr hab. n. med. Marek Postuła, prof. dr hab. n. med. Dagmara Mirowska-Guzel

**Introduction:** Platelets have been well-established as key figures in the development of atherosclerosis and, therefore, are reported to be critically involved in the development of cerebral ischemia. Since genetic architecture of platelet activation in large vessels ischemic stroke is likely to include frequent genetic variants, recognition of the importance of genetic background of platelet function in ischemic stroke may have profound clinical consequences on the development of individual platelet-directed pharmacotherapy by providing insight into the risks and possible benefits associated with specific genotypes.

**Aim of the study:** Our study aimed to establish an association between frequent genetic variants in platelet activation pathway genes in 82 candidate genetic loci previously linked to platelet reactivity.

**Material and methods:** We used massive, parallel next generation sequencing (NGS) of selected exons from pooled-DNA samples in Polish patients with a history of large-vessel ischemic stroke. Genetic analysis was performed on blood samples obtained from 500 patients (diagnosed with acute ischemic stroke associated with large artery atherosclerosis) and matching 500 controls of Polish origin. Sequencing of 10 pools (5 for each group) performed on the Illumina HiSeq2500 sequencer generated an average of 36.1 (22.7-45.9 range) million pair-end 101 bp reads and 5.3 (3-7 range) Gbp per pooled sample consisting of 100 subjects.

**Results:** In total we observed 789 frequent polymorphisms in the sequenced 82 genes (703 of SNP type and 86 indels). When compared the Minor Allele Frequencies (MAF) between control and stroke groups, 3 polymorphisms (2 SNPs and 1 indel) in PCK1, RGS7 and ANKS1B genes show statistically significant differences. Two of these variants are located in the intronic part of the genes, and one (rs1062600 in PCK1) is located in the coding part (exon) and is of synonymous type. From the remaining variants, 35 polymorphisms displayed various degrees of nominal significance (from  $0.6.3 \times 10^{-5}$  to  $5 \times 10^{-2}$ ) and 751 polymorphisms did not show any statistical significance when comparison was evaluated for differences in MAF between the study groups.

**Conclusions:** In conclusion, results of the study demonstrate statistically significant differences in 3 frequent genetic variants (in PCK1, RGS7 and ANKS1B) and could be associated with the platelet function between patients with large vessels ischemic stroke and control patients.

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[200]

### Is myotonic dystrophy an independent factor influencing autonomic nervous system functions and increasing cardiovascular risk?

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**Trustee of the paper:** Anna Łusakowska, MD, PhD

**Introduction:** Myotonic dystrophy (DM) is the most common muscle dystrophy in adults. Two genetically distinct forms of DM are identified, both with multi-organ involvement, i.a. cardiovascular abnormalities. Dysfunction of autonomic nervous system (ANS) and decreased baroreflex sensitivity (BRS) are well-known risk factors for ventricular arrhythmias and sudden cardiac death. Reports of ANS abnormalities in DM are scarce and equivocal.

**Aim of the study:** The aim of the study was to assess an influence of myotonic dystrophy, as independent factor, on ANS function, BRS and cardiovascular risk among patients with myotonic dystrophy type 1 and 2.

**Material and methods:** The study group consists of 11 DM1 patients (3 females, 8 males, mean age  $41 \pm 11$ ) and 5 DM2 patients (3 females, 2 males, mean age  $52 \pm 14$ ). We excluded patients with hypertension, diabetes, cardiovascular diseases and other conditions which may influence ANS or BRS. The BRS was measured by a sequence method at Task Force Monitor system. Data of ANS function was obtained from Sympathetic Skin Response (SSR) and RR-Interval variation (RRIV) tests. The clinical characterization of dysautonomia was performed using autonomic symptoms questionnaire (COPMASS-31).

**Results:** The most common symptoms of dysautonomia in DM1 group were dryness of mucous membranes (63.6%), deterioration of visual acuity and light sensitivity (54.5%) and diarrhoea (45.5%). The most frequent reported symptoms in DM2 group were dryness of mucous membranes (80%), urine incontinence (80%) and deterioration of visual acuity (80%) and light sensitivity (60%).

In DM1 group 9,1% (1 patient) had abnormal response from upper limbs in SSR test and decreased RRIV. In DM2 group, all results of SSR were normal and 20% (1 patient) had decreased RRIV.

The average BRS value was normal in both types of DM. However in DM1 group 36,4% had BRS results below an average age-dependent values for a healthy population. In DM2, none of the patients had BRS values lower than a healthy population.

**Conclusions:** DM, as independent factor, has a mild influence on ANS in both types of DM and on BRS only in DM1 patients, although a cardiovascular risk at this group might be initially higher. Reported clinical symptoms of dysautonomia are considerable in both groups compared with mild ANS abnormalities present in objective autonomic tests. This discrepancy suggests that reported clinical symptoms may be rather ascribed to other factors such as possible defects of target organs than to ANS dysfunction in course of DM.

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[201]

### **Clinicogenetical features in patients with paroxysmal kinesigenic dyskinesia – a condition easy to treat if diagnosed**

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**Introduction:** Paroxysmal kinesigenic dyskinesia (PKD) is a rare form of movement disorder with onset between 1-2 decade. In most cases the condition is inherited with an autosomal dominant pattern, but it can be also sporadic. Recently PRRT2 gene has been identified as a causative of PKD with c.649dupC as the hotspot mutation. Attacks may be characterized as dystonia, chorea or both. Episodes are triggered by sudden movement, last less than one minute, have unilateral or bilateral presence and do not cause loss of consciousness. In most cases movements appear tens to hundreds per day. In order to exclude other possible diagnoses such as paroxysmal non-kinesigenic dyskinesia (PNKD), epilepsy, tetany, myotonic spasm and psychogenic movement disorder we always have to do EEG, head CT and laboratory test results (e.g. electrolytes). The first-choice treatment is carbamazepine at low dose with a very good response in most of the patients.

**Aim of the study:** Investigation of PRRT2 mutation and drug response in two patients with typical symptoms of PKD.

**Material and methods:** Case 1: 16 year-old boy with a 5-year history of sudden involuntary movements of the limbs induced by standing up and the beginning of the walk. Episodes occur frequently during the day and last for 11 seconds to 1 minute. Family history was negative. EEG, brain MRI and laboratory tests (including electrolytes) were normal.

Case 2: 13 year-old boy presented with a 2-year history of involuntary dystonic movements of the upper left limb occurring at the beginning of the movement from rest, especially after standing up, at a frequency of 1-15 times per day. Attacks last for 4-5 seconds. Family history was negative. EEG and brain MRI were normal.

Genetic analyses of PRRT2 gene were done in both of our patients.

**Results:** We identified c.649dupC mutation in PRRT2 gene in both of our patients.

Symptoms of our patients responded well to 100 mg carbamazepine per day.

**Conclusions:** The diagnosis of PKD is mainly based on clinical features but genetic confirmation may reduce misdiagnoses and improve the quality of life. PRRT2 is a protein interacting with SNAP25 at the presynaptic membrane and probably regulating synaptic vesicle release. Lack of PRRT2 may lead to increased neurotransmitters release - carbamazepine might affect this pathway improving symptoms.

In our study we are planning to do genetic analyses of PRRT2 gene in parents of both boys in order to investigate if these are de novo mutations or were inherited with an incomplete penetrance.

[202]

### **Tacrolimus-associated neurotoxicity after liver transplantation: serie of cases**

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**Introduction:** Neurologic complications after liver transplantation can occur in up to 40% of patients. The immunosuppressive management of liver transplant recipients suffering severe neurotoxicity is a challenge in clinical practice. Liver transplant candidates often suffer episodes of encephalopathy, which can make them more sensitive to neurotoxic drugs in the post-transplantation period. In such cases, tacrolimus can exacerbate the underlying neurologic damage and precipitate neurologic disorders.

**Aim of the study:** The aim of this study was to present the incidence of tacrolimus-associated neurotoxicity in Liver and Internal Unit of Medical University of Warsaw.

**Material and methods:** In last two years in our clinic we observed five cases of tacrolimus-associated neurotoxicity after liver transplantation. We reviewed the databases and medical records of these patients, focusing on the type of neurotoxicity, pre- and post-conversion immunosuppression regimens, time elapsed between liver transplantation and the start of converted treatment, doses and trough levels, side effects, and follow-up after conversion.

**Results:** Clinical features of tacrolimus-associated neurotoxicity in our patients ranged from confusion and drowsiness to dysphagia, dysarthria, varying degrees of paresis and hand tremor which started from 10 days up to 21 months of treatment. The events of neurotoxicity include: central pontine myelinolysis in 1 patient, posterior reversible encephalopathy syndrome in 1 and 3 patients presenting symptoms without any changes in imaging studies. The level of tacrolimus was within normal limits during the therapy in all patients except one which was slightly elevated. In all cases treatment with tacrolimus was converted to everolimus and we observed fully neurologic recovery.

**Conclusions:** Everolimus is a feasible and effective option for immunosuppression in liver transplant recipients suffering neurotoxicity triggered by calcineurin inhibitors. Therapeutic drug monitoring cannot predict all adverse events associated with tacrolimus, because neurotoxicity can occur both at therapeutic and at high drug levels. Thus, recognition of prodromal signs such as tremulousness or headache is important for the early diagnosis and treatment. Immediate diagnostic work-up, especially MRI neuroimaging, is required in any transplanted patient presenting with neurological symptoms.

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[203]

### **Soluble urokinase plasminogen activator receptor levels are elevated in stroke and correlated with inflammatory and endothelial markers.**

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**Trustee of the paper:** Dariusz Kozirowski<sup>2</sup>

**Introduction:** Soluble urokinase plasminogen activator receptor (SUPAR) has been recently described to be not only an important prothrombotic factor but also a sensitive marker of tissues' remodeling and an inflammatory marker, which can be used as an independent prognostic factor in prediction of various cardiovascular events (CVE). The application of SUPAR in prognosis of CVE can be explained due to activation of endothelium and structural inflammatory damages of blood vessels, also in patients with stroke.

**Aim of the study:** The aim of our study was to evaluate the level of SUPAR in patients after ischemic stroke, in correlation with inflammatory markers (CRP, PCT, NT-proCNP) and markers of endothelial damage (endothelin 1-21, NT-proCNP).

**Material and methods:** The blood samples were collected from 50 patients (mean age 73,7±11,9 years, 26F and 24M), which were admitted to the Department of Neurology due to first-time ischemic stroke episodes. We evaluated the serum level of SUPAR, CRP, PCT, endothelin and NT-proCNP during 1., 3. and 7. day from stroke onset.

**Results:** The mean level of SUPAR<sup>1/2/3</sup> (1./3./7.-day measurement) was 3,43±2,2 / 3,58±3,0 / 4,22±3,9 ng/ml. The serum level of SUPAR<sup>1/2/3</sup> was strongly correlated with the serum level of PCT<sup>1/2/3</sup>

( $R_1=0,96/R_2=0,96/R_3=0,97$ ,  $p<0,05$ ) but not CRP ( $R_{1,2,3}=ns$ ,  $p>0,05$ ). The serum level of SUPAR was also correlated with the serum level of NT-proCNP1/2/3 ( $R_1=0,78/R_2=0,77/R_3=0,92$ ,  $p<0,05$ ). The serum level of NT-proCNP1/2/3 was correlated with the serum level of endothelin 1-21 ( $R_1=0,44/R_2=0,49/R_3=ns$ ,  $p<0,05$ ).

**Conclusions:** The mean serum level of SUPAR in ischemic stroke patients is correlated with serum level of PCT (inflammatory marker) and NT-proCNP (inflammatory and endothelial marker) therefore it should be taken into consideration as a possible prognostic factor of inflammation and endothelial damage in this group of patients.

[204]

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### **ER $\alpha$ and ER $\beta$ as potential prognostic factors of mTOR/PI3K/Akt pathway activation in different types of gliomas.**

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**Introduction:** Estrogen receptor  $\alpha$  (ER $\alpha$ ) and estrogen receptor  $\beta$  (ER $\beta$ ) have been shown to be involved in the tumorigenesis of gliomas as they emerged as potential key regulators of signal transduction in glioma cells. Recently, decreased expression of ER $\alpha$  and ER $\beta$  have been negatively correlated with tumor differentiation in this group of tumors. ER $\beta$  agonist has also been described to influence chemotherapeutic sensitivity of glioma cells through the mTOR/PI3K/Akt pathway, which may lead to the formation of gliomas.

**Aim of the study:** The aim of our study was to evaluate the activation of ER $\alpha$  and ER $\beta$  in different types of gliomas, and to correlate the pattern of ER $\alpha$  and ER $\beta$  activity with tumor suppressor PTEN, as well as mTOR/pAkt/PI3K and pErk/p90RSK pathway activation.

**Material and methods:** We analysed xantastrocytoma, oligodendroglioma, oligoastrocytoma, anaplastic astrocytoma and glioblastoma (WHO grade II to IV) samples from 35 patients operated in the Children's Memorial Health Institute. Mouse or rabbit monoclonal antibodies against ER $\alpha$ , ER $\beta$ , Akt, PI3K, PTEN, pS6, mTOR, pErk, p90RSK were used in standard Western Blot method.

**Results:** ER $\alpha$  and ER $\beta$  were hyperactivated in the majority of groups of gliomas (WHO II-IV), but we observed negative correlation between the WHO grade of glioma and activation of ER $\alpha$  and ER $\beta$  in high-grade tumors. There was also a positive correlation between the pattern of activation of ER $\alpha$ /ER $\beta$  and mTOR/pAkt/PI3K and pErk/p90RSK pathway in gliomas.

**Conclusions:** ER $\alpha$  and ER $\beta$  are hyperactivated in pediatric gliomas and there is a negative correlation between the grade of glioma and ER $\alpha$ /ER $\beta$  activation. The correlation between activation of ER $\alpha$ /ER $\beta$  and mTOR/pAkt/PI3K and pErk/p90RSK pathways makes ER $\alpha$ /ER $\beta$  potential prognostic factors for mTOR/PI3K/Akt pathway activation in different types of gliomas which may also allow indirect prognosis of sensitivity to chemotherapy in this group of patients.

[205]

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### **The changes of lipid metabolism in young patients with spondylogenic vertebrobasilar insufficiency**

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**Introduction:** Disorder of a lipid metabolism plays one of the leading roles in development of vascular complications in patients with spondylogenic vertebrobasilar insufficiency (SVBI).

**Aim of the study:** To determine consistent patterns of changes of lipid metabolism in patients of young age with the SVBI.

**Material and methods:** We examined 98 patients (women - 56, men - 42) with manifestations of SVBN on the background of neurovascular and radicular syndromes of osteochondrosis of cervical vertebral column. Patients, age 18 to 40 years (middle age of  $28.5\pm 3.8$  years) were included in this study. All study subjects underwent functional X-ray examination, cervical spine MRI and duplex scanning of neck vessels for verification

diagnosis. Parameters of a lipid metabolism in serum of blood by a spectrophotometry were determined. The control group was made by 30 healthy donors comparable on a gender and age. Obtained values were analyzed by the Student t-test. The difference was considered statistically significant at  $P \leq 0.05$ .

**Results:** It was confirmed by reliable increase in the content of total cholesterol (TCh) in patients group ( $5.68 \pm 0.94$  mmol/l vs.  $3.51 \pm 0.08$ ). The content of triglycerides (Tg) was slightly raised comparing to control ( $0.94 \pm 0.3$  mmol/l vs.  $0.78 \pm 0.06$ ). The very low density lipoproteins (VLDL) were also increased in patients comparing to indicators of control group ( $3.7 \pm 0.77$  mmol/l vs.  $2.02 \pm 0.07$ ).

**Conclusions:** Analysis of condition of an anti-atherogenous reserve in the examined patients, revealed compensatory increase of protective forces in the form of the high density lipoproteins (HDL) level ( $1.53 \pm 0.25$  mmol/l vs.  $1.14 \pm 0.03$ ). Revealed in the examined patients reliable ( $p \leq 0.05$ ) positive correlation between the LDL level and TCh ( $r = +0.89$ ) against positive correlation between the HDL level and TCh ( $r = +0.52$ ) shows the sanogenetic activation of reserves in the young patients and strengthening of development of an anti-atherogenous part of lipid metabolism.

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[206]

### **Analysis of ischemic stroke risk factors over last 20 years.**

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**Trustee of the paper:** Piotr Szczudlik

**Introduction:** The ischemic stroke is a major health problem due to its high morbidity and mortality. Over the years, the impact of these factors on the incidence of stroke changed due to new methods of treatment or drugs used to prevent stroke. We retrospectively analysed how a role of main risk factors has changed over a 20-year period.

**Aim of the study:** Comparison of the risk factors of ischemic stroke in 1994 and 2014.

**Material and methods:** This was a retrospective analysis on proximately 50 consecutive patients admitted to Department of Neurology Warsaw Medical University in 1994 compared to 2014. The collected data were age, sex, the occurrence of hypertension, atrial fibrillation, ICA stenosis, obesity, alcoholism and smoking.

**Results:** The coincidence of hypertension and obesity with stroke was significantly higher in 2014 than in 1994. In both, 1994 and 2014, atrial fibrillation involved older patients whereas smoking was wieldier distributed among younger ones. Hypertension proved to involve younger patients in 2014 but not in 1994 and patients who had already had stroke history at presentation were significantly older than average in 2014 but not in 1994. In 2014 the modified Rankin Scale (mRS) score of patients at discharge was significantly lower in those with comorbid heart disease. The average age of patients with ischemic stroke and women to men ratio has not changed.

**Conclusions:** Many risk factors can increase the chances of the occurrence of stroke. Over the years, the impact of these factors on the incidence of stroke changed probably due to new methods of treatment, better availability of examination methods and new generations of drugs used to prevent ischemic stroke.

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[207]

### **Pattern of breathing as a reflection of the activity of limbic-reticular complex of humans and animals.**

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**Trustee of the paper:** Vilatiy Pravdivtsev, MD, PhD

**Introduction:** The respiratory center provides rhythmic breathing and is activated under the action of strong stimuli.

**Aim of the study:** Activities of the respiratory center are control by the reticular formation, the nuclei of the hypothalamus and the limbic system of the brain. Respiratory activity of a person in a state of emotional excitement or stress is different from breathing of a person who is in a state of psychic and physical rest.

The purpose of polygraphic registration is finding changes in human visceral functions upon presentation of neutral, control and significant questions.

The aim: to study the characteristics of a person breathing pattern at rest and on stimulation.

**Material and methods:** All observations were carried out with involvement of volunteers. The sensor, which registers pneumogram, was applied to the chest. Recording pneumogram was carried out with simultaneous recording of the blood pressure and galvanic skin response. Subjects were asked to perform certain tests.

**Results:** Pneumogram of a person in a state of total repose shows that the subject is calm. The breath is rare, 5 heart beats during one respiratory cycle, galvanic skin response is zero.

In some individuals there were spontaneous fluctuations, galvanic skin response and respiratory rate were increased, the amplitude was decreased, pneumatic graphic shifted up as a result of a small increase in inspiratory tone.

The amplitude pulse pressure decreased as a result of increased vascular tone that is evidence of the change of the activity of the sympathetic nervous system.

The parity the duration of the inspiratory and expiratory phase was 1: 3.

Human respiratory cycle in a state of tension - can be presented as a ratio of inhalation and exhalation phases 1: 1.8.

Pneumogram a person in a state of relative calm with the breathing cycles practically unchanged. A characteristic change occurs in the ratio between the inspiratory and expiratory phases between the conditional "slow" high-amplitude waves and "fast" low amplitude cycles.

**Conclusions:** Signs of sensory, emotional arousal of the organism in terms of respiratory curve are the following:

1. Increased frequency of respiratory cycles;
2. Reduction of the amplitude of respiratory waves;
3. The displacement of the breathing curve which contours up
4. Significant decline in the ratio of inhalation and exhalation phase in a situation of emotional stress.
5. Presence of a part of the low-amplitude single pneumogram breaths

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[208]

#### **Correlation between Polysomnography ( PSG) and observations of changes in driver's behavior under conditions of the experimental study- preliminary results.**

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**Trustee of the paper:** prof. Kazimierz Niemczyk MD, PhD

**Introduction:** Polysomnography (PSG) allows assessment of sleep involving the recording of brain electrical activity (EEG) , eye movements(EOG) , muscle activation(EMG) and heart electrical activity(ECG) and peripheral blood oxygenation, providing a lot of data important in understanding of human sleep and process of falling asleep. Identification of specific parameters that directly precede sleep-onset can be helpful to assess the driver's impending drowsiness.

**Aim of the study:** The aim of the study was to evaluate the changes in driver's behavior in correlation with full PSG study and to assess physiological markers, which can indicate the early stages of sleep.

**Material and methods:** Study material consisted of analysis of one case. The inclusion criteria included good health, with no sleep related disorders. The patient was under sleep deprivation (one night before the study) . Study included a simulation of driving a truck with full PSG performed and correlated with observations of one observer. The drivers mistakes (varying from ignoring road signs to a car crash) made in time were assessed on the questionnaire and were correlated with PSG observations. Study was conducted for 2 hours and was finished by the time when the patient had fallen asleep.

**Results:** The preliminary results revealed early signs of falling asleep presented in EEG, followed by acceleration of heartbeat, which was a significantly correlated with falling asleep. The spectral wavelet analysis revealed a shift to the lower frequencies, waves characteristic for NREM1 with concomitant changes in eye movements (slow eye movement), also many artefacts occurred. Analysis of EMG revealed a decreasing amplitude . No significant changes in respiratory movements and saturation were perceived, but shorten of breath was visible a short time before falling asleep. The positive correlation between sleep episodes and driver's mistakes was observed.

**Conclusions:** Brain electric activity registered by PSG shows characteristic wave-patterns in various states. Differences between being awake and asleep have been studied intensively. Changes observed in EEG, heart

rate and breathing seem to be a reliable sleep indicators. Early sleep detection could be used in prevention of sleeping episodes in drivers.

# Neurosurgery

## **Jury:**

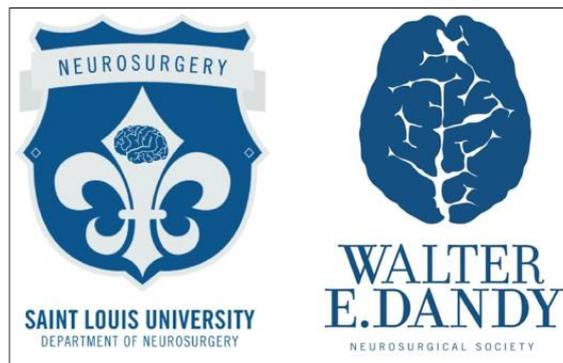
dr hab. n. med. Jarosław Andrychowski  
prof. dr hab. n. med. Zbigniew Czernicki  
prof. dr hab. n. med. Jan Krzysztof Podgórski

## **Coordinators:**

Oliwia Opacka  
Aneta Niedziółka

## **Scientific Patronage:**

Walter E. Dandy Neurosurgical Society Polish Chapter



**Date:**

Saturday, May 14th, 2016

**Location:**

Room 233+234, Didactics Center

**Regular:**

Haifa Hfaiedh  
Paulina Donicz  
Łukasz Przepiórka  
Kacper Koczyk  
Kornelia Kliś  
Urszula Knych  
Bartosz Sieradzki

**Short:**

Jolanta Walaszczyk  
Mariusz Zając  
Izabela Marczak  
Krzysztof Węgrzyn

[209]

## ROLE OF STENT-RETRIEVER THROMBECTOMY IN THE TREATMENT OF ACUTE ISCHEMIC STROKE

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**Trustee of the paper:** Conf. Dr. Dan Cucuireanu

**Introduction:** Among patients with acute ischemic stroke due to occlusions in the proximal anterior intracranial circulation, less than 40% regain functional independence when treated with intravenous tissue plasminogen activator (t-PA) alone. Thrombectomy with the use of a stent retriever, in addition to intravenous t-PA, increases reperfusion rates and may improve long-term functional outcome.

**Aim of the study:** prove that the stent retriever role in the treatment of ischemic cerebrovascular accident can reduce disability and improve long-term functional outcome

**Material and methods:** We randomly assigned eligible patients with stroke who were receiving or had received intravenous t-PA to continue with t-PA alone (control group) or to undergo endovascular thrombectomy with the use of a stent retriever within 6 hours after symptom onset (intervention group). Patients had confirmed occlusions in the proximal anterior intracranial circulation and an absence of large ischemic-core lesions. The primary outcome was the severity of global disability at 90 days, as assessed by means of the modified Rankin scale (with scores from 0 [no symptoms] to 6 [death]).

**Results:** The study was stopped early because of efficacy. 196 patients underwent randomization (98 patients in each group). In the intervention group, the median time from qualifying imaging to groin puncture was 57 minutes, and the rate of substantial reperfusion at the end of the procedure was 88%. Thrombectomy with the stent retriever plus intravenous t-PA reduced disability at 90 days over the entire range of scores on the modified Rankin scale ( $P < 0.001$ ). The rate of functional independence (modified Rankin scale score, 0 to 2) was higher in the intervention group than in the control group (60% vs. 35%,  $P < 0.001$ ). There were no significant between-group differences in 90-day mortality (9% vs. 12%,  $P = 0.50$ ) or symptomatic intracranial hemorrhage (0% vs. 3%,  $P = 0.12$ ).

**Conclusions:** In patients receiving intravenous t-PA for acute ischemic stroke due to occlusions in the proximal anterior intracranial circulation, thrombectomy with a stent retriever within 6 hours after onset improved functional outcomes at 90 days

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[210]

## Hiponatremy is predictor of sepsis following aneurysmal subarachnoid haemorrhage.

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**Trustee of the paper:** Roger Krzyżewski MD, Jarosław Polak MD, PhD

**Introduction:** Aneurysmal subarachnoid haemorrhage (aSAH) is a neurological syndrome with complex systemic complications which can contribute to poor outcome of treatment. Many of those complications are thoroughly described with well-defined predictors. However, due to our knowledge, predictors of sepsis after aSAH are poorly defined. We decided to analyse which common variables could be used as such predictors.

**Aim of the study:** Aim of the study was to define predictors of sepsis following aneurysmal subarachnoid haemorrhage.

**Material and methods:** We retrospectively analysed 108 patients with aSAH confirmed by Computed Tomography (CT). We obtained patients' medical history, parameters and results of blood tests and bacteriological analysis of urine, sputum blood and cerebrospinal fluid when indication for their analysis occurred from their medical records. Upon admission Glasgow Coma Scale (GCS), Hunt and Hess and World Federation of Neurological Surgeons (WFNS) grade were assessed

**Results:** A total of 7 (6.48%) patients developed sepsis. All of them developed pneumonia during hospitalization (100% vs. 19.80%;  $p < 0.01$ ). Those patients also had lower blood sodium level upon admission ( $119.40 \pm 44.52$  vs.  $139.99 \pm 6.08$ ;  $p < 0.01$ ), lower Glasgow Coma Scale score ( $8.71 \pm 5.56$  vs.  $12.04 \pm 4.03$ ;  $p = 0.042$ ) and higher Hunt and Hess grade ( $3.86 \pm 1.22$  vs.  $2.48 \pm 1.37$ ;  $p = 0.01$ ).

**Conclusions:** Patients in poor condition upon admission are more likely to develop sepsis after aSAH. Lower blood sodium level upon admission and development of pneumonia are associated with higher risk of sepsis development during hospitalization

[211]

### **Morphometric analysis of intravertebral joints in terms of surgical treatment of cervical discopathy by posterior foraminotomy**

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**Trustee of the paper:** lek. Tomasz Dziedzic

**Introduction:** Posterior cervical foraminotomy is an attractive approach for a lateral foraminal disc herniation without spinal cord compression. It is generally accepted, that approximately medial one-half of the facet of intravertebral joint can be removed during this procedure without destabilizing cervical spine.

**Aim of the study:** The aim of my study was a morphometric analysis of intravertebral joints in cervical spine in order to plan an extent of a safe resection of the articular processes.

**Material and methods:** The author studied in a dynamic fashion axial and sagittal scans of computed tomography images (with 0.6 mm of separation acquisition) of 50 consecutive patients examined due to a reason other than cervical spondylosis. The width of the intravertebral joint was measured according to a transverse plane, and height – after having done a reconstruction in a sagittal plane. All measures were done on both sides of the vertebra. Test group consisted of 32 men and 18 women with the mean age of 29,2.

**Results:** Mean width of the intravertebral joints varied between 12 mm on a C2/C3 level and 15,1 mm on a C6/C7 level. Mean width of the joints on the same level was comparable, with maximal difference up to 0,2 mm. Maximal difference between neighboring levels was 1,3 between levels C5/C6 and C6/C7, while the minimal measured 0,3 mm and was between levels C3/C4 and C4/C5. On other levels difference varied between 0,6 and 0,9 mm. Depending on the level of the operation, assuming possibility of a safe resection of the half of a intravertebral joint, it is out of danger to remove from 6 to 7,5 mm. Nevertheless level of the surgery, foraminotomy technique requires more extended resection of the superior articular process than inferior. Inferior articular process requires removing from 4,3 mm to 5,3 mm of the process, and superior – from 7,7 mm to 9,9 mm. Mean for all levels measured 9 mm and 4,8 mm for superior and inferior process respectively.

**Conclusions:** Assuming that it is safe to remove the medial half of the intervertebral joint, then regardless of the cervical spine level, 6 mm of the intravertebral joint can be safely removed. Correct visualization of the nerve root in the intervertebral foramen can be achieved after removal of 4,8 mm of the lower and 9 mm of the upper facet joint on average.

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[212]

### **Seizure freedom predictors in surgical treatment of epilepsy related to cerebral cavernous malformations**

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**Trustee of the paper:** lek. Tomasz Dziedzic

**Introduction:** Cerebral cavernous malformations (CCMs) are slow flow endothelium-lined dilated sinusoids with no intervening brain tissue. Seizures are the most frequent presenting symptom of supratentorial CCMs. According to literature, surgical treatment of these lesions provides seizure freedom in 75% and its effectiveness predictors are not fully established.

**Aim of the study:** The aim of the study was to identify the predictors of seizure freedom after surgical treatment of cavernoma related epilepsy (CRE) and report on the results of surgical treatment at our neurosurgical institution.

**Material and methods:** In the 2001-2014 period 67 patients with supratentorial CCMs were treated surgically in our neurosurgical institution, 45 of them were diagnosed with CRE. Among 45 patients with CRE in 31 cases it was possible to conduct a follow-up basing on telephone interviews or documentation from neurosurgical outpatient clinic. The patients were inquired about their epilepsy status (classified in Engel Epilepsy Surgery Outcome Scale) and the use of antiepileptic medicines. The average time of follow-up after surgery was 50 months (range 12-114 months). The study included 16 women and 15 men, the patient average age at the time of the operation was 33 (range 18-70).

**Results:** Among 31 patients included in the study 22 were classified as Engel I (70,97%) while 9 were classified as Engel II-IV (29,03%). Predictors of post-operative seizure freedom included surgery within 1 year from seizure onset (59,09% in Engel I vs 44,44% in Engel II-IV), lesion diameter no larger than 15 mm (31,82% vs 22,22%), homogenous semiology of seizures (81,82% vs 33,33%), surgery after first and only generalized tonic-clonic seizure (36,36% vs 22,22%) and simple lesionectomy (86,36% vs 66,67%). Temporal involvement (31,82% vs 55,56%) and localization in the deep structures in proximity to the insula (0 vs 33,33%) indicate lack of seizure freedom after surgery.

**Conclusions:** Surgical treatment of cavernoma related epilepsy proves more effective when a simple lesionectomy is applied to a patient with a malformation in extratemporal cortical localization, no larger in diameter than 15 mm, with shorter than 1-year history of epilepsy of homogenous semiology. A single and only one generalized tonic-clonic seizure preceding the surgical treatment also indicated postoperative seizure freedom. The small size of the patients' group was the main limitation to the study, therefore further investigation of this problem is required.

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[213]

### **Association between blood groups and poor outcome after aneurysmal subarachnoid haemorrhage**

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**Trustee of the paper:** Roger Krzyżewski MD, Jarosław Polak MD, PhD

**Introduction:** It has been described that the blood groups can be associated with prognosis in numerous diseases, especially neoplasms and cardiovascular diseases. However, due to our knowledge, there are no studies analysing influence of blood group on prognosis after aneurysmal subarachnoid haemorrhage (aSAH).

**Aim of the study:** The aim of our study was to find a link between blood group and outcome after aSAH

**Material and methods:** We retrospectively analysed 108 patients with CT-confirmed aSAH admitted to hospital between 2013-2015. We obtained patients' medical history, parameters and blood test results from their medical records. Upon admission Glasgow Coma Scale (GCS), Hunt and Hess and World Federation of Neurological Surgeons (WFNS) grade were assessed. On discharge patients were assessed using modified Rankin Scale (mRS). Poor outcome was defined as mRS > 2 assessed on discharge. We used univariate and multivariate logistic regression analysis to determine the possible predictors of poor outcome

**Results:** A total of 45 (41.66%) patients had poor treatment outcome. Those patients had lower GCS score ( $9.93 \pm 4.66$  vs.  $13.23 \pm 3.18$ ;  $p < 0.01$ ), higher Hunt and Hess grade ( $3.20 \pm 1.42$  vs.  $2.10 \pm 1.18$ ;  $p < 0.01$ ), WFNS grade ( $3.20 \pm 1.63$  vs.  $1.94 \pm 1.36$ ;  $p < 0.01$ ), glucose level on admission ( $8.28 \pm 3.27$  mmol/l vs.  $6.55 \pm 1.76$ ;  $p = 0.014$ ) and more often had B Rh+ blood type (15.56% vs. 1.59%;  $p < 0.01$ ). On multivariate logistic regression analysis B Rh+ blood type remained independently associated with higher risk of poor outcome (OR: 0.341, CI 95% 0.133 – 0.871,  $p = 0.024$ ).

**Conclusions:** Patients in poor condition, higher glucose level upon admission and B Rh+ blood type more often had poor outcome after aSAH. B Rh+ blood type is independently associated with higher risk of poor outcome.

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[214]

### **Meta-Analysis of the long term efficacy of early decompressive craniectomy in treating patients after malignant infarction of the middle cerebral artery in patients younger than 60 years old.**

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**Trustee of the paper:** dr hab. n. med. Jarosław Andrychowski

**Introduction:** Malignant infarction of the middle cerebral artery is associated with case-fatality rates of approximately 80%. There is no effective conservative therapy of malignant infarction of the middle cerebral artery. As an alternative, hemicraniectomy is used to relieve high intracranial pressure. Efficacy of this method is still discussed therefore many studies seek for beneficial conditions for performing it.

**Aim of the study:** To evaluate the efficacy of early decompressive craniectomy in treating the malignant infarction of the middle cerebral artery.

**Material and methods:** A systematic literature review was performed by searching in PubMed, ScienceDirect, Cochrane Library and Embase to retrieve prospective studies or randomized controlled trials assessing efficacy of decompressive craniectomy in treating patients after malignant infarction of the middle cerebral artery using modified Rankin Scale before January March 2016. Only the studies assessing patients younger than 60 years old which included 1 year follow up and also in which all patients qualified for decompressive craniectomy were operated earlier than 48h after the onset of symptoms, were included. The meta-analysis was conducted using program STATISTICA.

**Results:** There were 4 studies meeting the criteria, assessing 145 patients after malignant infarction of the middle cerebral artery. Meta-analysis showed, that the overall survival of patients who underwent decompressive craniectomy was significantly higher in comparison to those who received only conservative treatment (OR=8,96; PU d. 4,00; PU g. 20,04; p=0,00001). Moreover, the favorable outcome defined as mRS <4 was more frequent in patients who underwent decompressive craniectomy than in the group that received conservative treatment (OR= 2,99; PU d. 1,26; PU g. 7,07, p=0,0126).

**Conclusions:** The decompressive craniectomy, performed earlier than 48h after the onset of symptoms in patients younger than 60 years old, shows lower mortality and gives better chances for avoiding severe disability than conservative treatment in treating patients after malignant infarction of the middle cerebral artery.

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[215]

### **Facial nerve outcome after the vestibular schwannoma surgery – intraoperative neurophysiological assessment and postoperative clinical function.**

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**Trustee of the paper:** Anna Podgórska MD, PhD, Przemysław Kunert MD, PhD, Prof. Andrzej Marchel MD, PhD

**Introduction:** Preservation of facial nerve function is a well-recognized goal of tumor excision at the cerebellopontine angle (CPA). Intraoperative monitoring with electromyography (EMG) is now routine and has been shown to improve FN functional outcome.

**Aim of the study:** The aim of the study was to determine correlation between intraoperative facial nerve (FN) assessment and clinical function in short and long-term follow-up (FU).

**Material and methods:** We retrospectively investigated data of 46 patients (30 women aged 11 to 75 and 16 men aged 18-74) who underwent vestibular schwannoma surgery with anatomically preserved FN postoperatively. During the surgery the FN was monitored and at the end of tumor removal the direct facial nerve stimulation at the brain stem and deep in internal acoustic meatus was performed. The ratio of orbicularis oculi and orbicularis oris evoked response amplitude obtained with FN stimulation at the brain stem to orbicularis oculi and orbicularis oris evoked response amplitude obtained with FN stimulation deep in internal acoustic meatus was estimated (expressed as a percentage, average value from orbicularis oculi and orbicularis oris).

Facial nerve function in House-Brackman scale (HBS) scale was assessed at the discharge from the hospital (early FN outcome) and 6 or more months after the surgery (late FN outcome). The clinical status expressed in HBS was correlated with the results of intraoperative direct FN stimulation at the end of tumor removal.

**Results:** There was a good correlation between final intraoperative FN evoked response amplitude ratio and early and late FN outcome. However even patients with pronounced reduction of final FN evoked response amplitude ratio (up to 90%) had good late FN function prognosis. There was a strong correlation between final intraoperative FN evoked response amplitude ratio lowering and worse early and late FN outcome.

**Conclusions:** Based on the results of our investigation we came to the conclusions:

1. Patients with final intraoperative facial nerve evoked response ratio more than 10% have satisfactory late facial nerve prognosis.

2. The unresponsive facial nerve on the final intraoperative stimulation (or responsive with very low FN evoked response amplitude ratio - not more than 10%) is bad prognostic factor for long-term FN function. These patients should be monitored postoperatively very carefully to give them a chance for early treatment (FN anastomosis) in case of facial palsy.

[216]

### Advantages of surgical treatment of intraspinal meningiomas

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**Trustee of the paper:** prof. dr hab. n. med. Piotr Bażowski, dr hab. n. med. Stanisław Kwiek

**Introduction:** Intraspinal meningiomas represent the second most common tumor of the spinal canal (25-46%). It is more frequent for elderly patients. Early diagnosis and treatment produce excellent results, however they are slowly growing tumors which lead to symptoms only after reaching a size to significant spinal cord compression. The standard treatment is surgical resection, adjuvant chemotherapy and radiotherapy are still taken under consideration.

**Aim of the study:** We aimed to define the incidence and demographic features of intraspinal meningiomas in Clinic of Neurosurgery of Medical University of Silesia in Katowice, define the temporal trends, early effects and complications of surgery

**Material and methods:** Between the years of 2007-2014 33 patients were diagnosed with intraspinal meningioma and underwent surgical treatment via laminectomy. 28 patients were female and 5 were male, the mean age was 61 years (range 35-82 years). We examined the Simpson's grading scale to determinate the extend of surgery and Glasgow Outcome Scale to evaluate the outcome of treatment. All calculations were done in Statistica 12.

**Results:** Localization of intraspinal meningiomas was thoracic - 22 (66%), cervical – 7 (21%) and cervicothoracic - 4 (13%). The resection of the tumor was total for 25 (76%) patients and subtotal for 3 (9%). 19 patients were classified to Simpson grade 1. Next grades had respectively 5, 1 and 1. There were no biopsies. 8 patients showed early complications such as paresis and muscle weakness. The average length of stay on neurosurgical ward was 14 days. 29 patients (87%) had Glasgow Outcome Scale 5.

**Conclusions:** Intraspinal meningiomas were most common in females over the age of 60. The most common localization was thoracic region. Surgery had good outcome for all patients with improvement of clinical symptoms and signs. The low amount of early complications and very good clinical outcome show that surgical resection is the best treatment for intraspinal meningiomas.

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[217]

### Evaluation of Kocher's Point Assessment Methods on Three-dimensional Computer Model

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**Trustee of the paper:** dr Tomasz Dziedzic

**Introduction:** Kocher's point ventriculostomy is one of the primary methods of ventricular drain placement to frontal horn of lateral ventricle. There is a consensus regarding correct target point of ventriculostomy - intersection of line passing through endocanthus of right eye and bilateral tragi. However, there is no consensus regarding entry point on surface of the cranium. Medical literature mentions several definitions/procedures of assessing Kocher's Point, each resulting in different point placement on the surface of the cranium. I have found 6 such definitions in available medical articles and literature.

**Aim of the study:** Selection of clinically best method of Kocher's point assessment with simultaneous exclusion of imperfect drain placement by human operator.

**Material and methods:** 14 adult patients without hydrocephalus or structural shift, with eligible Computer Tomography Angiography scan were selected. Subsequently, we marked 6 entry points on computer generated, 3-dimensional reconstruction of patients' CTA using Slicer 3D application. Axi were marked between 6 entry points and a target point. Axi were then assessed, taking into consideration their placement in or outside of anterior horn of lateral ventricle (precisely using modified scoring system suggested by Kakarala et al.).

A successful placement is considered as placement inside ipsilateral to entry point frontal horn of lateral ventricle or tip of third ventricle. Unsuccessful placement is considered as placement in eloquent nervous tissue.

**Results:** Out of 6 tested methods, none yielded 100% success rate in correct placement of axe inside lateral ventricle. Highest success rate was observed at 70% (10 cases) for one of the definitions, while the lowest success rate was 29% (4 cases). Placement inside of the septum pellucidum while suboptimal was also considered successful. Only one of the definitions yielded results higher than 50%.

**Conclusions:** Out of all the tested methods the one yielding the best results was originally described by Kocher, Neisser and Pollack.

The results presented in this research are in authors' opinion preliminary, because of the small test group. Therefore, further research is necessary. The authors' plan to present extended and more precise results from research on a bigger test group the following year.

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[218]

### **Relationship of glioblastoma multiforme to neural stem cells migration in adult human brain**

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**Introduction:** Glioblastoma multiforme (GBM) is one of the most common and most malignant form of brain tumor in adults. Recent studies revealed the involvement of neural stem cells (NSCs) in development of GBMs. In adult human brain, the NSCs proliferate mainly in the subventricular zone (SVZ). Newly generated cells migrate from SVZ along rostral migratory stream toward olfactory bulb. During this migration NSCs may become cancer cells that will lead to tumor development. Migration of NSCs reduces its own dynamics with one's age. Thus, it can be assumed that the location of GBMs will also vary according to age.

**Aim of the study:** Evaluation of GBMs location in relation to migratory stream of NCSs originated from SVZ. Evaluation of GBMs origin in relation to patient age.

**Material and methods:** Analysis of preoperative MR or CT images of 76 patients with diagnosed GBM. GBMs were classified by their involvement with SVZ and cerebral cortex (Ctx). Classification criteria were defined by the area of non-tumor parenchyma of the brain that separates the tumor from the lateral ventricles and cerebral cortex or lack of it. The location of GBMs were determined in relation to the three planes of brain: the anterior horn of lateral ventricle - superior (S) or inferior (I) part, precetral sulcus - left (L) or right (R) part and great longitudinal fissure - anterior (A) or posterior (P) part of the brain.

**Results:** GBMs were classified into four groups: group I - SVZ (+) Ctx (-) n=19; group II - SVZ (-) Ctx (+) n=27; group III - SVZ (+) Ctx (+) n=29; group IV - SVZ (-) Ctx (-) n=1; The average age in group I - 56 yo; group II - 58 yo; group III - 56 yo; group IV - 30 yo

**Conclusions:** Result of our study indicates no relationship between location of GBMs and rostral migratory stream of NSCs. In addition, there is no correlation between the radiological morphology of GBMs and age of the patients. However, we have noticed that non-SVZ GBMs (group III) are located more often in superior and posterior (SP) region of the brain - the region not related to rostral migratory stream of NSCs

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[219]

### **Low Glasgow Coma Scale associated with earlier stay at Intensive Care Unit after Traumatic Brain Injury**

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**Trustee of the paper:** Jarosław Polak MD, PhD, Roger Krzyżewski MD, Paweł Krawczyk MD, PhD,

**Introduction:** Predictors of early admission to the Intensive Care Unit (ICU), due to our knowledge, are poorly defined. Knowledge of those predictors is very important, because it might allow to make faster and more reliable decision to transfer the patient to the ICU and provide early implementation of intensive monitoring and treatment. The aim of our study was to identify factors associated with early ICU admission after Traumatic Brain Injury (TBI).

**Aim of the study:**

**Material and methods:** We retrospectively analysed 242 patients hospitalized between January 2013 and January 2015 after TBI confirmed by Computed Tomography (CT) scans. On admission patients were assessed using Glasgow Coma Scale (GCS). Traumatic Coma Data Bank (TCDB) was evaluated based on the CT scans. We obtained patients' medical history, results of blood tests during the hospitalization and details about the operation from their medical records.

**Results:** A total of 110 patients (45.5%) were admitted to ICU. Those patients had higher sodium levels in the first three days of hospitalization (first day:  $138.95 \pm 5.36$  mmol/l vs  $142.10 \pm 4.59$  mmol/l;  $p=0.031$ , third day:  $140.34 \pm 6.36$  mmol/l vs  $147 \text{ mmol/l} \pm 16.45$ ;  $p=0.037$ ), lower GCS grade ( $11.46 \pm 4.47$  vs  $4.7 \pm 2.97$ ;  $p < 0.01$ ) and TCDB grade III (5.34% vs 12.73%;  $p=0.042$ ) or IV (10.69% vs 37.27%;  $p < 0.01$ ). They more often suffered for Diffused Axonal Injury (0.00% vs 5.45%;  $p < 0,01$ ), intracerebral hematoma (11.45% vs 29.09%;  $p < 0.01$ ) and had

lesion localised in fronal lobe (17.42% vs 28,18%;  $p < 0.01$ ) or temporal lobe (15.91% vs 30.00%;  $p < 0.01$ ). Polytrauma (6.82% vs 20.00%;  $p < 0.01$ ), especially thoracic trauma (3.79% vs 11.93%;  $p = 0.017$ ) was also associated with the earlier ICU admission. Factors which not predisposed to early ICU admission were hypertension (27.27% vs 15.45%,  $p = 0.027$ ) and older age ( $62.39 \pm 17,80$  years vs  $57.59 \pm 17.80$  years;  $p = 0.038$ ).

**Conclusions:** Patients with higher natrium level, lower GSC, higher TCDB and with lesion localised in frontal or temporal lobe predispose to earlier stay in the ICU. Protective factors are hypertension and older age.

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# Obstetrics, Perinatology & Gynecology

## **Jury:**

prof. dr hab. n. med. Krzysztof Czajkowski  
dr n. med. Zbigniew Lewandowski  
dr hab. n. med. Bronisława Pietrzak  
dr hab. n. med. Ewa Romejko-Wolniewicz  
prof. dr hab. n. med. Włodzimierz Sawicki  
dr hab. n. med. Joanna Szymkiewicz-Dangel  
prof. dr hab. n. med. Mirosław Wielgoś

## **Coordinators:**

Paweł Bartnik  
Klaudia Malec

## **Scientific Patronage:**

Polskie Towarzystwo Ginekologiczne



**Date:**

Saturday, May 14th, 2016

**Location:**

Room 117, Library - CBI

**Regular:**

Magdalena Ciebiera  
Aleksandra Symonides  
Ewelina Wieczerek  
Daniel Jakubik  
Katarzyna Baran

**Short:**

Anna Średniawa  
Emanuel Cojocariu  
Anna Cepowicz  
Joanna Spaczyńska  
Joanna Kacperczyk  
Angelika Stapińska-Syniec  
Ewa Wojciechowska

[220]

### The assessment of prognostic factors for the efficacy of misoprostol in the induction of first trimester abortion

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**Trustee of the paper:** Iwona Szymusik MD PhD

**Introduction:** Early pregnancy loss is defined as a pregnancy failure up to 13 completed weeks. In case of missed abortion and blighted ovum FIGO/WHO guidelines recommend a repeatable dose of 800 mcg misoprostol vaginally to induce bleeding and tissues extraction. Pharmacological induction allows the avoidance of surgical procedures on uterine cervix and cavity.

**Aim of the study:** The aim of the study was to find out factors which influence the efficacy of misoprostol in women with the diagnosis of missed abortion and blighted ovum.

**Material and methods:** A retrospective study was performed at the 1st Department of Obstetrics and Gynaecology, Medical University of Warsaw, in years 2013-2015. Medical charts of 359 women admitted with the diagnosis of missed abortion or blighted ovum were analysed. All of them were qualified for pharmacological induction of abortion. Different factors, which could have an influence on successful treatment, were taken into account: age, BMI, parity, mode of previous delivery, current week of gestation based on the last menstruation, type of miscarriage, doses and time in which misoprostol was administered, presence of bleeding at admission and a history of previous surgical procedures on uterus. The endpoint was a successful pharmacological induction of abortion considered as a bleeding with excretion of all tissues with no need to perform curettage. The statistical analysis was performed with the use of STATISTICA 10.0. P-value <0.05 was considered as significant.

**Results:** The patients were divided into two groups: a successful pharmacological induction (n=309; 86%), and an unsuccessful induction in which curettage was necessary (n=50; 14%). Only the number of doses (2.4 vs 3.8; p=0.00007) and the time in which misoprostol was administered (1.35 vs 1.9 days; p=0.0) were highly significant factors affecting the efficacy of pharmacological induction of abortion. Parity (p=0.04) and gravidity (p=0.03) also had some influence on the success of treatment. All other analysed factors were insignificant. In the studied group only one patient experienced side effects in form of emesis.

**Conclusions:** Pharmacological induction is an effective and safe treatment method of first trimester abortion in the majority of cases. The possibility to avoid surgical procedures in such cases favours this method in clinical practice. The knowledge of factors influencing the efficacy of misoprostol may help clinicians in proper counselling and individualisation of therapy.

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[221]

### Risk of perinatal asphyxia and infant consequences – can it be predicted?

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**Introduction:** Perinatal asphyxia results from an inadequate intake of oxygen by the child at any stage of birth. It is a dangerous condition which can lead to severe hypoxic ischaemic organ damage in newborns followed by a fatal outcome or severe life-long pathologies. In order to avoid perinatal asphyxia, Cesarean sections are performed if the monitored fetal heart rate is inappropriate.

**Aim of the study:** The aim of this study was to analyze possible differences during the pregnancy of women who undergo a Cesarean section because of the risk of perinatal asphyxia (group 1) and women with elective Cesarean deliveries (group 2) as well as to analyze infants' condition after non-elective Cesarean sections in group 1.

**Material and methods:** Medical records of 100 patients who underwent Cesarean section because of the risk of perinatal asphyxia and 127 patients after elective Cesarean sections were analyzed. Patients were hospitalized in 2015 in a tertiary referral hospital. Patients' age, occurrence of pregnancy induced hypertension (PIH), diabetes, hypothyroidism, anemia, other comorbidities, vaginal bleeding during pregnancy, premature rupture of membranes (PROM), group B Streptococcal (GBS) infections, twin pregnancies and children's Apgar scores were compared.

**Results:** In the group with the risk of perinatal asphyxia there were more children with 1' Apgar score 7 or lower [ $p=0.04$ ,  $OR=2.40(1.00-5.961)$ ]. There were also more cases of prematurity in this group ( $p=0.03$ ,  $OR=2.06(1.04-4.10)$ ). There were 3 cases of nuchal cord in group 1. PROM was more likely to be followed with the risk of Perinatal asphyxia [ $p<0.001$ ,  $OR=5.12(1.97-13.86)$ ]. Children of patients from group 1 with reported vaginal bleeding during pregnancy were more likely to obtain worse 1' Apgar score result ( $p=0.03$ ,  $OR=4.52(1.03-19.77)$ ). No significant differences in occurrence of PIH, diabetes, hypothyroidism, anemia, GBS infections or twin pregnancies were observed.

**Conclusions:** Patients with PROM may be at higher risk of Cesarean delivery due to cardiotocographic (CTG) patterns. Children of patients with the history of vaginal bleeding during first or second trimester and non-elective Cesarean delivery due to CTG records may be born with lower Apgar score result.

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[222]

### Evaluation of chosen cancer antigens in ovarian cancer patients

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**Introduction:** Mesothelin is a protein which can be overexpressed in several cancers, for example pancreatic or ovarian cancer. Normal mesothelial cells of human body contains this protein and it is encoded by MLSN gene.

**Aim of the study:** Evaluation of mesothelin and carbohydrate antigen 125 (Ca 125) in the plasma of patients with different grade and stage of ovarian cancer.

**Material and methods:** The study group consisted of 56 women with histologically confirmed ovarian carcinomas. The reference group consisted of 25 women with serous cyst of the ovary. Mesothelin and Ca125 levels were analyzed using a sensitive enzyme-linked immunosorbent assay (ELISA).

**Results:** Our study showed, that the plasma mesothelin levels (61.29 ng/ml) in women suffering from ovarian cancer were significantly higher ( $p=0.000003$ ) than in patients with benign disease (19.99 ng/ml). Moreover, the plasma mesothelin levels were significantly higher ( $p<0.05$ ) in women with FIGO II, III, and IV stages than in patients with FIGO stage I of ovarian cancer. What's more, the plasma mesothelin levels were significantly higher in women with stage IV FIGO when in women with FIGO stage II and III ( $p<0.05$ ).

Moreover, higher plasma mesothelin levels were found in patients with grade 3 of ovarian cancers than in those with G2 degree ( $p=0.03$ ).

Concentrations of Ca 125 was also significantly higher in patients with ovarian cancer (571.60 U/ml) than in the reference group and correlated with the degree of cancer differentiation and with the FIGO stages of ovarian cancer classification.

**Conclusions:** The measurement of mesothelin in the plasma may be useful to differentiate between benign and malignant ovarian tumors. There is a relationship between the plasma mesothelin and Ca125 levels and ovarian cancer stage and grade.

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[223]

### PREVALENCE OF FEMALE SEXUAL DYSFUNCTION AMONG PATIENTS WITH POLYCYSTIC OVARY SYNDROME

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**Introduction:** Polycystic ovary syndrome (PCOS), characterized by hyperandrogenism and ovulation disorders concerns about 6-10% of women of reproductive age. This is an interdisciplinary problem, which is associated with increased prevalence of the metabolic syndrome, hypertension, and consequently contributes to an increased risk of cardiovascular diseases. Numerous studies indicate that PCOS is a risk factor for anxiety and depressive disorders. Occurrence of hyperandrogenism, obesity, and hirsutism in PCOS patients predisposes to the development of sexual dysfunction.

**Aim of the study:** The assessment of prevalence and severity of sexual disorders among women with PCOS.

**Material and methods:** 70 patients aged mean 27 years with BMI mean 25,2 kg/m<sup>2</sup> with diagnosis of PCOS according to the Rotterdam 2003 criteria hospitalized in the Department of Gynecological Endocrinology. Exclusion criteria: history of depression, other causes of hiperandrogenism (non-classic adrenal hyperplasia, hypercortisolemia, virilising tumors), diabetes mellitus, hypogonadotropic hypogonadism.

The control group: 272 healthy, regularly menstruating women aged mean 24 years with BMI mean 23,4 kg/m<sup>2</sup> without hyperandrogenic symptoms and depressive disorders.

There was no statistically significance differences between the study and control groups according to age and obstetrics history. We exclude other possible causes of sexual dysfunction (sexual abuse, diabetes, stroke, cardiovascular disease, multiple sclerosis, urinary incontinence, excessive chronic stress )

The diagnostic methods included standard laboratory and ultrasonography testing necessary for the PCOS diagnosis. The study and control groups completed questionnaires: Beck Depression Inventory (BDI) and The Female Sexual Function Index (FSFI).

**Results:** According to the criteria proposed by Wiegel M, et al. (J Sex Marital Ther. 2005 ) that score  $\leq 26,55$  (max 36.0) is considered as the Female Sexual Dysfunction, the frequency of sexual disorders among patients with PCOS was 41.7% (mean 26,09) while in the control group 7.35% (mean 31.12 ) ( $p < 0.001$ ). PCOS group scored lower in every assessed domains : desire (mean 3.64 vs 5.27  $p < 0.001$ ), arousal (mean 3.88 vs 5.47  $p < 0.001$  ), lubrication (mean 4.38 vs 5.49  $p < 0.05$ ), orgasm (mean 3.77 vs 4.72  $p < 0.05$ ), satisfaction (mean 4.29 vs 4.87  $p < 0.05$ ), pain (mean 4.30 vs 5.29  $p < 0.001$ ) using the Mann-Whitney test.

**Conclusions:** Diagnosis of sexual dysfunction in women with PCOS will identify which patients require psychosexual therapy.

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[224]

#### **HYPOPLASTIC LEFT HEART SYNDROME AND ITS ASSOCIATION WITH HYPOTROPHY**

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**Introduction:** Hypoplastic left heart syndrome (HLHS) is associated with risk of the central nervous system injury during fetal period. Prenatal diagnostic makes it possible to highlight those children earlier and to prepare a multidisciplinary team, that will take care of newborns straight after birth.

**Aim of the study:** The aim of the study was to analyze the biometric profile of children with HLHS. A percentage of hypotrophy was determined by evaluation of head circumference and weight of children with hypoplastic left heart syndrome.

**Material and methods:** Observational study was conducted, using data of 36 neonates with HLHS born in Neonatal Unit in Katowice from 2002 to 2015. The prenatal examination was conducted on different stages of pregnancy (22nd-39th week). Results of prenatal diagnostics of patients were analyzed retrospectively. The collected data of fetuses and neonates (head circumference and fetal weight) was referred to fetal-infant growth chart and compared to the average for the corresponding gestational age. The children were divided into 3 groups, basing on the result in each category: group I – 90th-10th percentile; group II – 10th-3rd percentile; group III – below the 3rd percentile.

**Results:** In respect of head circumference the amount of fetuses qualified to each group was: group I: 66,7% (n=24), group II: 27,8% (n=10), group III: 5,6% (n=2). In respect of fetal weight: group I: 86,1% (n=31), group II: 8,3% (n=3), group III: 5,6% (n=2). The same method was used to classify the children after birth. Regarding the head circumference the results were: group I: 61,1% (n=22), group II: 33,3% (n=12), group III: n=0. Regarding the body weight the results were: group I: 77,8% (n=28), group II: 8,3% (n=3), group III: 11,1% (n=4). Additionally, 11,4% of fetuses were diagnosed with symmetrical hypotrophy.

**Conclusions:** Hypoplastic left heart syndrome in fetal and postnatal age is associated with high percentage of small head circumference and hypotrophy.

[225]

### Postpartum depression and its correlation with breastfeeding

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**Introduction:** Postpartum depression (PPD) is an affective disorder that can last from 2 to 6 months after labour. It applies both to women and men. There are many risk factors of PPD and its symptoms may be problematic. Moreover, in infant care breastfeeding is of great importance.

**Aim of the study:** The aim of our study was to correlate the occurrence of PPD in women with their efficacy in breastfeeding.

**Material and methods:** We examined 119 women aged 30,46 +/- 4,18. 92 of them were breastfeeding at the moment of study. We used Edinburgh Postpartum Depression Scale (EPDS) to determine the risk of PPD and Breastfeeding Self-efficacy Scale (BSES) to specify breastfeeding competence. Data was collected in 7 clinics in Cracow in February and March 2015.

**Results:** According to EPDS 10% of patients were at risk of developing PPD (12 of 119). There was a statistical significant relationship between PPD and mother's chronic diseases ( $p=0,00$ ), BSES questionnaire's results and EPDS questionnaire's results ( $p=0,00$ ,  $r= -0,38$ ). Women with higher scores in EPDS were less educated, more often underwent cesarian section and less often feed their babies naturally.

**Conclusions:** Factors such as age, occupation, number of children, type of delivery do not contribute to PPD. Women at risk with PPD have lower breastfeeding self-efficacy than their healthy coevals.

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[226]

### PREVALENCE OF PROTHROMBOTIC GENES POLYMORPHISMS IN AETIOLOGY OF RECURRENT MISCARRIAGES IN HEREDITARY THROMBOPHILIA PATIENTS

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**Introduction:** Predisposition to thrombotic events in patients diagnosed with acquired and/or inherited risk factors represent a leading cause of mortality worldwide. Pregnancy is a hypercoagulable state, and thromboembolism is the main cause of antepartum and postpartum maternal complications. Much interest has been focused on the pathogenesis of hereditary thrombophilia in pregnancy as screening measures in due time may offer additional help in the resolution of habitual abortions.

**Aim of the study:** The aim of the study was to investigate the relationship between recurrent pregnancy loss (RPL) and factor V Leiden, prothrombin G20210A mutations, hyperhomocysteinemia related disorders within methylenetetrahydrofolate reductase gene translocations (MTHFR C677T and MTHFR A1298C) and 4G/5G polymorphism in the promoter of the plasminogen activator inhibitor-1 (PAI-1) gene.

**Material and methods:** A multidisciplinary case series study was conducted within the haematological, genetics, obstetrics and gynaecology departments in Iasi, Romania. A cohort of 64 patients with at least 2 miscarriages of non gynaecological origin and no previous child births that met the criteria were included in the study.

**Results:** Descriptive and inferential statistics were conducted to characterize sample. No direct association between the age of the patients ( $30,45 \pm 3,89$  y/o) and that of the number of habitual abortions ( $2,61 \pm 0,88$ ) was shown (Spearman correlation  $p= +0,111$ ;  $p=0,383$ ).

At least one of the interested gene mutation was present among the patients ( $n=30$ ; 47%), two mutations ( $n=23$ ; 36%), three ( $n=10$ ; 16%) and four ( $n=1$ ; 1%). Kruskal Wallis test shows that a higher rate of miscarriages (3- 4) are present in the heterozygous Factor V Leiden population ( $n=9$ ), heterozygous Prothrombin ( $n= 2$ ), Homozygous MTHFR A1298C ( $n=5$ ), homozygous MTHFR C677T ( $n=8$ ) in comparison to their alternative zygosity status averaging 2-3 miscarriages ( $p<0,05$ , CI 95%). No correlation between PAI-1 mutations and the number of miscarriages could be made ( $p=0,21$ ). When analysing an association between the most frequent abnormalities presented (MTHFR C677T, MTHFR A1298C, Factor V Leiden and PAI-1 mutations) and RPL, statistical significance was proven ( $p=,000$ ).

**Conclusions:** The significant prevalence of miscarriages in the presence of prothrombotic genetic risk factors analyzed, recommend that screening for these mutations should be made among women with a personal history of thromboembolic events as appropriate thromboprophylaxis remains key to which fetal demise can be prevented.

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[227]

**Novel protein biomarkers in preeclampsia - protein macroarray.**

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**Introduction:** Preeclampsia (PE) is a multi-system disorder, which affects 3-5% of pregnant women in Western Europe and North America. It usually occurs in the third trimester of pregnancy and is characterized by a high blood pressure and proteinuria. The pathogenesis of preeclampsia remains uncertain. It is thought that the invasion of the vessel walls by trophoblast is impaired, which leads to the narrowing of spiral arteries and results in oxidative stress and hypoxia. As the consequence of placental ischemia there occur an imbalance of angiogenic and anti-angiogenic factors, which causes generalised endothelial dysfunction. Therefore, measurement of the angiogenic factors in women with preeclampsia could help to better understand the pathomechanism of the disease and possibly provide new biomarker(s) for non-invasive testing.

**Aim of the study:** Aim of the study was to determine the concentration of angiogenic factors in blood plasma of women with preeclampsia.

**Material and methods:** Within the project have been recruited 12 pregnant women with mild preeclampsia into the study group and 12 pregnant women (matched for age, gestational age, BMI) with uncomplicated pregnancies into the control group. To assess the concentration of angiogenic factors in blood plasma we used quantitative protein macroarray method that allows simultaneous analysis of 60 angiogenic proteins per sample.

**Results:** We demonstrated that there is a significant increase in the concentration of 14 proteins: IFN-gamma, IL-6, IL-8, LIF, MCP-1, AgRP, Hb-EGF, HGF, IL-2, IL-17, IP-10, Leptin, PDGF-BB, G-CSF and a significant decrease in the concentration of 3 proteins: VEGF, PlGF, Follistatin in the plasma of women with PE in comparison to the group of women with uncomplicated pregnancy. In the next step we created ROC curves, which allowed us to predict the likelihood of PE with specific sensitivity and specificity - minimal sensitivity was set to 0.7.

**Conclusions:** The results of our study enabled identification of new directions of protein research in etiology of PE and confirmed the information available in the current literature.

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[228]

**Influence of antenatal anemia on the route of delivery and neonatal outcomes.**

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**Introduction:** Antenatal anemia is a common problem in perinatology.

In the literature there is still little research about this topic.

**Aim of the study:** The objectives of this study were to check the influence of antenatal anemia in pregnant woman during antenatal period on the route of delivery and neonatal outcomes.

**Material and methods:** The retrospective study included 210 pregnant women who gave birth in Department of Obstetrics and Perinatology UJ CM in 2015. In the study group 100 patients had anemia and 110 women were admitted with appropriate hemoglobin level. Patient groups were randomly assigned. As an antenatal period, the period of seven days before giving birth was defined. Anemia was defined as hemoglobin level <11g/l in the antenatal period. We analyzed: RBC, hemoglobin levels, hematocrit, MCV, MCH, MCHC. Neonatal outcomes were analyzed based on birth weight, body length, and number of points in the Apgar score. Women's groups did not differ significantly in terms of demographic and socioeconomic factors. To compare groups we used chi square test.

**Results:** The low maternal hemoglobin level in antenatal period increased risk of having a baby with birth weight <2500g more than 4-times (OR 4,6 CI 95% p<0,05) and increased risk of having baby with <8 points in Apgar score in first minute of life more than 5-times (OR 5,34 CI 95% p<0,05) but had no effect on the route of delivery.

**Conclusions:** Antenatal maternal anemia is a risk factor for low body weight in newborns and worse neonatal outcomes. The important part of perinatal care is to make more efforts to maintain the proper level of hemoglobin and others red blood cells indices.

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[229]

### Neonatal outcomes in intrahepatic cholestasis of pregnancy

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**Introduction:** Cholestasis of pregnancy occurs in late pregnancy and triggers intense itching, usually on the hands and feet but often on many other parts of the body. For mothers, cholestasis of pregnancy may temporarily affect the way the body absorbs fat-soluble vitamins, but this rarely impacts overall nutrition. Itching usually resolves within a few days after delivery, and subsequent liver problems are uncommon. For children, the complications of cholestasis of pregnancy can be more severe.

**Aim of the study:** The aim of this study was to analyze pregnancy outcomes in patients with cholestasis of pregnancy.

**Material and methods:** Medical records of 52 patients with laboratory confirmed cholestasis of pregnancy (group 1) and 291 patients without cholestasis (group 2) were analyzed. Patients were hospitalized and gave birth between 2014-2015 in a tertiary referral hospital. Children's Apgar scores, mode of delivery and pregnancy outcomes were compared. Mothers' biochemical status, hepatic ultrasonography, occurrence of liver or bile duct disease and drug intake during pregnancy among group 1 were studied.

**Results:** Mean values of lowest measured AspAT and AlAT results in group 1 were 69 and 123 respectively. Mean values of highest measured AspAT and AlAT results in the same group were 194 and 293 respectively. There were more cases of preterm birth [ $p=0.009$ ,  $OR=2.81(1.23-6.35)$ ] and more Cesarean deliveries due to fetal heart rate patterns [ $p<0.001$ ,  $OR=5.30(2.08-13.49)$ ] in group 1. Among pregnancies with cholestasis there were 5 (9.6%) children born with 1' Apgar score 7 or lower, 18 (34.6%) children required phototherapy due to icterus in the neonatal ward, 10 (19.3%) children needed breathing support with Neopuff, nCPAP or other mechanical ventilation. There was one case of necrotizing enterocolitis.

**Conclusions:** Children of patients with cholestasis required neonatal care because of frequent prematurity and accompanying conditions following premature birth.

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[230]

### Depression in women with polycystic ovary syndrome (PCOS)

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**Introduction:** Polycystic ovary syndrome (PCOS) is currently estimated to be one of the most common endocrinopathies, affecting approximately 10% of women of childbearing age. As a leading cause of female infertility and a source of socially stigmatizing symptoms, PCOS constitutes a risk factor for developing a wide range of psychiatric problems— from eating disorders to severe depression. It is believed that depression affects 4% of women in Poland and that its incidence may be significantly higher in patients with PCOS.

**Aim of the study:** In our survey we set out to assess the incidence of depression among patients with PCOS in relation to its prevalence in general population. Moreover we searched for disease-related factors which contributed the most to the patients' susceptibility to psychological problems.

**Material and methods:** We conducted a survey on 250 women with PCOS comprising of two separate parts: (1) an original questionnaire focusing on general patient data and detailed PCOS history and (2) Beck's Depression Inventory evaluating declared mood disorders in a standardized manner. Anonymous questionnaires were collected in digital form and analysed with the help of Excel and Statistica.

**Results:** The study revealed that 24,8% of women suffering from PCOS have mild mood disorder and more than half (52%) present symptoms of depression. Only 30,8% declare having searched for psychiatric help. The study group was divided into two subgroups: women presenting symptoms of depression (G1, n=130) and a group without these symptoms (G2, n=120). The mean value of BMI varied significantly between these subgroups – women with depression more frequently suffered from obesity/overweightness (mean BMI: 29,5 kg/m<sup>2</sup> in G1 vs 24,6 kg/m<sup>2</sup> in G2). Almost a third of women (30,8%) showing signs of depression declared having inadequate support from their relatives compared to only 15,8% in G2. Moreover, 48% of women with depression symptoms feel that PCOS takes its toll on their everyday life, while only one fifth of not depressed women felt that way. Women without depression symptoms more often had a university degree (67,6% vs 50%).

**Conclusions:** Our survey has shown that women with PCOS bear a significantly increased risk of developing depression compared to general population (52% vs 4%). Factors such as BMI, level of education, unsupportive environment and lack of motivation to cope with the disease may prove useful in selecting a group of patients particularly prone to psychological problems.

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[231]

### **SERIAL AMBULATORY BLOOD PRESSURE MONITORING, INTENSITY OF ANTIHYPERTENSIVE DRUG TREATMENT, AND PREGNANCY OUTCOMES IN WOMEN WITH HYPERTENSION FOUND EARLY DURING PREGNANCY**

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**Trustee of the paper:** Piotr Gryglas, MD, PhD

**Introduction:** Few data are available on serial ambulatory blood pressure monitoring (ABPM) throughout pregnancy and antihypertensive drug treatment required for good blood pressure (BP) control in hypertensive pregnant women.

**Aim of the study:** To evaluate BP control, antihypertensive drug treatment intensity, and pregnancy outcomes in patients with hypertension (HTN) found early during pregnancy.

**Material and methods:** We studied 49 consecutive pregnant patients (mean age 33.4±4.8 years, BMI before pregnancy 24.5±3.7 kg/m<sup>2</sup>) referred for office HTN found early during pregnancy (mostly before 5 weeks) who gave birth to 50 children (1 twin pregnancy) in 2011-2015. Gestational HTN was previously diagnosed in 39 women, and 9 women had a history of previous miscarriage or stillbirth, with multiple previous pregnancies lost in some patients. ABPM was repeated at 5, 10, 15, 20, 25, 30, 33, 35 and 37 weeks of pregnancy. We calculated overall antihypertensive treatment intensity in standard daily drug doses per patient (standard doses: labetalol 200 mg, methyldopa 750 mg, metoprolol 50 mg, nifedipine 20 mg, verapamil 120 mg). Statistical analysis was performed using ANOVA.

**Results:** All children were born alive (24 vaginal delivery, 26 cesarean section) and are well at follow-up. Gestational age was 38.0±2.5 (range 29-40) weeks, and birth weight was 3215 ± 653 (range 955-4200) g. Preeclampsia occurred in 10 women, and eclampsia in 3 women. Four patients had normal BP values by ABPM throughout pregnancy and did not receive antihypertensive drugs. Most patients were treated with labetalol (100-600 mg) and methyldopa (500-2000 mg). BP remained well controlled throughout the pregnancy (24-hour mean systolic/diastolic BP 120.3-126.0/75.3-77.1 mm Hg). Most patients were treated with labetalol (100-600 mg/day) and methyldopa (500-2000 mg/day). The number of treated patients increased from 25 at 5 weeks to 42 at 25-35 weeks, and the average number of daily antihypertensive drug doses in treated patients increased from 1.82 at 5 weeks to 2.98 at 37 weeks (p < 0,001).

**Conclusions:** Serial ABPM-guided antihypertensive drug treatment started early during pregnancy was associated with favorable outcomes. The number of patients requiring treatment and the treatment intensity to maintain good BP control increased throughout the pregnancy. No physiological BP fall at the end of first trimester was observed. Our findings help estimate the expected treatment intensity required in pregnant patients with preexisting hypertension.



# Oncology & Hematology

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prof. dr hab. n. med. Cezary Szczylik  
prof. nadzw. dr hab. n. med. Lucjan Wyrwicz

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Friday, May 13th, 2016

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Joanna Połubok  
Roiya Farhan  
Aleksander Ślusarczyk  
Alicja Hoffman  
Katarzyna Pruszczyk  
Michał Mielnik

**Short:**

Anna Kuk  
Valeriia Vasylieva  
Adebayo Bamisile  
Joanna Dąbrowska  
Konstanty Marczenko  
Natalia Kliszcak  
Artur Bandura

[232]

**How often patients after anticancer treatment have endocrinological disorders? The evaluation of endocrinological abnormalities after the anticancer treatment of solid tumors in childhood.**

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**Introduction:** The progress in anticancer treatment caused that number of childhood cancer survivors (CCS) continues to increase. Endocrine disorders are common abnormalities after anticancer treatment. The evaluation of late affect among childhood cancer survivors could improve their health status and quality of live.

**Aim of the study:** The aim of our study was to evaluate the incidence of the selected endocrine disorders after the anticancer treatment of solid tumors.

**Material and methods:** The study group consisted of 74 patients (48 boys), aged 3.25-27 years (mean 13.24±6.21), at least one year after anticancer therapy of solid tumours. Thyroid function, concentration of: sex hormones, IGF-1 (ng/ml), PTH (pg/ml), lipids (cholesterol/LDL/TG, HDL), were established. BMD (Z-score) were evaluated. Following anthropometric parameters were examined: height SDS, body mass SDS and BMI SDS.

**Results:** Endocrinological abnormalities were found in 89.19% of the patients. Most common abnormalities were dyslipidaemia occurred in 58.21% patients. The second were overweight or obesity, presented in 33.78% survivors. Other abnormalities were as follows: disturbance in sex hormones in 27.45% patients, abnormal PTH in 19.4%, abnormal IGF-1 in 14.75%, short stature in 12.16%, underweight in 11.11%, hypothyroidism in 9.72%, low BMD 8.69% and hyperthyroidism in 2.78%.

**Conclusions:** Patients after the anticancer treatment are significantly exposed to endocrine disorders. The results of our study emphasize that almost all of the patients suffer from endocrinological abnormalities. These patients require detailed follow-up examinations to detect endocrinological disorders.

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[233]

**Biosimilar G-CSF versus filgrastim and lenograstim in healthy volunteer hematopoietic stem cell donors**

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**Introduction:** The World Marrow Donor Organization recommends original granulocyte colony stimulating factor (G-CSF) formulations (Granocyte and Neupogen) for mobilization of stem cells in healthy unrelated hematopoietic stem cell donors. So far there is no study that compares biosimilar G-CSF (Zarzio) with the two original drugs – filgrastim and lenograstim – for mobilization in healthy hematopoietic stem cell donors.

**Aim of the study:** The study aimed at comparison of efficiency of biosimilar G-CSF with original G-CSF in unrelated donors.

**Material and methods:** The study included 282 donors of both genders aged between 19-55 years, that were mobilized in the period from October 2014 to February 2016. Among them: 116 received Granocyte, 84 Zarzio, and 82 Neupogen as a G-CSF in mobilization of hematopoietic stem cells. All three groups had similar demographic data including sex distribution, median age, body mass index and body surface area.

The generic G-CSF has been used due to the problems in market availability of the Granocyte. The only available G-CSF formula to the center at that time was biosimilar G-CSF (Zarzio) and was later changed to Neupogen as soon as it became possible for the center.

**Results:** The dosage of G-CSF to the first apheresis was similar in all groups: 5.2 mln IU per/kg for Granocyte, 4.4 mln IU per/kg for Zarzio and 4.3 mln IU per/kg for Neupogen. The CD34+ cell number in the blood before the initiation of apheresis was 103 cells/μl for Granocyte, 118 cells/μl for Zarzio, 133 cells/μl for Neupogen (the differences did not reach statistical significance). All donors mobilized enough stem cells for transplantation. The mobilization with Zarzio and Neupogen was more efficient with than with Granocyte (mean number of CD34+ cells/kg of patient of: 7.5 x 10<sup>6</sup>, 7.5 x 10<sup>6</sup> versus 6.1 x 10<sup>6</sup> respectively; p= 0.003).

**Conclusions:** Generic G-CSF is as effective in mobilization of hematopoietic stem cell in unrelated donors as original G-CSF. The better mobilization with filgrastim compared to lenogastrim could be explained by improvement of apheresis methodology (introduction of cMNC for Optia). The further prospective long term studies are needed for evaluation of short and long term complications.

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[234]

### **The role of steroid receptors overactivation in the tumorigenesis of juvenile pilocytic astrocytoma.**

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**Introduction:** Juvenile pilocytic astrocytoma is the most common solid neoplasm occurring in the period of childhood and adolescence. The majority of them are infratentorial tumors, located in the cerebellum and brainstem. According to WHO, JPAs are grade I tumors, because of their well-limited and not aggressive nature. The five-year survival rate for children with JPA is about 85%. The treatment of choice is surgical resection of the neoplastic tissue, which is not always possible, because of risk of damaging important brain structures. As there are many areas responsible for controlling crucial physiological and other functions in the CNS that enable us to think, learn and work, sometimes surgical resection is not allowed at all or only partly. As a result, alternative therapy needs to be found.

**Aim of the study:** Our aim was to determine the role of progesterone and estrogen receptors in the development of JPA. It is supposed that some types of estrogen and progesterone receptors and metabolic pathways associated with them play an important role in oncogenesis in JPA. Such studies need to be done to find a proper kind of pharmacological treatment for patients with JPA.

**Material and methods:** In our study we analyzed 28 samples of tumor tissues resected from patients with JPA. Tumor tissues were homogenized in RIPA lysis buffer. Proteins were obtained by centrifugation. Then, western blot was performed to detect the presence of activated estrogen receptors (ER $\alpha$  and ER $\beta$ ) and progesterone receptors (PR-A and PR-B). Specific anti-pPR, anti-PR, anti-pER $\alpha$ , anti-ER $\alpha$ , anti-ER $\beta$  antibodies were used.

**Results:** Western Blot technique demonstrated that estrogen receptors (ER $\alpha$  and ER $\beta$ ) are overexpressed in JPA. We found that ER $\alpha$  were activated (phosphorylated) in tumor cells. However, progesterone receptors (PR-A and PR-B) were not expressed at high levels and were not activated.

**Conclusions:** Presence of overactivated ER $\alpha$  indicates neoplastic nature of analyzed cells. These receptors with attached ligand dimerize and are subsequently phosphorylated. In this form they act as transcription factor. Therefore, they appear to play a significant role in cell proliferation and growth. On the contrary, ER $\beta$  and PR-A are suggested to play an antiproliferative role. We suppose that the activation of ER is associated with activation of other metabolic pathways such as PI3K/Akt/mTOR and MAPK/Erk, which are also activated in JPA. However, exploring the exact role of steroid receptors in the pathogenesis of JPA needs further studies.

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[235]

### **Hematological malignancies in Jehovah's witnesses – report from a single institution**

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**Introduction:** Treatment of hematological malignancies requires chemotherapy in vast majority of patients. Both these malignancies as such and therapy may produce severe and prolonged cytopenias requiring blood component support. Because of Jehovah's Witnesses' (JW) refusal of acceptance of intake of blood components under any circumstances, treatment challenges arise.

**Aim of the study:** To evaluate the results of hematological management of JW patients, who did not receive blood component transfusions.

**Material and methods:** Eight JW, male 2 (25%), median age 42,5 (range 20-77) were enrolled into the analysis. They were admitted to the Department of Hematology between 1994 and 2015. The diagnoses were: acute lymphoblastic leukemia (ALL) - 2 (25%), acute myeloid leukemia (AML) - 2 (25%) and non Hodgkin's lymphoma (NHL) - 4 (50%). 6 (75%) patients received chemotherapy; CHOP- based (cyclophosphamide, doxorubicin, vincristine, prednisone) in 3 NHL pts, vincristine + prednisone in acute lymphoblastic leukemia – in 1 with addition of imatinib (ALL Ph+). 3 patients have received erythropoiesis stimulating agents.

**Results:** While median hemoglobin (Hgb) concentration at diagnosis was 8 g/dl (range 4.4 – 13.1) it dropped to 2.8 g/dl (range 0.93-9.3) during treatment (3.3 and 5.2 g/dl in patients without chemotherapy). 3 patients developed respiratory failure. Anemia did contribute substantially to death of 4 patients (50%). Platelet counts were as follows: 57.5 G/l (20-392) at diagnosis and 3.5 G/l (2-85) at treatment. One patient succumbed to central nervous system bleeding.

3 patients obtained complete remission (CR) after first line treatment. 2 patients experienced progression and 2 died before initiation of cytostatic treatment. Three patients received erythropoietin support without significant effect. With the median follow up of surviving patients of 268 days, the median overall survival was 128 days, with only 25 days for acute leukemias.

**Conclusions:** The outcome of JW treated without transfusions is very dismal, although NHL patients, requiring less intensive chemotherapy, can still obtain complete remissions. Anemia is the leading cause of death. There is need to explore alternative support methods.

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[236]

### **No indication for autologous blood transfusion in unrelated hematopoietic stem cell donors undergoing bone marrow harvest.**

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**Introduction:** The World Marrow Donor Association guidelines recommended collection of blood for autologous transfusion to the donor during or after the harvest procedure. The opinions on usefulness of this procedure are divided between the centers. Despite being not currently recommended some centers still use it in unrelated donors who undergo bone marrow harvest.

**Aim of the study:** The study aims to evaluate blood count parameters in bone marrow (BM) donors to assess the possible need for transfusions.

**Material and methods:** We conducted retrospective, single-center analysis of medical records of a cohort of 187 bone marrow donors admitted to the Department of Hematology since 2010. For the final analysis 162 donors who had complete medical records (including blood morphology results on the day before and after BM harvest) and who did not undergo leukaphereses immediately prior to BM harvest.

**Results:** Mean age of the donors was 28 years (SD 7.4). 59% were male and 41% were female. Upon admission, mean hemoglobin concentration was 14.24g/dl (SD 1.4, range 10.96-17.58), mean red blood cells count 4.79 10<sup>6</sup>/ul (SD 0.44, range 3.84-5.94), mean hematocrit 42.77% (SD 4.07, range 32.3-56.7), mean platelet count 246.04 10<sup>3</sup>/ul (SD 58.94, range 49-476). After BM harvest, mean hemoglobin concentration was 11.76 g/dl (SD 1.63, range 7.1-16.6), mean red blood cells count 3.9 10<sup>6</sup>/ul (SD 0.5, range 2.59-5.24), mean hematocrit 34.73% (SD 4.65, range 22.4-50.7), mean platelet count 224.27 10<sup>3</sup>/ul (SD 56.07, range 30-451). Mean change in hemoglobin concentration was 2.49 g/dl (SD 0.94, range 0.4-4.8), mean change in red blood cells count 0.89 10<sup>6</sup>/ul (SD 0.32, range 0.16-1.9), mean hematocrit change 8.05pp (SD 3.03, range 0.8-16.6), mean change in platelet count 21.77 10<sup>3</sup>/ul (SD 27.27, range -34-123). None of the patients included in our study received blood transfusion.

**Conclusions:** Our data demonstrates that there is no clinical need for autologous transfusion after BM harvest since the donors do not become anemic to the extent that requires blood support.

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[237]

### **Influenza vaccine therapy in Chronic Lymphocytic Leukemia patients - new possibilities of response evaluation based on a study of peripheral blood**

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**Introduction:** Chronic lymphocytic leukemia (CLL) leads to significant immune system dysfunction. The predominant clinical presentation in 50% of patients involves recurrent, often severe, infections. Infections are also the most common (60-80%) cause of deaths in CLL patients. The scope of infections varies with the clinical

stage of the disease. Treatment-naive patients typically present with respiratory tract infections caused by influenza. Immune system disturbances in CLL are still not well defined. Clinical data indicates that despite normal serum immunoglobulin (Ig) level, treatment-naive patients may not respond to influenza vaccination.

**Aim of the study:** The aim of the study was to investigate changes in B-cell subpopulations in CLL patients, including plasmablasts, in peripheral blood by flow cytometry after influenza vaccination and to evaluate if plasmablasts may serve as a diagnostic tool for assessing response to vaccination.

**Material and methods:** Forty treatment-naive CLL patients and twenty healthy volunteers were immunized with influenza vaccine. Specific antibody levels and frequencies of plasmablasts were measured before vaccination and on day 30 by ELISA assay, and day 7 by flow cytometry after vaccination, respectively. Both groups were also evaluated for the levels of IgG and IgG subclasses, and the frequencies of selected peripheral blood lymphocyte subpopulations before and 30 days after immunization.

**Results:** Of the forty CLL patients studied, 100% lacked detectable changes in the serum level of specific anti-influenzae IgG antibodies before and after vaccination (mean: 122.41-41.94 mU/ml vs. mean: 128.37-52.13 mU/ml, respectively;  $p=0.24$ ). In none of patients an increase of the percentages and absolute counts of plasmablasts was noted. In the control group, an increase in circulating plasmablasts on day 7 post immunization corresponded with the appearance of specific antibody levels on day 30 post immunization ( $r=0.823$ ,  $p=0.000001$ ) and was statistically significantly higher than before a dose of influenza vaccine (before vaccination: 20.12-14.93%,  $0.46-0.36 \times 10^3/\text{mm}^3$ ; after vaccination: 46.81-26.87%,  $1.15-0.77 \times 10^3/\text{mm}^3$ ;  $p=0.01$ ). In contrast, CLL patients failed to increase plasmablasts significantly in peripheral blood after antigen challenge.

**Conclusions:** Our findings indicate that treatment-naive CLL patients have a block in terminal B-cell differentiation and that flow cytometry-based assessment of plasmablasts in peripheral blood after vaccination serves as a surrogate diagnostic marker for assessing in vivo antibody response in patients with CLL.

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[238]

### **Chronic Lymphocytic Leukemia complicated by rods colonization - evaluation of risk factors and epidemiology in untreated patients**

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**Introduction:** Infectious complications are still one of the major causes of morbidity and mortality in patients with chronic lymphocytic leukemia (CLL). Infections affect mainly the respiratory tract, skin, or urinary tract. The most common respiratory infections are acute and chronic sinusitis and pneumonia. In the past pneumonia was caused mainly by *Streptococcus pneumoniae*, but with current chemotherapeutic regimens, the spectrum of pathogens includes Gram-negative rods (GNR), *Nocardia* species, *Legionella* species, and *Pneumocystis carinii*. An increase in infections caused by GNR, particularly bacteraemia and pneumonia, may reflect more advanced disease and profound myelosuppression in these patients.

**Aim of the study:** The aim of this study was to assess the frequency and predisposing factors of colonization of upper respiratory tract by GNR in previously untreated CLL patients. Antimicrobial susceptibility of the isolated strains was determined.

**Material and methods:** This prospective study included 30 previously untreated patients with CLL and 24 healthy volunteers. Throat and nasal specimens were taken using sterile alginate-tipped swabs. Swabs were placed directly into Stuart's trans-medium, and samples were delivered to the laboratory, where specimens were streaked onto nonselective medium (blood agar) and selective medium (MacConkey agar). Plates were incubated for 24–48 h at 35°C under aerobic conditions. Presence of GNR in sample from nostrils and/or throat was called colonization. The identification of isolates was determined and antimicrobial susceptibility of the isolates was tested by the disc diffusion method according to the European Committee on Antimicrobial Susceptibility Testing recommendations. ESBL production screening was detected by double-disk synergy test. Peripheral blood (PB) specimens for flow cytometric studies were obtained from 30 CLL patients and 24 healthy donors.

**Results:** A significantly higher frequency of GNR colonization in CLL patients (36.7%) was observed in comparison to healthy volunteers (8.3%). This difference was statistically significant (

**Conclusions:** Awareness of risk factors predisposing to pathogens colonization, allows to identify group of patients which should be considered for immunoglobulin or antibiotic prophylaxis. Moreover, knowledge about antibiotic resistance of the colonizing pathogens is important to propose not only optimal antibiotic prophylaxis scheme but also empiric and targeted therapy with greater likelihood of clinical success.

[239]

### Can we prevent thromboembolic disease in ovarian cancer? Retrospective study.

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**Introduction:** Thromboembolic disease has always constituted a serious issue in oncology. Now, with the society becoming older and cancer diseases occurring more frequently, thrombosis has become one of the main side effects during treatment in this group of patients, often contributing to their premature death. Ovarian cancer remains symptomless during early stages, therefore is usually diagnosed when already advanced, and significantly increases the risk of thrombosis. D-dimers, BMI, leucocytes, blood platelets and hemoglobin are the known risk factors for thromboembolic disease.

**Aim of the study:** In our research we want to find out if type of chemotherapy has influence on frequency of thrombosis. We wish to consider if through control of the risk factors mentioned and intervention in the proper moments of treatment, we can decrease the risk of thromboembolic incidents in ovarian cancer patients.

**Material and methods:** The research group was treated with first-line chemotherapy scheme – paclitaxel with carboplatin (TK) and then bevacizumab. The control group was given paclitaxel and carboplatin only. The two groups were compared with regard to thrombosis risk factors before treatment and after each course of chemotherapy. BMI, D-dimers, leucocytes, blood platelets and hemoglobin were the parameters taken into consideration. For analytical purposes we used statistics.

**Results:** The research group comprised 19 patients treated according to TK + bevacizumab scheme, 4 of which had a thromboembolic incident. The control group contained 22 patients treated with standard first-line chemotherapy- 1 had a thromboembolic incident. The comparison of two parameters: BMI and D-dimers with and without thrombosis indicated a statistically important difference ( $p=0.0001$ ). (According to the scale of assessment  $BMI \geq 35 \text{ kg/m}^2$  is the risk factor, while in our research thromboembolic incidents occurred at a lower BMI). The more frequent occurrence of thromboembolic incidents in patients treated with bevacizumab was evident.

**Conclusions:** The risk factors of thromboembolic disease are high BMI and increased level of D-dimers. Keeping the body mass in check through proper diet and slimming treatment might help in avoiding thromboembolic incidents. Chemotherapy with the use of bevacizumab can be the risk factor of thromboembolic disease, but further research on bigger group of patients is required.

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[240]

### Analysis of complications' risk factors after Radical Cystectomy

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**Introduction:** Radical cystectomy (RCE) is one of the most traumatic surgeries in oncurology and is accompanied by the development of number of complications. Understanding the risk factors why these complications appear makes it possible to predict and thus prevent the development of complications.

**Aim of the study:** To identify complications' risk factors after RCE.

**Material and methods:** A retrospective analysis has been conducted analyzing treatments results of 92 patients who underwent RCE in regards to bladder cancer, its exstrophy and necrosis due to radiotherapy. Based on Clavien-Dindo classification, it was identified that 40% of patients had early post-surgical complications. Statistical analysis of the results was performed using the program Medstat and Excel.

**Results:** Age of patients ranged from 19 to 81 years (average  $58.6 \pm 1,28$  years), the majority were men - 81 (88.0%) and 11 women (12.0%), ratio of 7.4:1. 92.4% were diagnosed with cancer with invasion of the muscular layer. Metastases in regional lymph nodes were detected in 24 (26.0%) patients, distant metastases in 2 (2.2%) patients. When analyzing the influence of age (in patients above 65) on the frequency of complications' appearance, a direct correlation was discovered ( $r=+0,4$ ;  $p<0,05$ ). Analysis of frequency of severe complications from the aggressiveness of tumor revealed a direct correlation relationship ( $r=+0,43$ ;  $p=0.01$ ). History of

pyeloectasia also served to predict development of complications, as evidenced by the existence of a direct, albeit weak, correlation ( $r=0,26$ ;  $p<0,05$ ).

Early mortality was recorded at 9.0% among women and 1.2% in men, which displays higher post-surgical mortality rate in female patients. Analysis of the overall survival (OS) showed the following results: 1 year-OS 88.0%, 3 year OS-52.2%, while the inverse correlation was found between the degree of severity of post-surgical complications, and 3 year OS ( $r=-0,42$ ) at a significance level of  $p<0,05$ .

**Conclusions:** The tendency to increased frequency of complications among patients above 65 and in patients with highly aggressive tumor has been identified, which should be considered prior to performing the surgery. 48% patients had pyelectasia even before the surgery, which contributed to the development of chronic inflammatory process in kidneys, which greatly exacerbated early post-surgical period. The need to identify and control complications' risk factors in the pre-surgical period is confirmed by the presence of inverse correlation between the severity of complications and a 3 year OS.

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[241]

#### THE HEAVY METALS AND BREAST CANCER

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**Introduction:** To date it is not possible to control the growth of morbidity due to lack of effective ways of primary prevention. Comparing the incidence of breast cancer in developed countries with the countries of Asia and Africa, there is the fact of predominance lesion of population in more urbanized countries. This suggests that the environment along with other factors, occupies a significant place in the initiation and progression of breast neoplasia.

**Aim of the study:** The objectives of this paper are as follows: the chemical composition determination of neoplastic breast tissue, evaluation of the DNA methylation level, study of prognostic-important receptors expression in the BC cells, establishing linkages between all the derived indicators.

**Material and methods:** In our study we used the following methods: studying of the chemical composition of BC tissue by atomic absorption spectrophotometry and energy-dispersion spectrometer; Immunohistochemical study of ER, PR, HER2/neu, p53, Ki-67, E-cadherin and MGMT receptors; DNA extraction and investigation by oscillating infrared spectroscopy method; Statistical analysis of the results.

**Results:** The total number of heavy metals in breast cancer tissue ranged from 51.21 to 84.86mg/kg (average 72.44mg/kg). They accumulated more in the parenchymal component of tumor tissue. We have got the following results: the growth of heavy metals in neoplastic tissue is accompanied with the increase of HER2/neu, p53, Ki-67, MGMT expression and decrease of ER and PR expression. The growth of pathological DNA methylation is also accompanied with the increasing number of heavy metals in tumor tissue.

**Conclusions:** DNA of tumor tissue has a different level of methylation which depends on the number of heavy metals in cancer cells. This is displayed on the synthesis of prognostically important receptors (MGMT, p53) in neoplastic tissue. Heavy metals through different pathogenetic links stimulate the progression of breast cancer and reduce its sensitivity to treatment.

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[242]

#### The cytotoxic effect of linoleic acid on colon cancer cell lines under tissue normoxia and hypoxia

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**Trustee of the paper:** Keyword 1: linoleic acid Keyword 2: colon cancer cell lines Keyword 3: oxygen level

**Introduction:** Linoleic acid (LA) is a fatty acid which exerts tumoricidal activity attributed to oxygen-dependent ROS generation and lipid peroxidation. Other fatty acids also influence cytotoxic LA effect. As yet, the effect of LA on cancer cells was studied in vitro at atmospheric normoxia (21% oxygen). Because oxygen level in tumor does not exceed 10%, LA effects observed in vitro may differ from those in vivo, i.e. at 1% and 10% oxygen.

**Aim of the study:** The aim of the study was to evaluate the cytotoxic effect of LA on colon cancer cells under various oxygen level.

**Material and methods:** The study was carried out on the primary (SW480) and metastatic (SW620) colon cancer cell lines cultured in hypoxic chamber at 1% (hypoxia), 10% (tissue normoxia) and 21% oxygen level. LA was added at 40 and 120 uM concentration to the medium containing palmitic (PA) + oleic (OA) acid, thereby gave physiological and suprphysiological LA/PA+OA ratio, respectively. The cell viability was determined using trypan blue exclusion test. Oxaliplatin was used as reference anti-cancer drug.

**Results:** LA decreased SW480 and SW620 cell viability at all oxygen levels. The LA cytotoxicity was prominent at 120 uM and weak at 40 uM LA concentration compared to control. SW620 cells were more prone to LA cytotoxic effect than SW480 cells at all oxygen levels. In the presence of LA there were no differences in SW620 cell viability at 1,10 and 21% oxygen but SW480 cell viability at 1% oxygen was about 1,5-fold lower compared to 10% oxygen at 120 uM LA concentration. The cytotoxic effect of LA at 120 uM in SW620 cells exceeds that observed for oxaliplatin.

**Conclusions:** LA exhibits cytotoxic effect on colon cancer cell lines which is more pronounced in metastatic than primary cells. 1% hypoxia increases LA effect compared to 10% tissue normoxia (in vivo conditions) only in primary colon cancer cells. LA cytotoxicity occurs only in suprphysiological LA/PA+OA ratio and is higher compared to oxaliplatin in metastatic cancer cells. It indicates that cytotoxic LA effect differs between primary and metastatic cancer cells and is dose- and oxygen-dependent. Thus oxygen level and LA/PA+OA ratio should be taken into account in studies on antitumor LA activity.

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[243]

#### **Survival and quality of life following surgery of patients diagnosed with brain metastases.**

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**Introduction:** Brain metastases (BM) are a common challenge in neurosurgery and oncology. They originate most frequently from lung cancer (48%), breast cancer (15%), genitourinary tract cancer (11%), melanoma (9%) and gastrointestinal (3%). Neurological symptoms caused by BM are often the first manifestation of the neoplastic disease. The standard treatment of BM is surgical resection followed by radiotherapy.

**Aim of the study:** The aim of our study was to examine the effects, complications and quality of life of surgical treatment of BM and to define the demographic features of patients with BM in Clinic of Neurosurgery of Medical University of Silesia in Katowice.

**Material and methods:** 204 patients were diagnosed with BM between the years 2005 and 2014 and underwent surgical treatment, most commonly via craniotomy. In some cases stereotactic biopsy was performed to achieve histological sample of tissue. Medical records and imaging were reviewed for all patients. Quality of life was determined using Karnofsky Performance Status Scale (KPS). Necessary information and further treatment was obtained by phoning patients.. Glasgow Outcome Scale (GOS) was used to evaluate clinical outcome after surgical treatment. All calculations were made in Statistica 12.

**Results:** From all patients 103 were female and 101 were male. The average age was 59,9. Lung cancer was the origin of BM of 96 (55%) patients, breast cancer had 22 patients (13%), genitourinary tract cancer 27 patients (16%) melanoma 15 patients (9%) and gastrointestinal cancer 14 (7%). The most common localization was superficial - 119 patients (58%), deep - 69 (33%) and middle 18 (9%). Average hospitalization in neurosurgical ward was 12 days. Early complications were present in 22 cases such as paresis, aphasia or nausea.. 80% of patients had good or excellent outcome (GOS ≥4) with rise of their KPS score.

**Conclusions:** BM were most frequent in patients around the age of 60. The same frequency of cases was noted for both males and females. Most common localization of BM was superficial - 119. Most patients had beneficial results of surgical treatment with quality of life with KPS improvement therefore we conclude that this treatment should be considered with every patient with BM.

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[244]

#### **Association of breast cancer and meningioma**

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**Introduction:** The association of breast cancer and meningioma is becoming a popular field of study. Literature confirms of existing factors present for both neoplasms such as progesterone receptor or the influence of sizes of the neoplasms on each other. Breast cancer is the most common neoplasm for woman and meningiomas are the second most common primary brain tumors. This shows the gravity of researching their association.

**Aim of the study:** The aim of our study was to examine factors such as age, size, localization, WHO grade, histological type for patients with both breast cancer and meningioma and confront our results with literature.

**Material and methods:** Between the years of 2007 – 2014, 389 female patients were diagnosed with meningioma in Clinic of Neurosurgery of Medical University of Silesia in Katowice. From this group 17 were already diagnosed with breast cancer and 1 patient was diagnosed with it after surgical treatment. Medical records and imaging were reviewed for all patients. Simpson's grading scale was used to evaluate the extend of surgical resection. Glasgow Outcome Scale was used to evaluate clinical outcome and early complications after treatment. All calculations were made in Statistica 12.

**Results:** The mean age of patients with both meningioma and breast cancer was 58 years (range 42-72 years). Localization of meningioma was superficial in 12 cases (67%) and 6 deep (33%). 11 (61%) were localized on the right side, 6 (33%) left side and 1 (6%) middle. All meningiomas were the size under 3cm and benign (WHO grade I – 16, WHO grade II – 2). 14 patients with breast cancer had benign tumors and 4 malignant tumors. 15 patients (83%) were classified to Simpson grade I or II, 2 patients had Simpsons grade III, 1 patient grade IV. All patients had very good outcome after surgery – Glasgow Outcome Scale 5.

**Conclusions:** Out of 389 female patients with meningioma treated by surgical resection 5% were patients with breast cancer. For most patients both neoplasms were benign. Dominating localization was superficial, size of meningiomas was smaller in comparison with general population. Surgical treatment had excellent outcome.

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[245]

### **Bacterial blood stream infections in hematopoietic stem cell transplant recipients during the preengraftment period - assessment of incidence and risk factors.**

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**Trustee of the paper:** dr hab. n. med Lidia Gil

**Introduction:** Hematopoietic stem cell transplantation (HSCT) is a standard therapy for many hematologic malignances. Bacterial blood stream infections (BSI) are well-known cause of morbidity and mortality in recipients of HSCT, typically vulnerable to infection during the neutropenic period.

**Aim of the study:** The aim of the study was to assess etiology, incidence and risk factors of BSI during first 30 days after HSCT in group of patients undergoing allogeneic HSCT (alloHSCT) or autologous HSCT (autoHSCT) in a single center between January 2012 and December 2014.

**Material and methods:** We retrospectively analyzed medical records of 306 patients (pts) (149 females, 157 males). Uniform prophylactic measures, as well as empirical antibiotic therapy were applied to all patients.

**Results:** Total number of BSI was 131 with Gram(-) and Gram(+) bacteria comprising 56 and 75, respectively. It occurred in 34.96% of all pts, but was more often observed after alloHSCT than autoHSCT (43.6% vs. 26%; p=0.0019). Percentage of G(-) BSI was increasing during these years, but it wasn't statistically significant (2012: 35%, 2013: 37%, 2014: 49%, p=0.1693). Among G(-) bacteria the most common was K.pneumoniae ESBL+ and among G(+) methicillin-resistant S.epidermidis. Gram(-) ESBL+ strains were more common than ESBL- (31 vs. 25). Among patients undergoing alloHSCT bone marrow recipients had BSI more often than peripheral-blood stem cell recipients (60.0% vs. 39.7%, p=0.070). Patients who received alloHSCT from matched-unrelated donors were at the risk of BSI in comparison to family donors (OR: 2.43 CI: 1.73-5.03). In autoHSCT setting lymphoma-sufferers BSI was observed more often than among myeloma ones (39.5% vs. 12.2%, p=0.003).

**Conclusions:** In autoHSCT the risk of infections is significantly higher in patients transplanted due to lymphoma than myeloma procedure. Among alloHSCT, transplants from unrelated donors or from bone marrow as a source had the higher risk of BSI. Increasing number of resistant bacteria remains a concern.

# Ophthalmology

**Jury:**

prof. nadzw. dr hab. n. med. Dariusz Kęcik  
dr hab. n. med. Piotr Skopiński  
prof. dr hab. n. med. Zbigniew Zagórski

**Coordinator:**

Jacek Dziedziak

**Date:**

Saturday, May 14th, 2016

**Location:**

Room 140, Didactics Center

**Regular:**

Maksims Tjurins

Tímea Virág

Katarzyna Moskal

Jędrzej Nowak

Małgorzata Bilińska

Marta Hajduga

**Short:**

Adriána Furdová

Katarzyna Samelska

Olha Motuzenko

Marta Bazylevych

Monika Kowalik

[246]

### Changes in the Anterior Chamber after Cataract Surgery with Intraocular Lens Implantation

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**Trustee of the paper:** Maksims Tjurins

**Introduction:** Anterior chamber is an important eye area that is filled with aqueous humor and is passed through the anterior chamber angle to the drainage canal. These structures play a huge role in pathogenesis of glaucoma. It is necessary to know how the most common surgical procedure in Europe (cataract surgery) influences anterior chamber configuration.

**Aim of the study:** The objective of the current study was to investigate changes in anterior chamber parameters after phacoemulsification and intraocular lens (IOL) implantation, using Pentacam rotating Scheimpflug camera.

**Material and methods:** In this prospective study we analysed anterior chamber parameters of 20 eyes of 18 patients before and 2 weeks after phacoemulsification and intraocular lens (IOL) implantation. Mean age 66.8 years  $\pm$  10.5 [SD]. The following variables were measured: anterior chamber depth (ACD), anterior chamber angle (ACA), and anterior chamber volume (ACV). All operations were done in the same operating room by the same ophthalmic surgeon (I.S.). Statistical analyses were performed using the SPSS 20.0 software. Difference between before and after operation values were analyzed by the Student two-tailed paired t test. Correlation coefficients of significances calculated by Student two-tailed t test. Data are expressed as mean  $\pm$  SD.

**Results:** Anterior chamber depth increased from 3,29 $\pm$ 0,48 mm to 5,18 $\pm$ 0,39 mm ( $p = 0,0004$ ). Anterior chamber angle increased from 32,3 $\pm$ 7,0 degrees to 44,2 $\pm$ 3,2 degrees ( $p = 0,019$ ). Anterior chamber volume increased from 149,8 $\pm$ 45,9 mm<sup>3</sup> to 202,0 $\pm$ 23,5 mm<sup>3</sup> ( $p = 0.005$ ).

**Conclusions:** The present results showed that anterior chamber depth, anterior chamber angle and anterior chamber volume increased significantly after phacoemulsification with intraocular lens implantation. Therefore cataract surgery decreases the risk of angle-closure glaucoma. People with cataract and narrow anterior chamber angle should undergo cataract surgery as fast as possible to prevent angle-closure glaucoma.

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[247]

### Corneal aberration parameters and visual acuity changes after riboflavin ultraviolet-A collagen cross-linking in progressive keratoconus

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**Trustee of the paper:** Dr. Máté-István Ildikó

**Introduction:** The keratoconus is one of the cornea dystrophies. It has a multifactorial etiology, such as age, genetic and environmental influences, socioeconomic factors and it affects both genders, all ethnic groups. The keratoconus was classically described as a bilateral, non-inflammatory ectatic corneal disorder, it is associated with a progressive thinning and protrusion of the cornea, which pathology leads to myopia, irregular astigmatism and vision impairment.

**Aim of the study:** The aim of the present study was to evaluate the effect of corneal cross-linking (CXL) in progressive keratoconus regarding corneal aberrations and visual acuity.

**Material and methods:** Patients with progressive keratoconus at Semmelweis University Department of Ophthalmology between 2012 and 2015 were included in this study. Baseline measurements included the best-corrected visual acuity (BCVA), and corneal aberrometry root mean square values (RMS), higher order aberration values (HoA) and lower order aberration values (LoA) at anterior and posterior corneal surface measured using OCULUS Pentacam Scheimpflug Cross-sectional imaging. All patients were subsequently treated by riboflavin UV-A collagen cross-linking method and reevaluated at 2.5 years postoperatively.

**Results:** Thirty-three progressive keratoconic eyes from 33 patients (10 female, 13 male) were enrolled. Mean patient age was 29 $\pm$ 10 (range 16 to 55). No intraoperative or postoperative complications were observed in any of the patients. BVCA increased post-CXL, 0,72 $\pm$ 0,21 vs. 0,87 $\pm$ 0,20. Mean RMS of total corneal surface in  $\mu$ m was 10,81 $\pm$ 6,71 before and 9,42 $\pm$ 6,10 after surgery. Mean HoA of total corneal surface in  $\mu$ m was 2,52 $\pm$ 1,30 at baseline and 2,47  $\pm$  1,43 after surgery. LoA of total corneal surface in  $\mu$ m was 10,42  $\pm$  6,51 before and 9,16 $\pm$  6,28 after the procedure. All measured parameters improved significantly ( $p < 0.05$ ) after CXL. HoA of total corneal surface was correlated to BCVA ( $R = -0.7$ ,  $p > 0.001$ ) both pre- and post-CXL.

**Conclusions:** Riboflavin UV-A collagen cross-linking improves visual acuity and corneal aberration parameters in progressive keratoconus eyes.

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[248]

**Pattern of uveitis in Poland.**

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**Trustee of the paper:** Joanna Brydak-Godowska, Mariusz Przybyś, Piotr Borkowski

**Introduction:** Uveitis is an intraocular inflammatory disease resulting from several etiological entities that are linked to geographical, socioeconomic and immunological variables. The main objective of this study was to determine the causes of uveitis in Poland.

**Aim of the study:** To describe the pattern of uveitis in Department of Ophthalmology Warsaw Medical University in Poland and connect them with infectious and systemic diseases.

**Material and methods:** We reviewed all of the case records with a presumptive diagnosis of uveitis from patients referred to Department of Ophthalmology Warsaw Medical University between 2005 and 2015. The cases were classified according to the Standardization of Uveitis Nomenclature Study Group criteria for Uveitis.

**Results:** We encountered 282 uveitis patients, 170 female (60,3%) and 112 male (39,7%). The age of included ranged from 18 to 80 years.

Unilateral presentation was noted in 169 (59,9%) and bilateral in 113 (40,1%) patients. Posterior uveitis was the most common anatomical diagnosis in 137 patients (48,5%), followed by anterior uveitis in 74 patients (26,2%), intermediate uveitis in 38 (13,4%) and panuveitis in 33 (11,7%).

In 61 patients (21,6%) showed an association between uveitis and extra-organ diseases like: joint disease, sarcoidosis or multiple sclerosis. In others diagnosis of infectious uveitis in 111 patients (39,3%) like toxoplasmosis, toxocarosis, tuberculosis or neuroborreliosis was made. In others 97 patients (34,3%) inflammation was idiopathic. In 3 cases uveitis masquerade syndrome was diagnosed, connected with systemic amyloidosis or suspect primary ocular lymphoma.

**Conclusions:** The most common cause of uveitis in our observation was infectious disease. Diagnosis and treatment of uveitis is an interdisciplinary problem.

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[249]

**Evaluation of patients with cystoid macular oedema after MicroPulse Laser Therapy (MPLT). Preliminary study.**

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**Trustee of the paper:** dr n. med. Iwona Świtka

**Introduction:** Cystoid Macular Oedema (CME), defined as retinal thickening of the macula due to a disruption of the normal blood - retinal barrier, causes accumulation of fluid within the intracellular spaces and is a leading cause of central vision loss in the developed world. Visual loss occurs from retinal thickening and fluid collection that distorts the architecture of the photoreceptors. MicroPulse Laser Therapy is a procedure used in the treatment of diseases such as diabetic macular edema, branch retinal vein occlusion or idiopathic macular telangiectasia. MPLT consist in series of repetitive, intermittent pulses. Intervals are the main difference between MPLT and previous method – continuous wave (CW). MPLT allows the tissue to cool between laser pulses, minimizing or preventing tissue damage.

**Aim of the study:** The aim of this study is to evaluate and compare reducing of cystoid macular oedema and the visual acuity, together with the thickness of retina, before and after implementation of MicroPulse Laser Therapy.

**Material and methods:** Our study covered 18 patients (21 eyes), who were treated by MicroPulse Laser Therapy in 2015. Average age of a patient was 62 years (29-78 years). 25 laser procedures were performed. We collected and compared the data of reducing of cystoid macular oedema, thickness of retina and visual acuity before and after the treatment, with the use of Optical Coherence Tomography (OCT) and (Retinal Thickness Analyzer) RTA. Age, gender and associated diseases, besides CME and DR (diabetic retinopathy), were assessed.

**Results:** Oedema was reduced in 16/25 (64%) procedures. Average reduction of edema was at the level of 70,2  $\mu\text{m}$  (3 – 212  $\mu\text{m}$ ). We also observed enlargement of edema after 9/25 (36%) procedures. Average enlargement was at the level of 20,7  $\mu\text{m}$  (3-60  $\mu\text{m}$ ).

In our study we have also took into account vision acuity (VA). Vision acuity was enhanced in 4 patients. We also observed worsening of VA in 8 patients and no significant change in 8 patients. In 5 cases data was incomplete.

**Conclusions:** MicroPulse Laser Therapy, as a method of reducing Cystoid Macular Oedema, may be implemented as a well promising therapy, as results show that more than half of the patients responded well. However, in case of visual acuity, it does not show a positive correlation as more patients observed worsening of VA.

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[250]

### **Endoscopic orbital decompression (EOD) for graves orbitopathy- preliminary treatment results**

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**Trustee of the paper:** Mirosław Szczepański, MD, PhD

**Introduction:** Graves' Ophthalmopathy is an autoimmune disease characterized by anti-thyroglobulin immune complex deposition and inflammatory cell infiltration of the orbital fat and muscles and subsequent fibrosis. Female predominance is observed (2.5-6 times more frequently), severe cases occur more often in men. The clinical manifestations range from tearing, photophobia, periorbital edema, proptosis, exposure keratitis, and diplopia to visual loss. The most common clinical signs are proptosis (asymmetrical / bilateral) and diplopia. In more severe cases keratoconjunctivitis, eyelid retraction and corneal ulcerations occur, because of insufficient eyelid closure. Optical neuropathy is caused by a compression on the posterior third of ophthalmic nerve, located at the orbital apex. The first line of management is by high doses of corticosteroids, surgical decompression is indicated for long-standing cases resistant to steroid treatment, acute cases with visual loss and for cosmetic indications.

**Aim of the study:** The aim of the study was to evaluate the preliminary results of endoscopic orbital decompression for Graves' orbitopathy.

**Material and methods:** Study material consisted of 11 patients (8 women, 3 men); 17 orbits. Indications for surgery included optic neuropathy, increased intraocular pressure and cosmetically disfiguring proptosis. All cases had orbital decompression by the nasal endoscopic approach (medial / medial and inferior wall ) under general anesthesia. All patients underwent Ophthalmological consultation pre- and postoperatively.

**Results:** In all patients improvement of vision, proptosis reduction and reduction of intraocular pressure was observed. 24 hours after surgery significant improvement of vision was noted in patients with optic neuropathy. The surgery had no impact on diplopia, which occurred before the treatment. No intraoperative and postoperative laryngological or ophthalmological complications were observed.

**Conclusions:** Endoscopic orbital decompression has become the surgical treatment of choice for many patients with orbital manifestations of Graves' disease. Preliminary results suggest, that EOD is a safe and effective procedure for the treatment of thyroid orbitopathy and produces an effective reduction in proptosis. Close cooperation between Rhinologist and Ophthalmologist is essential in severe Graves' orbitopathy cases treatment.

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[251]

### **Orbital lymphomas from the Department of Ophthalmology at the Medical University of Silesia in Katowice**

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**Introduction:** Eye socket is an infrequent place of NHL (non-Hodgkin lymphoma, NHL) occurrence, appearing from 8 to 15% of extranodal NHL location. The most common manifestation of the disease is slow growth in the eye socket, which can be asymptomatic or depending on the location of the tumor - associated with exophthalmos, disorders of ocular motility, periorbital edema, blurred vision or swelling of the conjunctiva. In

the case of orbital lymphoma nonspecific clinical presentation may be initially evaluated as different units of disease.

**Aim of the study:** The aim of this study was the analysis of prevalence and type of lymphoma in the material collected from the eye socket.

**Material and methods:** In the period of 2011-2015 at the Department of Ophthalmology at the Medical University of Silesia in Katowice 43 procedures were performed, which resulted in the material collection from the eye socket to the histopathological examination. In the collected material there were found 7 different types of lymphomas in 4 women and 3 men, aged 59-86 years.

**Results:** Histopathological analysis of the collected tumors revealed 6 B-cell lymphoma (including 2 MALT and 1 DLBCL), one mantle cell lymphoma. Only two tumors were removed in its entirety, including one, which infiltrated the lacrimal gland. The symptoms often resembled nonspecific inflammation. In the one case at the same time hemangioma was removed from the same orbit, in the another one case it was suspected metastatic breast cancer.

**Conclusions:** Due to the non-specific symptoms, in any case of the orbital tumor, biopsy is necessary to establish the diagnosis and targeted therapy.

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[252]

### **The Usage of Smartphone as an Imaging Technique for the Eye Fundus Examination in Developing Countries**

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**Trustee of the paper:** Doc. Mgr. MUDr. Alena Furdová, PhD., MPH, Msc., Prof. MUDr. Vladimír Krčméry, DrSc., Dr.h.c.

**Introduction:** Documentation of findings on the eye fundus by modern devices allowing precise diagnostics is an important part of a monitoring and management of eye disorders. However, in developing countries is impossible to find devices as fundus camera and the examination of the eye fundus is in the local hospitals absolutely unavaliabe. This is the reason, why it is necessary to use inexpensive alternative techniques that are easy to use and transportable to hardly reachable areas.

**Aim of the study:** The aim of our study is to present the first experience of the eye fundus photodocumentation within the screening project of eye disorders in South Sudan by using the combination of smartphone and spheric Volk lens.

**Material and methods:** During the period from January to February 2015 in hospital in Mapuordit, South Sudan we were examining main functions of vision of patients – central visual acuity, findings at the eye subsidiary organs, anterior segment, optical media, presence of eye fundus reflex and changes at the inner eye surface. For documentation of findings on eye fundus we used the alternative option to fundus camera – spheric Volk lens (+20 diopters) and a smartphone Lenovo S660, o.s. Android with 4,2 Mpix camera and LED flash. The process of photodocumentation was performed in arteficial mydriasis in laying position in darkened room. The acquired images were not edited by any additional program or application. During the examination patients were not complaining about any discomfort and no complications have occurred.

**Results:** From the total number of patients (241) we made a documentation of findings with Volk lens and smartphone in 9 patients with the age of 10-62 years and visual acuity 0.01-1.0. In 7 from 9 patients were not found any changes of inner eye surface, in two patients have been found various pigmentations. In the first case were captured small numerous pigmentations at the whole surface of the eye fundus and in the second patient have been found ring-shaped pigmentation and changes of vessels typically occurred with hypertension.

**Conclusions:** The examination of eye fundus by using the smartphone and spheric Volk lens is an effective and easy technique, allowing to capture images of the inner eye surface with high quality and reproductibility. In a short time period and difficult conditions in South Sudan, we have successfully examined group of patients with this alternative technique which will hopefully become a standard within examination of patients with eye disorders in developing countries.

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[253]

### **Penetrating keratoplasty and Descemet's stripping automated endothelial keratoplasty may lead to deterioration in glaucoma management**

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**Trustee of the paper:** Justyna Izdebska MD PhD

**Introduction:** Keratoplasty is a treatment for corneal diseases such as pseudophakic bullous keratopathy (PBK) and Fuchs' dystrophy.

Penetrating keratoplasty (PK) has been in use for over 100 years and is applicable as a treatment for disorders found in every layer of cornea. Descemet's stripping automated endothelial keratoplasty (DSAEK) is a newer transplant technique in which only the posterior corneal tissue is replaced.

PK and DSAEK may be followed by postoperative glaucoma in healthy eyes and lead to glaucoma deterioration in eyes previously treated for glaucoma.

**Aim of the study:** The aim of the study was to determine whether PK or DSAEK lead to greater deterioration in the management of preexisting glaucoma.

**Material and methods:** The research is a retrospective study based on documentation of the patients diagnosed with Fuchs' dystrophy or PBK who underwent DSAEK or PK in 2009-2013 and had been diagnosed with glaucoma before the keratoplasty. Patients who were observed for a time shorter than 12 months or qualified for retransplantation were excluded from the study.

The patients' assessment during the 12-month observation was recorded. The glaucoma deterioration was defined by augmentation of the number of anti-glaucoma medication types prescribed or by anti-glaucoma surgeries performed.

**Results:** There were 22 eyes that underwent PK and 10 that underwent DSAEK.

Out of 22 eyes that underwent PK, 12 months after the keratoplasty there was an increase in medications given in 4 cases (18%), there was not anti-glaucoma surgery in any of the cases.

Out of 10 eyes that underwent DSAEK, 12 months after the keratoplasty there was an anti-glaucoma surgery performed in 2 cases. There was increase in medications given in 1 eye out of those not operated. Overall, there was deterioration in glaucoma management in 3 (30%) cases.

12 months after the surgery, there was a decrease in number of types of glaucoma medications used in 6 cases: all of them after PK.

There was a higher incidence of glaucoma deterioration in DSAEK group compared to PK group.

**Conclusions:** DSAEK may present a higher risk of glaucoma deterioration than PK. It is an interesting fact, given that the studies implicate that DSAEK (compared to PK) does not have a bigger risk of leading to glaucoma in eyes with no history of glaucoma. The facts above should be taken into consideration when qualifying the patients for one of these procedures.

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[254]

### **AUTO VISUALIZATION OF THE VASCULAR TREE RETINA**

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**Trustee of the paper:** O.A.Tsikhotska PhD and V.M Didych MD

**Introduction:** Vision is a complex process that involves scanning, focusing and adaption of eye movements and visual information processing in the human brain. Pathological diseases of vascular tract in the eye structure frequently occur. The most common: inflammation, degenerative changes, cancer and injuries and congenital anomalies. Detection of pathology in time is very important, but there are very few methods to do this. Most of them are quite expensive and time-consuming. In our research paper we present a device using which everyone, even at home, will be able to detect the minor deviations in the structure of blood vessels of the retina, which proves the actuality of the topic.

**Aim of the study:** The aim of this work is to describe the results of special devise invention that facilitates the detection of pathology at early stages and to test new methods and ways of diagnosing of vascular tree of the retina, particularly at home, not at hospital.

**Material and methods:** Analysis, synthesis, experiment, comparison and generalization on the basis of physical and medical scientific literature, own research and observations.

**Results:** To solve the problem, the special device, which work is based on the Purkine phenomenon and the emergence of phosphene, was invented. The essence of the Purkine phenomenon is that sensitivity in the dark (i.e. eyes closed) is reduced, while green waves are perceived better for cones which are more sensitive to this wavelength range. As a result, phosphene is formed, which produces the phantom visual image effect of retinal vascular tree due to the stimulation by green.

**Conclusions:** All in all, we made sure that this product is comfortable in use as it is portable, so it has the advantage over an ophthalmoscope, which is stationary. So everyone can check their vessel status and if the slightest disturbances occur, consult a doctor immediately, find out pathology and receive the proper treatment.

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[255]

### **Morphological changes of corneal endothelial cells in patients with different stages of keratoconus**

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**Trustee of the paper:** PhD Andrij Hudz

**Introduction:** Keratoconus is a degenerative disorder of the eye, characterized by progressive thinning, elasticity reduction of the cornea and, as a result, its conical shape. The exact cause of the structural changes of the cornea is unknown.

**Aim of the study:** To study morphological changes of the corneal endothelium in patients with different stages of keratoconus.

**Material and methods:** Twenty-three eyes of 13 patients were enrolled into the study, 9 (69.2%) of them were men and 4 (30.8%) - women.

The mean age was 24.8 (range=18-33) years. The comparison was based on images, which were taken by specular microscope (Tomey, EM-3000) at the medical centre "Vizex", Lviv. The studied parameters included endothelial cell density (CD), average cell area (AVG), the percentage of hexagonal cells, central corneal thickness (CCT) and were analyzed by "Statistica for Windows 5.0" (Statsoft, USA).

**Results:** The mean ECD in stage 1 of keratoconus was  $2613.5 \pm 122.8$  cells/mm<sup>2</sup>, in stage 2 -  $2602.8 \pm 134.2$  cells/mm<sup>2</sup>, in stage 3 -  $2494.6 \pm 125.0$  cells/mm<sup>2</sup> and in stage 4 -  $2520.3 \pm 146.5$  cells/mm<sup>2</sup>. There was no statistically significant correlation between the stage of keratoconus and the ECD ( $p = 0.11$ ). The decrease in ECD was statistically significant in stages 3 and 4 ( $p = 0.05$ ). The mean CCT in stage 1 was  $498.5 \pm 34.1$   $\mu$ m, in stage 2 -  $479.0 \pm 19.2$   $\mu$ m, in stage 3 -  $467.9 \pm 39.7$   $\mu$ m and in stage 4 -  $444.0 \pm 34.9$   $\mu$ m. There was a statistically significant decrease in CCT with stage of keratoconus ( $p = 0.08$ ). The mean AVG in stage 1 was  $383.1 \pm 18.1$   $\mu$ m<sup>2</sup>, in stage 2 -  $385.0 \pm 20.3$   $\mu$ m<sup>2</sup>, in stage 3 -  $401.6 \pm 20.7$   $\mu$ m<sup>2</sup> and in stage 4 -  $397.8 \pm 24.3$   $\mu$ m<sup>2</sup>. The mean percentage of hexagonality (6A) in stage 1 was 47.6%, in stage 2 - 41.8%, in stage 3 - 42.4% and in stage 4 - 44.5%. There was no statistically significant correlation between the stage of keratoconus and the AVG ( $p=0.11$ ) or percentage of hexagonality (6A) cells ( $p=0.19$ ).

**Conclusions:** The results of this investigation have shown that there is statistically significant decrease in CCT with the stage of keratoconus. The decrease in the ECD was statistically significant only in stages 3 and 4. No significant relationships were found between the stage of keratoconus and the AVG or percentage of hexagonality cells.

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[256]

### **The type and frequency of adverse reactions and reasons for wearing contact lenses – survey research of people between 17 and 28 years old**

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Chair and Department of Ophthalmology Departmen at the Jagiellonian University

**Trustee of the paper:** Anna Bogdali PhD

**Introduction:** People with eyesight disorders constitute a significant percent of the population. Many people live actively, that induces them to seek more convenient forms of vision correction. Contact lenses are constructed mostly from the hydrogel and have undoubtedly many advantages – they are comfortable, recommended for people with large visual defects, do not affect color vision, do not distort the image on the perimeter. However, improper adjustment and use can cause a number of side effects, therefore it is important to visit the ophthalmologist regularly.

**Aim of the study:** Evaluation of the incidence and type of side effects and reasons for use of contact lenses.

**Material and methods:** The study was conducted in a group of 350 respondents wearing contact lenses, consisting of people aged 17-28. Voluntary, anonymous and proprietary survey was used. Data was analyzed using the program Statistica 10.0.

**Results:** The majority of respondents are using the lenses at least one year and up to 94% of the questioned are satisfied with the use of them. 61% believe that wearing the lenses is more comfortable than glasses, but only 16% of them did not experience any side effects associated with the use of the lenses. The most common side effects reported by respondents include: dry eyes (51%), redness (49%), irritation (46%), tearing (41%). 18% of interviewees declared symptoms remarkably severe, that required an ophthalmologist visit. As many as 70% of respondents announce aesthetic values as the main reason for the use of lenses.

**Conclusions:** The most common reason for choosing lenses are aesthetic gains. Despite the relatively high incidence of side effects while using lenses, the vast majority of the respondents did not required ophthalmology consultation. Almost all of the respondents are satisfied with the usage and more than half of them believe that they are more convenient than glasses.

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# Orthopedics

## Jury:

dr hab. n. med. Ireneusz Babiak  
dr hab. n. med. Dariusz Białoszewski  
dr hab. n. med. Krystyna Księżopolska-Orłowska  
prof. dr hab. n. med. Paweł Małydk  
dr hab. n. med. Witold Rongies  
dr hab. n. med. Grzegorz Szczęsny  
dr n. biol. Zbigniew Wroński

## Coordinator:

Marcin Maciejewski

## Scientific Patronage:

Polskie Towarzystwo Ortopedyczne i Traumatologiczne



**Date:**

Saturday, May 14th, 2016

**Location:**

Room 231+232, Didactics Center

**Regular:**

Boglárka Debity  
Konrad Synowiec  
Daryna Kechur  
Grațiana Georgescu  
Rūdolfs Vīksne

**Short:**

Prannoy Paul  
Oleksandra Grygorenko  
Linda Rancāne  
Igor Chantsau  
Miłosz Durka

[257]

### Functional analysis of the spine in young fencers by using Spinal Mouse

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**Trustee of the paper:** Julianna Cseri, Hajnalka Petrika, Júlia Battáné Tar

**Introduction:** Asymmetric mechanical forces act on the fencers' spine causing muscle dysbalance and impaired function.

**Aim of the study:** Aim of the study was the examination of the occasional spinal deviations and elaboration of a specific physiotherapy intervention for correction.

**Material and methods:** The group of 24 young fencers (age:  $17 \pm 3.3$  years) took part in the study. They had regular, intensive training programme being participants of national/international competitions. The control group at similar age was composed of 30 young people without regular sports activity. The lifestyle, injuries and pain were revealed by a questionnaire. The level of the pain was recorded in a Visual Analogue Scale (VAS). The circumferences of the upper and lower extremities were measured in both groups comparing the dominant and the opposite sides. The objective data about the spinal flexibility were measured by using Spinal Mouse®. Our study focused on the reduced movements of the spine in frontal plane. Based on the initial findings a 12-week physiotherapy programme containing functional training, proprioceptive elements and dynamical stabilization was constructed.

**Results:** The circumference measurements showed asymmetry between dominant and the opposite arms (the difference was  $2.23 \pm 0.52$  cm in the fencers and  $0.06 \pm 0.17$  cm in the control group,  $p < 0,01$ ). Significant differences were not detectable in the lower extremities. The objective measurements of spinal lateral flexions before the training programme showed deviations from the reference values in Th2-4 and Th11-L1 segments in correlation with the location of the pain. Due to the physiotherapy programme the symmetry and bilateral flexion of the spine increased ( $p < 0,001$ ). The upper back pain indicated by VAS decreased from  $4,65 \pm 2,61$  to  $2,77 \pm 1,96$  ( $p < 0,05$ ).

**Conclusions:** Results show that physiotherapy programme significantly improved the mobility, segmental flexibility and stability of the spine exposed to asymmetric load. By conclusion the integration of the physiotherapy programme to the fencers' training programme is recommended to increase the performance and to prevent injuries.

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[258]

### The work-related musculoskeletal pain among baristas

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**Introduction:** The prevalence of work-related musculoskeletal pain is widely investigated in some groups such as army, medical staff or industrial workers. Baristas are an occupational group, which is still raising in number. They should be investigated due to the cumulative load. Standing long hours behind the bar and making coffee, which is a very precise action, might cause particular musculoskeletal disorders similar to 'tennis elbow'.

**Aim of the study:** The aim was to evaluate the impact of the baristas' work on their musculoskeletal pain.

**Material and methods:** The study group consisted of 384 international baristas (the mean age: 26,2; 153 women and 231 men). The authors' questionnaire with the elements of the Nordic Musculoskeletal Questionnaire was used to assess musculoskeletal pain. The data concerning the work experience, the knowledge of ergonomics and the rating of physical strain at work were also collected.

**Results:** Among baristas 83.9% complain about musculoskeletal pain (53.9% lower back pain, 45.1% lower extremities pain, 29.2% wrist pain); 82.9% of them attributed it to their work, but only 12.1% have visited the medical specialists to treat the symptoms. 20.5% use painkillers to ease the pain which occurs at work. 78.9% have ever heard about the concept of ergonomics, but only 35.4% of the investigated group had a training concerning ergonomics issues. 48.7% think that the procedure of making espresso might cause wrist injury. The mean rate of the physical strain at work was 5.5 (in 1 to 10 scale).

**Conclusions:** The significant impact of baristas' work on musculoskeletal system was observed. The knowledge of ergonomics and the awareness of the health effects of the job are crucial in prevention and treatment.

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[259]

**Roentgenological characteristics of the lumbar spine of human depending on age and gender features.**

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**Introduction:** Osteoporosis is a common disease of the skeletal system, which also occurs in younger people without manifest clinical symptoms at the initial stages. The most vulnerable to osteoporosis are the lumbar and thoracic spine, as they receive most of the body load. The integral indicator of osteoporosis is reduction of the bone mineral density, which primarily affects bones with predominance of trabecular bone tissue. As vertebral bodies are mainly composed of spongy tissue, the early radiographic signs of osteoporosis include increased radiolucency of the vertebral bone tissue with subsequent deformation of the vertebrae. In this view, the studying of the qualitative and quantitative features of the lumbar vertebrae expands opportunities for early diagnosis and prevention of osteoporosis.

**Aim of the study:** To study the qualitative and quantitative characteristics of the lumbar vertebrae of human spine depending on age and gender features.

**Material and methods:** 50 radiographs of the lumbar spine (of 28 male and 22 female patients of the Lviv Clinical Municipal Communal Emergency Hospital) in anterior and lateral projections were analyzed. The extent of radiolucency and the character of radiologic picture were examined. Three heights (anterior, middle, posterior); sagittal and transverse diameters were measured. Based on these data, the Barnett-Nordin, Rochlin and Sharmazanova indices were determined.

**Results:** The study of the qualitative features revealed: the increase in radiolucency of the bone tissue is seen in patients of the 1. mature age (both genders). The Barnett-Nordin index analysis revealed that its maximum value (94-100%) is characteristic of young patients and gradually decreases with age (lowest value is 80.5%-L3 of males). The value of the Rochlin index decreases with age as well; however, as soon as the 2. mature age, especially in females, the index value decreases significantly (min. 60.2% for L5); besides, for elderly patients the index value is below the norm. The analysis of Sharmazanova index shows: its values are somewhat different from the previous ones and are slightly reduced in young people (41.4 to 44.0). The lowest rate of the index is typical for the vertebrae of females of the 2. mature age (36.1 - 39.2%).

**Conclusions:** Radiographic studies provide an opportunity for studying the quantitative and qualitative criteria for osteoporosis in its early stages. One of the earliest manifestations of osteoporosis is the increased radiolucency of the vertebral bodies.

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[260]

**Complications in carpal tunnel decompression surgery: a meta-analysis of 9 studies**

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**Trustee of the paper:**

**Introduction:** The carpal tunnel syndrome is a common clinical disorder affecting the wrist and the hand, that occurs when there is an increased pressure inside the carpal tunnel, resulting ischemia of the median nerve and physiological dysfunction. In order to release the pressure, a complete surgical decompression of the flexor retinaculum ligament has to be performed.

**Aim of the study:** The purpose of this study is to look at the possible complications that occur after the surgery and what needs to be done in order to treat and avoid them.

**Material and methods:** Several data has been processed from studies conducted on 40 patients, 26 females (65%) and 14 males (35%) between 2014-2015. The patients were diagnosed with carpal tunnel syndrome, presenting pain or numbness in the thumb, index, middle finger, the radial side of the ring finger and a reduction of the strength and function of the affected hand. 19 patients (47,5%) were referred following initial surgery elsewhere, 6 (15%) of them developed hypertrophic scars and dysesthesias after multiple procedures to release

the carpal tunnel. 8 patients (20%) presented an incomplete division of the transverse carpal ligament. A severe complication presented in 2 cases (5%) was median nerve injury, as a result of the nerve being repeatedly subjected to mechanical forces. 3 patients (7,5%) developed neuromas caused by damage to the cutaneous branch of the median nerve after their first carpal tunnel release surgery.

**Results:** The most common complication was incomplete cutting of the transverse carpal ligament in 8 patients (20%), which will often resolve in time and there is little evidence to suggest that reconstructing the ligament helps. Excessive tenderness and hypertrophy of the scar in 4 cases (10%) responded to physical therapies and the other 2 patients (5%) occasionally may require surgical revision of the scar. 3 patients (7,5%) with injury to the palmar cutaneous branch required surgical excision and the 2 cases (5%) with injury to the median nerve required nerve grafting and a tendon transfer to restore thumb movement.

**Conclusions:** Even though the complications had severe effects, they were successfully resolved. During the healing process, the ligament gradually grows back together, allowing more room for the nerve than there was before and most patients were able to return to their jobs.

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[261]

### **Evaluation of intraoperative high-volume local infiltration for early analgesia after total shoulder replacement**

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**Introduction:** Total shoulder replacement surgery is associated with mild to severe post-operative pain that lasts for up to 48 hours and is particularly severe during movement. Local infiltration analgesia (LIA) technique is one of the analgesic methods along with brachial plexus block. LIA technique involves infiltration of the wound during surgery with local anaesthetic (Ropivacaine) along with an adjuvant (e.g. epinephrine). Brachial plexus block technique involves injection of local analgesic in close proximity to the nerves of the brachial plexus.

**Aim of the study:** Evaluate the high-volume local infiltration analgesia as a component of multimodal post-operative analgesia after total shoulder replacement

**Material and methods:** Patients scheduled for total shoulder replacement surgery were randomized into one of the 3 groups. First group is consisting of patients with plexus brachialis block (Ropivacaine 0.2% 40ml) and general anaesthesia. Second group consists of patients with LIA method receiving general anaesthesia + Ropivacaine 0,2% 140 ml combined with Epinephrine. The third group are patients with general anaesthesia only. After surgery all three groups received multimodal analgesia which included Acetaminophen, Naproxen and Morphine if VAS (visual analogue scale) scale showed > 4. VAS score was assessed while at rest and performing movements and scored from 0 to 10 where 0 equals no pain and 10 as the highest intensity pain.

**Results:** Our results show that there were no significant difference in pain for the first 48 hours after surgery while at rest but movement pain had a tendency to be lower with LIA group.

Pain directly after surgery is higher in LIA group, but pain intensity does not require analgesics.

In first 8 hours of post-operative period a higher need for analgesics was in the general anaesthesia group.

In first 8 hours general anaesthesia group had a higher pain intensity at rest than other groups.

**Conclusions:** The results are not statistically valid since we have a small amount of patients, there are only observable tendencies. Also the success of LIA and plexus block is dependent on the technique and skill, therefore results may slightly vary. LIA group shows a decrease in pain with movement in relation to other groups.

Yet there are too few significant data that distinguishes one of the methods as more effective and further research is necessary.

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[262]

### **Delay in time from fracture to surgery: a potential risk factor for in-hospital mortality in elderly patients with hip fractures?**

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**Trustee of the paper:** PRANNOY PAUL

**Introduction:** With increasing life expectancy, developing countries are about to witness a sharp rise in the incidence of hip fractures in the near future .Hip fractures are very common in the elderly and are associated with high degree of morbidity and mortality. Some guidelines recommend that surgery within 48 hours may provide better outcomes. But, the effectiveness of an early surgery in reducing mortality remains largely unknown in the context of developing countries

**Aim of the study:** To estimate the Impact of delay in surgery for hip fracture on short term outcome measured in terms of in-hospital mortality.

**Material and methods:** Medical records of all patients above the age of 60 years admitted to a Medical College Hospital in Kerala, India from 1st January, 2005 to December 31st, 2009 with a primary diagnosis of hip fracture were reviewed to analyze the relation between timing of surgery and in-hospital mortality.

**Results:** Among the 144 patients reviewed, there were 12 (8.3%) in-hospital deaths. Age at fracture, gender, type of surgery or comorbidities were not associated with significant in-hospital mortality ( $p>0.05$ ), whereas timing of surgery was associated with significant in-hospital mortality ( $p=0.01$ ). Delay in surgery increased the risk of in-hospital mortality by 8 fold (OR: 8.3, 95% CI 1.04-66.64,  $p=0.01$ ).

**Conclusions:** Delay in time from fracture to surgery is associated with increased in-hospital mortality, and if the association our results provide is causal, improving patient access to healthcare and appropriate timing of surgery in future could prevent many hip fracture related deaths in the context of a developing country.

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[263]

### **Morphological characteristics of congenital hip defects based on anatomical and ultrasound comparisons.**

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**Trustee of the paper:** PhD. Mota Oksana

**Introduction:** Congenital dysplasia of the hip (CDH)-a disturbance characterized by underdevelopment of joint components;it occurs with frequency 25:1000,5 times more often in girls than in boys.For the purpose of early diagnosis,ultrasound examination is commonly used.However, upon hip sonogram interpretation,the differentiation of anatomical

structures falling into the scan zones is problematic.In addition, there is a discrepancy between clinical and anatomical nomenclature that complicates proper construction of diagnostic angles and obtaining of reliable results.This problem could be solved by comparison of anatomical and ultrasound pictures.But the authors failed to find any studies on the topic in reviewed literature.

**Aim of the study:** To study the morphological features of normal hip joint vs congenital hip defects of various degrees of severity based on ultrasound findings.

**Material and methods:** The incidence of hip joint abnormalities in 2013-2015 was analyzed.The study was conducted at the City Community Children's

Hospital of Lviv.Ultrasound examination by Graf's method was carried out at the department of functional diagnostics using the apparatus HS 2000 Honda equipped with linear-array and Doppler transducers.The examined group included 20 children aged 1 week to 9 months-5 boys and

15 girls.Wet preparations from the Anatomy Department of the LNMU were used for simulation of hip defects.

**Results:** Statistical analysis reveals a downward trend (from 8.9% in 2013 to 7.1% in 2015).On the basis of anatomical and ultrasound comparisons the following correlation was found:the bony roof anatomically is the edge of the bone cut of the ilium in the area of its transition into the body;the

cartilaginous roof is the articular lip.The bone edge is a part of the bony roof and morphologically matches the cut of ilium above the acetabulum.Other ultrasonic anatomic structures are fully consistent with the

nomenclature. During the simulation of hip joint defects on anatomical specimens it was revealed that with increasing degree of a hip defect the femoral head is displaced laterally, and the body—medially.

**Conclusions:** Anatomical and ultrasound comparisons of the normal hip allowed detailing the anatomical structures and guide the quantitative analysis of hip joint defects. The hip joint defects modeled on anatomical preparations indicate that with increasing degree of severity the  $\alpha$  angle decreases, while the  $\beta$  angle increases.

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[264]

### THE RISKS OF THROMBOTIC AND BLEEDING COMPLICATIONS AFTER ORTHOPEDIC SURGERY

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**Trustee of the paper:** Prof. Oskars Kalējs

**Introduction:** Introduction: Knee and hip replacement operations are increasing in frequency. Despite the significant consequences of perioperative bleeding, there is a lack of information about baseline risk factors. This complicates the preoperative evaluation and makes it difficult to assess the thrombotic and bleeding risks of surgery.

**Aim of the study:** Aim: The aim of study is to investigate the risk factors for bleeding and thrombotic events in patients undergoing orthopedic surgery.

**Material and methods:** Methods: We performed analysis of 68 patients <60 years old, (I group) 61-75 years old (II group), >75 years old (III group), undergoing hip or knee replacement surgery in Vidzemes Hospital and Madonas Hospital, Latvia between January 7, 2015 and May 14, 2015. Bleeding risk was evaluated based on HAS-BLED scale and usage of medications prone to cause bleeding due to raising concentration of anticoagulants (Wessler JD et. al JACC 2013; 61(25):2495-2502) and thrombotic risk was evaluated based on CHAD-VASC and low, medium and high venous thromboembolism risk factors by (S. Konstantidines, A. Torbicki, G. Agnelli et al. 2014 ESC Guidelines on the diagnosis and management of acute pulmonary embolism).

**Results:** Results: Of total 68 patients 70.6% underwent hip and 29.4% knee surgeries. Using HASBLED scale 41.2% of patients had 2 points, 32.4% -1, 16.2% -0, 7.45 % -3 and 2.9% -4. The medications prone to cause bleeding are using 19% of all 68 patients. Using CHAD-VASC scale 27.9% had 3 points, 21% -1, 19% 2, 15%- 4, 10%- 0, 4%- 5, 3% -6. Using HASBLED scale in I group mode is 1 point, II group mode is 2 points and in III group mode is 2 points. Using CHAD-VASC scale in I group mode- 1, II group mode- 3 and III group mode- 4. Using low, medium and high thrombotic risk factor scale: all have at least 1 high risk factor of thromboembolic episode. In I group: low risk factors are less common than in III group, medium risk factors in I group are more or less compatible with II group and the most medium risk factors have III group.

**Conclusions:** Conclusions: 1. There is greater risks of thrombotic episodes after orthopedic surgeries in III group rather than in younger participants. 2. There is no significant difference of bleeding risk between groups II and III. 3. Bleeding risk factors are significantly lower in the I group.

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[265]

### Diagnostic and treatment of aseptic loosening of total hip replacements

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**Trustee of the paper:** PhD Alexander Martinovich MD

**Introduction:** Aseptic loosening of the implant components is a major problem, which determines duration of the functioning of prosthesis and clinical result of operation. As the number of primary operations is steadily growing, it demands more re-replacements. The longer the period of observation, the higher value of aseptic loosening. Choice of replacement acetabular component of total hip endoprosthesis is currently one of the most debated issues in the world of orthopedics.

**Aim of the study:** To analyze time of and causes of aseptic loosening of total hip prosthesis. To study clinical and radiological manifestations of aseptic loosening of the implant. To improve the algorithm for choosing surgery tactics in aseptic loosening. Improve auditing procedure of reconstruction of acetabulum and femur. Examine results of revision arthroplasty and analyze errors and complications of surgical treatment.

**Material and methods:** The work is based on the analysis of the survey results and treatment of 51 patients with aseptic loosening of the hip endoprosthesis components in age from 30 to 84 years. Patients were treated between January 2012 and February 2016 at the 6th City Clinical Hospital Clinical Center of Traumatology and Orthopedics, Minsk, Belarus.

**Results:** Complications after revision hip replacement developed in 19.6%, implants removed in 5.9% of patients, functioning fistulas remain in 5.9%. In the majority of cases (92.1%) good results and satisfactory functionality were achieved.

**Conclusions:** Slight deficit of bone cavities (1 and 2A W.G.Paprosky) in young and middle-aged persons with sufficient wall density require the implantation of a standard press-fit or screw cups with plastic inserts, which allows for fierce primary and long-term stability. In order to achieve primary stability at cups defect type 1 and 2A in elderly patients or in the case of low-density bone of acetabular cup wall it is advisable to set the standard cement fixation.

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[266]

### **Prevalence of plica mediopatellaris syndrome in maturing girls.**

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**Introduction:** Plica mediopatellaris is the most common symptomatic plica in the knee joint, causing the inflammation of knee's synovial membrane. When irritated, it causes pain over the anteromedial aspect of the knee joint and gives episodes of crepitation, catching, and pseudo-locking events with activities.

**Aim of the study:** The aim of the study was to verify the hypothesis that the plica syndrome occurrence and results of arthroscopy might be related to elevated estrogen levels in maturing girls (age 10-17 years).

**Material and methods:** From the database of patients treated in the Carolina Medical Center clinic since 2007, we analyzed all the 46 cases where plica mediopatellaris was diagnosed before arthroscopy and was the main reason for the surgery. Additional criterion for the selection of the records was the presence of the birth date and complete follow-up after 6 and 12 weeks after surgery in the record.

**Results:** Among the group of 46 patients, there were 36 females and 10 males. Among females in age 10-17 years, there were 25 patients, which makes 54% of the whole analysed group. According to the statistical data from GUS (Central Statistical Office of Poland) published at stat.gov.pl for the year 2012, there were only 4% of women aged 10-17 in the population of Poland, which proves significant prevalence of this group among the plica mediopatellaris patients. We hypothesised also that the increased estrogen levels might correlate with the number of negative outcomes of arthroscopy; however, this effect (48% among women aged 10-17 vs. 38% in the rest of analysed records) did not prove significant for the analyzed sample.

**Conclusions:** Presented data suggest that plica mediopatellaris syndrome occurs significantly more frequently in maturing girls at age 10-17 years, compared to the rest of Poland's population. This might be caused by the fact that at that age there is significantly higher estrogen to androgens ratio. Estrogens have immunoenhancing effect and androgens have immunosuppressive effect. The presence of oestrogen receptors on macrophage-like synoviocytes and increased estrogen and estrogen to androgens ratio in synovial fluid in rheumatoid arthritis may also suggest possible reasons of higher synovitis rate in women of that age. The hypothesis of worse prognosis of plica mediopatellaris syndrome in maturing girls was not proven, although the results might be not conclusive due to too small sample size.

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**Date:**

Sunday, May 15th, 2016

**Location:**

Room 140+141, Didactics Center

**Regular:**

Gellert Attila Gyurka  
Joanna Połubok  
Katarzyna Adamczewska  
Ewa Żurkowska  
Magdalena Ciebiera  
Sabina Chiperea  
Joanna Król  
Mihaela Balan  
Olga Kamińska  
Małgorzata Borowiec  
Aleksandra Rurarz  
Karol Ratajczak  
Agnieszka Pskit  
Przemysław Grabowski  
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[267]

### The importance of precise imaging in villonodular synovitis of the hip

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**Trustee of the paper:** Ileana Muntean MD, PhD

**Background:** A 17-year-old woman presents to her primary care provider with persistent and worsening joint pain of the left hip and general myalgia, accompanied by muscle stiffness. The pain does not respond to over-the-counter or anti-inflammatory analgesics. Because no concluding diagnosis is made after physical examination, she is sent by her orthopedic specialist to the emergency service at Spitalul Clinic Judetean de Urgenta Brasov, Romania.

**Case:** Patient is admitted on 09.02.2015 to Spitalul Clinic Judetean de Urgenta Brasov, Romania for imaging purposes: a radiography, CT-scan (8-slice, 1G) and MRI (Philips 1 Tesla) are performed. The CT-scan excluded diagnosis of synovial chondromatosis as no intra-articular calcifications of the coxofemoral joint were found. On MRI, an intra-articular mass with polycyclic outlines is observed. The mass diameter average maximum is 50 mm, seen as a low to medium signal intensity heterogeneous image in T2, T2 FS, STIR, T1 sequences, in the posteriorinferior quadrant of the left coxofemoral joint, next to the left femoral neck. Additionally, we can observe an intra-articular fluid collection on the left coxofemoral joint, with a maximum diameter of 31mm with an Adductor Magnus and Obturator Externus edematous infiltration. The diagnosis is confirmed by biopsy of the intra-articular piece and patient is treated accordingly.

**Conclusions:** Diagnosis of VS remains a challenge in the medical world. Patients present with various symptoms that are nonspecific to the disease, the disease onset is insidious and diagnostic imaging has to be reviewed accurately to find the subtle signs of VS. Imaging specificity and accuracy play a great role in identifying the key elements conducting to the diagnosis.

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[268]

### Autoimmune thyroiditis in 2,5 years old girl – 6-years observation

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**Trustee of the paper:** PhD Ewa Barg

**Background:** Autoimmune thyroiditis are rare in young children, especially pediatric Graves' Disease. Pediatric Graves' Disease is more frequent in children with other autoimmune diseases or with family history of autoimmune thyroid disease.

**Case:** The 2,5 year old girl was admitted to the hospital because she had tachycardia and subfebrile temperature from 1 month. Two weeks before the submission she had respiratory tract infection with hepatosplenomegaly. The girl presented symptoms of atopic dermatitis. Her psychomental development was undisturbed. Child's mother was diagnosed with Hashimoto disease two months later after child diagnosis. In physical examination of the child enlarge thyroid was found. At the submission the laboratory tests revealed decreased TSH (0.001 uIU/ml) increased both FT3 (>30 pg/ml) and FT4 (3.43 ng/dl), but ATG (0.64 IU/ml) and anti-TPO (0 IU/ml) were in normal ranges (TRAb antibodies were not identified). The Graves' disease was diagnosed. Girl started treatment with methimazole (2x5mg) and propranolol (due to tachycardia, 2x5mg). At 4 months of treatment was initiated therapy with levothyroxine because of hypothyroidism. In the patient still persisted hyperthyroidism and increased levels of antibodies TRAb (17,75 IU/ml) was found. The thyroid function (TSH, FT4 and FT3) normalized 1 year after diagnosis and hormone levels remained within normal reference values. The antibodies against the TSH receptor (TRAb) systematically decreased to the normal range, it normalized when child was 4.5 years old (TRAb 1.14 IU/ml) and remained in normal range during observation. At the age of six, the laboratory test revealed increased thyroglobulin antibody (ATG 227,5IU/ml) with normal thyroid function (TSH 0.294 mUI/ml FT4 17.41 pmol/l) and normal values of both TSH receptors antibodies (TRAb 0.79 IU/l) and anti-TPO antibodies (ATPO <5IU/ml). The ATG decreased during the observation to normal values (55.6 IU/ml). The patient is 8 years old, presently. The girl is not receiving treatment, thyroid function is correct. The girl still present symptoms of atopy, especially food, in the diet are limited dairy products and wheat.

**Conclusions:** The patient requires regular evaluation of thyroid function, due to the current inflammation of the thyroid gland.

[269]

### **Diagnostic difficulties- osteoarticular pain as the main symptom of acute lymphoblastic leukemia (ALL)**

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**Trustee of the paper:** K. Derwich Ph.D., M.D., Assistant Professor

**Background:** Acute lymphoblastic leukemia (ALL) commonly presents with skeletal manifestation, which can mimic juvenile idiopathic arthritis and requires differential diagnosis. The aim of this study is to highlight these clinical onset of childhood leukemia through presenting three cases.

**Case:** 15-year old girl was admitted to Pediatric Oncology and Hematology Department with a suspicion of hematologic malignancy. She presented with a history of low back pain for one month without any improvement on anti-inflammatory drugs. Physical examination revealed vertebral pain and inability to remain upright. MRI showed vertebral fracture of Th12-L2 and advanced osteoporosis. The patient received orthopedic equipment and supplementation of vitamin D and calcium.

13-year old girl was referred with a history of weakness, dizziness, loss of appetite and diffused skeletal pain. The symptoms increased gradually for 4 weeks before admission. On examination she performed with pale skin, cervical and submandibular lymphadenopathy and subcutaneous nodules on skull cap. The biopsy of nodules revealed the presence of lymphoblasts.

5-year old male patient presented with lumbosacral vertebral pain for 6 months, mainly on upright position and while walking. MRI showed irregular shape with vertebral body collapse of thoracic and lumbar vertebra Th3-L5. Laboratory test revealed increased erythrocyte sedimentation rate, hypercalcemia, hyperphosphatemia and hyperuricemia. Densitometry found intensive osteoporosis. The bone marrow examination was performed. Orthopedist referral indicated implementation of vitamin D and calcium and avoidance of vertical posture.

The bone marrow aspiration was performed in all patients and revealed the presence of lymphoblasts. Thus the diagnosis of ALL B-common was made and chemotherapy according to ALL IC 2009 was introduced.

**Conclusions:** Although the most common skeletal symptoms are long bones pains, vertebral involvement also occurs in children. ALL should be considered in patients refusing to walk or being unable to maintain standing position without precise reason, even with nearly normal complete blood count. It must be remembered that effects of glucocorticosteroids- commonly used to reduce osteoarticular pain-may delay the diagnosis of ALL.

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[270]

### **Invasive fungal infection in patient with relapsed precursor B-cell lymphoblastic lymphoma.**

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**Trustee of the paper:** doc Katarzyna Derwich

**Background:** Fungal infection becomes very serious problem in the treatment of patients with severe immunosuppression, as it already applies to 10% of the patients. It is connected with very high mortality (up to 95%) and usually begins inconspicuously with the symptoms of pneumonia. It is characterized by high fever occurring at the time of induction of the chemotherapy (especially the one that causes bone marrow suppression and damages the mucous membranes) that does not react to the wide-spectrum antibiotics. Other risk factors include the presence of intravascular cannulas, administration of steroids and prolonged deep neutropenia ( $<0,1 \times 10^9 / \mu\text{L}$ ), lasting over 10 days.

**Case:** 14-years old boy with relapsed precursor B-cell lymphoblastic lymphoma was admitted to the hospital for the chemotherapy according to the protocol IntreALL 2010 series Modified ALL R3 Mitox for 8 days inclusive. After third course of Erwinase the patient developed high fever, which did not decrease after administration of wide-spectrum antibiotics. CT was conducted due to lack of response to the treatment and continuously increasing CRP. CT revealed invasive fungal infection of the right lung. The treatment included administration of antifungals, what brought desirable effects and allowed for the renewal of the chemotherapy.

**Conclusions:** Nowadays the fungal infection slowly becomes a great challenge for a modern haematologists, as we observe increasing incidence of fungal infections, unfortunately connected with very high mortality. Therefore it is highly important to know risk factors, recognize first symptoms and quickly apply proper antifungal treatment. In the presented case the therapy went fluently, without any complications, and resulted with very good short-term outcome.

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[271]

### **Pompe disease as a rare cause of hypertrophic cardiomyopathy**

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**Trustee of the paper:** Marta Ciebiera MD

**Background:** Pompe disease, also known as Glycogen Storage Disease type II, is a rare illness which occurs once in 40,000 live births. It is an autosomal recessive disorder caused by low activity of a lysosomal enzyme - acid- $\alpha$ -glucosidase. It leads to an overload of cells with glycogen, what particularly affects peripheral and cardiac muscles.

Depending on the age at which symptoms appear, two types of this disease are distinguished – infantile-onset and late-onset. Infantile-onset has more severe course, but it is also the only one which can be treated by substitution therapy. In such case, one of the earliest recognizable symptoms may be hypertrophic cardiomyopathy.

**Case:** 5-month-old female infant was admitted to hospital due to fatigability and lack of weight gain. The infant on admission was weak and sweating. She had marked dyspnoea and reduced muscle tension. Physical examination revealed: bilateral basal crackles, moderately loud heart sounds, soft systolic murmur and tachycardia. Liver extended 2 cm out of costal arch. Laboratory test showed elevated transaminase levels (AST 288 IU/l; ALT 230 IU/l), elevated marker of myocardial damage (CK-MB 24 IU/l) and creatine kinase (CK 850 IU/l). Chest X-ray detected enlarged silhouette of the heart. Basing on ECG, echocardiography and general clinical presentation she was diagnosed with hypertrophic cardiomyopathy.

Due to coexisting symptoms and epidemiological situation in the region (8 children with a similar clinical state) it was desirable to clarify the cause of the disease. Doctors have commissioned appropriate tests. A sample of the patient's blood was sent to the specialized laboratory, where it was examined, among others, for the activity of acid- $\alpha$ -glucosidase. Test showed decreased activity of the enzyme - result 0.19 (reference range 0.31-0.52). This finding indicates Pompe disease. Afterwards the diagnosis was confirmed by genetic test, which revealed characteristic mutation - p.c103G and c.2495\_c.2946delCA. The girl was qualified for substitution therapy with the use of Myozyme.

**Conclusions:** It should be remembered that hypertrophic myopathy is mostly caused by mutations in proteins of myocardium, but rare genetic syndromes, including Pompe disease, should be also taken into consideration. Currently, there is no cure for this illness. However, enzyme substitution therapy can delay the onset of clinical symptoms or ameliorate the phenotype of disease. It is therefore important to diagnose these patients as soon as possible.

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[272]

### **The dangers of a gene mutation – a report of one case of Neurofibromatosis type 1**

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**Background:** Neurofibromatosis type 1 (NF1) (von Recklinghausen disease) is an autosomal dominant disease, caused by a mutation in the NF1 gene, which provides instructions for making neurofibromin, a protein located in many cells, especially nerve cells. Mutations in the NF1 gene lead to the production of a nonfunctional version of neurofibromin. The diagnosis of NF1 is clinical. The only treatment available for this disease is the symptomatic treatment.

**Case:** The authors present the case of a 15 year old female, with NF1 diagnosed in early childhood, who had two hospital admissions in one month. Prior to these admissions, the patient was asymptomatic. First admission was because of a tonic-clonic seizure, on the pediatric neuropsychiatry ward, where the patient was stabilized

and treated with benzodiazepines(carbamazepine).After approximately one week,she presents again at the emergency department with headache and abdominal pain.Clinical examination revealed a blood pressure of 270/120mmHg, thus the patient was transferred to the Intensive Care Unit,where she was examined para-clinically,including an echocardiography and electrocardiogram,CT-scan and an ophthalmological consult.Routine laboratory tests were within normal range,except a very high Antistreptolysin-O value.Physical examination revealed café au lait spots on the patients thorax and abdomen,including a giant one(approximately 15 centimeters in diameter)and a motor deficit of the right eye.Electrocardiogram revealed an enlarged left ventricle, confirmed by echocardiography.The CT-scan showed a left suprarenal adenoma,suggestive for a pheochromocytoma.The ophthalmologist found Lisch nodules in the iris.

In this case,the high blood pressure(HBP) represents the emergency.Test results suggested it is a long evolving,secondary HBP.Our goal was to determine what is the primary condition that lead to HBP:cardiac abnormalities,drug induced HBP,renal malformations,post-streptococcal glomerulonephritis or an endocrine dysfunction,such as pheochromocytoma or primary hiperaldosteronism.

**Conclusions:** With this case report we aim to offer a much better understanding of type 1 neurofibromatosis,emphasizing the fact that underlying conditions caused by genetic diseases should be the target of early prevention and treatment,since they may cause secondary conditions with a possible fatal outcome.

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[273]

#### **A rare case of cowpox infection in 11-year old female**

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#### **Trustee of the paper:**

**Background:** Cowpox virus infection is an uncommon zoonosis with only about 200 human cases reported, most of them in Europe. The reservoir hosts of the virus are woodland rodents, from which the disease can spread to cats and cattle. Humans, mainly children and teenagers, most often contract the virus from the scratch of a domestic cat. Infection usually starts as a vesiculopustular lesion on hand or face, which subsequently ulcerates and develops a black eschar. The lesion can resemble anthrax, orf or Milker's nodule, but shows marked surrounding erythema, firm induration and local lymphadenopathy. General symptoms like fever, tiredness or vomiting can also be present.

**Case:** 11-year old female patient was referred to the Clinic from Children's Memorial Health Institute with suspected cutaneous anthrax. The patient presented with a two-week history of recurrent fever and vesiculopustular lesion on her left cheek. On admission, skin lesion on left cheek was ulcerated and the black eschar was present. The skin surrounding the lesion was swollen and erythematous with palpable infiltration in subcutaneous tissue. The left submandibular lymph nodes were enlarged. Due to possible cutaneous anthrax infection, a specimen was collected from the eschar for analysis and the patient was started on ciprofloxacin. The antibiotic was withdrawn after two days because of patient's intolerance of the drug. Nevertheless, the eschar, edema and submandibular lymph nodes started shrinking and the patient's condition also improved. The PCR test for *Bacillus anthracis* was negative. However, patient tested positive for Orthopoxvirus/Cowpox. The girl owns two cats.

**Conclusions:** The case shows how lack of clinical experience makes cowpox virus infection difficult to recognize. Although this rare disease is usually self-limiting and no cases of human-to-human transmission have been reported yet, it should be taken into account in differential diagnosis, when patient presents with typical lesions and confirms animal contact. Additionally, special attention should be paid to immunocompromised and atopic patients as they are at higher risk of a cutaneous dissemination and more severe course of illness, which may have even lethal outcome.

[274]

### Diagnosis of Truncus Arteriosus by two-dimensional echocardiography – a case report

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**Trustee of the paper:** Balan Mihaela

**Background:** Truncus arteriosus is an uncommon congenital cardiac abnormality which is characterized by a single arterial trunk origin from the heart that supplies both the systemic, pulmonary and coronary circulation. Congenital complex cardiac abnormalities are rare and two-dimensional echocardiography screening should be supported by cardiac computed tomography (CT). We present an infant male patient with type 4 truncus arteriosus (TA) (Collet classification), ventricular septal defect (VSD) and major aortopulmonary collateral arteries (MAPCAS) diagnosed with CT and echocardiography. The purpose of this paper is to present the correlations between echocardiographic and CT findings in truncus arteriosus.

**Case:** We report a 3-month-old male patient diagnosed with truncus arteriosus, VSD and MAPCAS, who presents with dyspnea and cyanosis. A full physical examination was performed as well as laboratory tests, a chest radiography, echocardiography and thoracic CT scan. On physical examination the patient presented with cyanosis, nasal obstruction, dry cough, prolonged expiration time, dyspnea, bilateral rales, a O<sub>2</sub> saturation of 84%, a heart rate (HR) of 157 b/min and a systolic murmur grade IV/VI. Laboratory exams showed respiratory acidosis. The chest radiography revealed cardiomegaly, accentuated vascular and interstitial opacities, bilateral hilar opacities, bilateral basal hypertransparency and flattening of the diaphragm. Furthermore, with echocardiography the diagnosis of main pulmonary artery atresia with MAPCAS and a large VSD was revealed. CT scan showed the main pulmonary artery arising from aorta suggestive of truncus arteriosus type 4 (Collet & Edward classification) and the aforementioned findings on echocardiography. We initiated treatment with oxygen, corticotherapy and antibiotics with a favorable evolution. The patient was released with a good general status, absence of cough, increased O<sub>2</sub> saturation of 96%, HR of 120 b/min, systolic murmur grade IV/VI and is awaiting decision for surgical intervention by unifocalization of MAPCAS.

**Conclusions:** In conclusion, with the help of echocardiography and completed by CT scan we were able to diagnose the patient with TA, VSD and MAPCAS. We show here that although echocardiography is a basic, rapid, non-radiating and non-invasive method, it has limitations in diagnosis, CT being a more complete imaging method for diagnosis, surgical planning, and postoperative evaluation of TA.

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[275]

### Chronic pancreatitis in children - new diagnostic challenge

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**Trustee of the paper:** Dr n. med. Piotr Dziechciarz

**Background:** Chronic pancreatitis is a relapsing or continuing inflammatory disease of the pancreas characterized by irreversible morphological changes, which in some patients leads to, permanent impairment of exocrine function, endocrine function, or both.

The incidence of chronic pancreatitis appears to be increasing in paediatric population. Here I present two cases diagnosed in one paediatric academic centre within short period of time.

**Case:** 13-years old underweight girl with recurrent abdominal pain, located in epigastrium lasting from few hours to 1 week with occasional episodes of vomiting was electively admitted to the hospital. The girl was for several years under paediatric supervision without any abnormalities both in laboratory tests and repeated abdominal ultrasound (USG). The hospital ultrasonographer revealed extended Wirsung's duct, filled with numerous calcifications (5-8 mm) and hypotrophic pancreas. The magnetic resonance cholangiopancreatography confirmed the USG findings. Repeated liver function test tests didn't show any abnormalities.

9,5 years old girl admitted in emergency because of severe abdominal pain waking her up at night with episodes of vomiting lasting for 10 days without any relevant history. At admission except of epigastric pain no abnormalities on physical examination, laboratory tests and USG were found. During hospitalization significant elevations of GOT, GPT, GGTP were observed and USG showed Wirsung's duct multiple calcifications (up to 1 cm) and hypotrophic pancreas.

Both patients were referred for endoscopic retrograde cholangiopancreatography.

**Conclusions:** In children with abdominal pain located in epigastrium even without initial abnormalities in lab test and USG chronic pancreatitis should be considered in differential diagnosis.

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[276]

**Fructose intolerance - a rare cause of the lack of growth increase in children.**

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**Background:** Fructose intolerance is an autosomal recessive metabolic disease, in which the mutation is present within the gene encoding aldolase. The enzyme is responsible for splitting fructose 1,6-biphosphate into dihydroxyacetone phosphate as well as glyceraldehyde 3-phosphate. The condition is usually revealed when newborns start being provided with nourishment different than milk, which may be accompanied by nausea, vomiting, diarrhea and some metabolic disorders such as hypoglycemia, hypophosphatemia, hyperuricemia and lactic acidosis. Long-term ingestion of products rich in fructose leads to numerous anomalies including the failure of both renal and hepatic function and the inhibition of growth. People who suffer from the lack of aldolase may experience seizures and even coma when they are once supplied with a large amount of food containing fructose.

**Case:** The following case report pertains to a 13-month-old boy who was admitted to the Clinic due to the lack of growth increase and proteinuria. The patient was born on time and assessed for 10 points in the Apgar scale. He had been kept on breastfeeding on demand until the seventh month of his life, when new products were introduced into the diet, causing severe diarrhea. At first, the patient was suspected of having some food allergy and an eliminating, gluten-free diet was applied with no effect. Urine analysis revealed proteinuria (60-184 mg/dl). Physical examination affirmed weight (8380 g) and height deficiency (<3c). In addition, the boy's liver was enlarged. Laboratory findings showed isolated proteinuria 185 mg/dl and elevated levels of transaminases GOT 358 U/l, GPT 323 U/l in a sample. Hepatitis B, hepatitis C, cytomegalovirus and celiac disease were excluded. MS/MS as well as GC-MS were positive. CDG (congenital disorders of glycosylation) tests allowed to detect an incorrect isoform of transferrin type 1. The level of CDT was 36,1%.

**Conclusions:** The findings allowed to diagnose the patient with fructose intolerance, an inherited metabolic disease. The application of fructose-eliminating diet led to the patient's health improvement. The condition may be considered the cause of growth failure and proteinuria in infants and its early diagnosis prevents from improper development.

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[277]

**Angioedema - severe suspicions and unexpected solution.**

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**Background:** Angioedema is a medical emergency which may result in airway obstruction and suffocation. It is a rapid swelling of the dermis, subcutaneous tissue, mucosa and submucosal tissues. Most acute cases require steroid therapy.

**Case:** A girl at the age of 12 years was admitted to the clinic for the diagnosis of recurrent angioedema. The first episode happened in November 2014. The girl was then hospitalized and diagnosed with ascariasis. Antiparasitic drugs were administered and the angioedema symptoms subsided.

From October 2015 till January 2016 patient suffered from recurrent episodes of angioedema, that were demonstrated by dry, paroxysmal cough, swelling of the tongue and dyspnea. The episodes happened even when patient received oral steroids and antihistaminics.

On admission to our clinic patient was in a good general condition. Examination of the larynx showed no abnormalities. The patient and her caregivers declined any connection between episodes of angioedema and consumed food or used cosmetics.

In Allergology Clinic: allergy, parasitic infestation, hypothyroidism, Helicobacter pylori infection and C1 esterase inhibitor deficiency were excluded. During the hospitalization the patient reported swelling of the tongue a few times. She presented dry cough during such episodes. During each episode vital signs were within the normal range. All symptoms subsided few minutes after intravenous steroid administration.

Considering psychosomatic background of symptoms (it was difficult to measure size of the tongue and symptoms diminish very quickly after steroids) during one of the episodes of swelling of tongue girl received hydroxyzine. Regression of symptoms was immediate.

After further examination of her social background we found out very difficult family situation.

The girl was send to psychological and psychiatric consultation.

**Conclusions:** In the course of history taking and physical examination, medical doctors should always perform a differential diagnosis based on family and social background of each patient. The observation of the child during the treatment is also very important, regardless of initial diagnosis to exclude psychogenic nature of the illness.

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[278]

### **Congenital laryngocele - a rare cause of airway obstruction in a pediatric patient.**

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**Background:** Congenital laryngoceles are defined as cystic dilatation of laryngeal saccules and are an extremely rare cause of newborn (infant) respiratory distress. A laryngomucocele occurs when the neck of the laryngocele gets obstructed and fills with the mucoid secretions of the saccule. Less frequently laryngocele gets infected and is filled with purulent secretion. It may cause stridor, respiratory distress, and severe airway obstruction in the narrow airway of a newborn (infant) and requires urgent surgical intervention. A characteristic feature of laryngeal cyst is the ability to enlarge during crying. Diagnosis is based on typical symptoms, laryngoscopy and radiological examination (CT).

**Case:** 3-month-old baby was urgently admitted to the Department of Pediatric Otolaryngology due to previous dyspnea for several weeks and enlarging mass on the right side of his neck. Laryngoscopy revealed a large cyst totally obstructing the entrance to the larynx, causing intubation impossible to be done. Urgent tracheotomy was performed. The result of CT examination confirmed laryngocele. The patient was operated by an external approach and laryngocele was surgically removed. 2 months after surgery directoscopy revealed no abnormalities in the larynx, apart from congenital laryngomalacia. There was no recurrence of laryngocele. The patient was successfully decannulated.

**Conclusions:** Congenital laryngocele may not be a common problem in pediatric patient, but when occurs should be considered as a life-threatening situation. Stridor, dyspnea and abnormal neck mass are the main signs and symptoms. Most importantly, patency of the airway must be established, and then further diagnostic procedures should be performed, such as laryngoscopy and CT. The long-term postoperative care and follow-up is obligatory after laryngocele surgery.

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[279]

### **Rheumatic fever in 12-year-old girl – case report.**

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**Trustee of the paper:** MD PhD Radosław Pietrzak

**Background:** Rheumatic fever is an inflammatory disease resulting from group A staphylococcal infection. It is a clinical diagnosis based on Jones criteria, which include major criteria (carditis, arthritis, chorea, subcutaneous nodules, erythema marginatum) and minor criteria. The incidence of rheumatic fever has dramatically declined in Europe, however, in diagnostics of acquired mitral insufficiency, it has to be taken into consideration.

**Case:** 12-year-old girl with the history of frequent episodes of pharyngitis presented to the hospital. Soon after one of the episodes, she was diagnosed with right hip joint arthritis with a good response to non-steroidal anti-inflammatory drugs (NSAIDs). Few weeks later, after the next episode of pharyngitis, the girl complained of migratory arthralgia and severe fatigue. About a month later chorea including involuntary movements, facial grimacing, clumsiness and emotional lability was observed. These symptoms resolved without specific treatment after two months. Recurrent annular erythema occurred on both lower extremities and was diagnosed as erythema marginatum. Considering further decrease in exercise tolerance, a cardiological examination was performed revealing loud cardiac murmur. The echocardiography showed severe mitral insufficiency with heart chambers enlargement, which all were new findings. According to Jones criteria, the patient was diagnosed with rheumatic fever and treated according to the guidelines.

**Conclusions:** 1. Rheumatic fever is a disease affecting various organ systems and, therefore, it is essential to pay attention to the details from the interview to make the correct diagnosis.

2. In spite of the low prevalence of rheumatic fever in Europe, being aware of its incidence is crucial not to ignore set of symptoms that may lead to the early diagnosis of this disease and influences the further prevention of heart failure due to mitral valve insufficiency.

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[280]

### **Ehlers-Danlos Syndrome, or child abuse - a case report.**

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**Trustee of the paper:** PhD Anna Smędra

**Background:** Ehlers-Danlos Syndrome (EDS) is a rare (1: 5000 live births) group of genetic diseases in which the background of the observed disorders are abnormalities in the synthesis and post-translational processing of collagen. Mainly the skin, joints and ligaments are affected by the symptoms as a result of a high content of collagen in these structures. The skin becomes overly flexible and susceptible to injury. One of incorrect diagnoses established in children with undiagnosed EDS is battered child syndrome, erroneously suspected particularly in children with recurrent bloody ecchymoses, subcutaneous hematomas, contusions, or sprains and dislocations of joints.

**Case:** The authors present the case of a 2-year-old girl, transported by an ambulance team to the emergency department due to cardiac arrest. Resuscitation was unsuccessful. The attending physician concerned with numerous injuries and not fully explained circumstances of sudden cardiac arrest in the child, decided to inform the police. The girl's family was under the supervision of Municipal Social Welfare Centre and probation due to suspected domestic violence and criminal record of her father. As shown by autopsy, the immediate cause of the girl's death was perforation of the small intestine, leading to peritonitis and consequent septic shock. According to the doctor performing the autopsy, the perforation was of traumatic origin. Due to the fact that the family and the doctors previously dealing with the child described the tendency to develop bruises, hyperactivity and osteoarticular symptoms, the forensic medical expert put forward a hypothesis of Ehlers-Danlos syndrome as a cause of the above disorders and bowel perforation. In this publication, the authors present all the evidence collected in the case and the conclusions that were finally drawn.

**Conclusions:** The presented case shows the difficulty in differentiating between "battered child syndrome" and Ehlers-Danlos syndrome. The key issue is differentiation of traumatic lesions caused by third parties from injuries caused by accidental traumas common in infancy and childhood; the primary responsibility in this regard lies with the first contact personnel – family doctors and pediatricians. On the one hand, this knowledge can prevent the tragedy, and on the other hand, in the case of children with rare diseases, ensure proper treatment and prevent false accusations of the parents.

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[281]

### **Infectious mononucleosis-like syndrome with high lymphocytosis and positive IgM EBV and CMV antibodies in 3-year old girl**

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**Trustee of the paper:** Katarzyna Pawelec M.D. PhD.

**Background:** Primary infections with EBV and CMV in young children are common and usually asymptomatic. However, exposure to closely related pathogens may alter the immune response and the course of infection. Because of a risk of cross-reactivity EBV IgM antibodies with CMV, a possibility of false-positive test results should also be taken into account.

**Case:** A 3,5 year old girl was admitted to the hospital with a suspicion of lymphoproliferative disorder. In the emergency room the child was ill-looking and fevered to 40C. Physical examination revealed cervical and submandibular lymphadenopathy, enlarged pharyngeal tonsils and hepatosplenomegaly that was confirmed by ultrasonography. Blood test showed high leukocytosis (61600/ul), mildly elevated uric acid level (6,9 mg/dl), high LDH (1708 UI/L) and ALT (67 UI/L). Peripheral blood smear showed massive lymphocytosis with 62% share of atypical lymphocytes. Bone marrow cytology corresponded to reactive hyperplasia. On day 2 of admission IgM antibodies to CMV and EBV VCA were positive. EBV VIDAS panel was indeterminated. PCR examination showed massive replication of EBV (10700 copies/mL in plasma) and lack of CMV DNA. After primary decrease, leukocytosis reached 121700/ul (83% of atypical lymphocytes) in the fourth day of hospitalization. Immunophenotyping of blood lymphocytes revealed 73264 cells CD8+CD3+/ul, 5581 NK cells/ul, 10854 CD4+CD3+/ul and CD4/CD8 ratio was 0,14. Trepanobiopsy and lumbar puncture was performed. There was no evidence of lymphoproliferative disease. The final diagnosis was infectious mononucleosis. Supportive treatment was administered and the child was discharged after 3 weeks.

**Conclusions:** Severe infectious mononucleosis with high lymphocytosis is unusual in young children. Activation of specific memory T cells can occur in response to other infections due to cross-recognition of epitopes or by bystander activation mediated by the cytokine environment. Our initial hypothesis, which was supported by previous studies, suggested that such fulminant course of infection can be caused by interaction of EBV with CMV or by immune disorder. However lack of CMV DNA and negative basic screening for immunodeficiency was inconsistent with our hypothesis. It was proved that identical IgM antibodies can recognize repeating region of the EBV nuclear antigen and CMV proteins causing false-positive result.

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[282]

### **How genetics can influence drug reaction? A case of vincristine toxicity.**

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**Trustee of the paper:** prof. dr hab. Anna Wiela-Hojeńska, dr Grażyna Wróbel, mgr Beata Sienkiewicz

**Background:** Vincristine (VCR) is a commonly used agent in the treatment of acute lymphoblastic leukemia (ALL). Unfortunately it carries a potential for neurologic toxicity which is depended on dose and duration of treatment, but also on co-administration of P-glycoprotein and cytochrome P450 inhibitors. In patients hospitalized in the haematological units it's also important to prevent invasive fungal infections (IFI). Currently triazole antifungal agents are widely used for prophylaxis and treatment. Although cases of interactions between these drugs and vincristine are known, there is poor research focusing on posaconazol as a potential agent interacting with vincristine. Our case gives a new light on already reported incidences.

**Case:** A 4-year-old girl was diagnosed with acute lymphoblastic leukemia and admitted to the hospital for chemotherapy. Concomitantly with beginning of the cycle with vincristine (1 mg/m<sup>2</sup>), posaconazole (80 mg x 3 t.i.d.) was started as prophylaxis. After the second dose of VCR patient's status started to decrease. The child presented with abdominal pain and cramps, constipation, lower extremities peripheral neuropathy, muscle weakness, lower limbs areflexia, myalgia, hypertension and temporary impaired consciousness. An abdominal ultrasound and an x-ray suggested fecal stasis without paralytic ileus. CT head scan showed no abnormalities. The girl's ABCB1 gene polymorphism was examined and homozygotic TT profile resulting in decreased activity of P-glycoprotein was discovered.

**Conclusions:** There are very few published case reports suspecting vincristine and posaconazole drug-drug interaction. The studies suggest that the main mechanism is likely attributed to inhibition of CYP3A4 isoenzyme or antifungal being a weak substrate and inhibitor of P-glycoprotein (VCR is a substrate of this transporter). Combining these two agents could increase intracellular vincristine levels leading to toxic symptoms. However our research results are show that these adverse reactions could probably occur even without concurrent use of posaconazole, because of the genetic background of the patient. At the same time the antifungal agent could increase the severity of symptoms. It shows that pharmacogenetics can play a key role in understanding patient reaction on particular drugs and also give a new perspective for improving therapy.

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[283]

#### **Case Report: A Long Road Leading to Diagnosing Factitial Panniculitis**

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**Trustee of the paper:** Daiva Gorczyca

**Background:** Panniculitis encompasses a group of pathologies that are rare in the pediatric age group, which are characterized by inflammation of subcutaneous adipose tissue. Factitial panniculitis is a type of panniculitis that develops when patients inject themselves with the most disparate substances, including acids, alkalis, mustard, milk, microbiologically contaminated material, urine, and even feces. We present a case of pediatric factitial panniculitis.

**Case:** A 15-year old girl, who was treated for acute lymphoblastic leukemia 2 years earlier was hospitalized because of recurrent and prolonged erythema with edema of the right foot and ankle. Symptoms of the disease started 3 months earlier with inflammation of the periarticular tissues in the right elbow, followed by abscesses in the area of the left knee and then the right. The patient was treated surgically by puncture and aspiration of the inflammatory fluid and was then administered antibiotics intravenously. Results of basic laboratory tests including; chest radiography, immunological tests including immunoglobulin level, subpopulation of lymphocytes, and neutrophil oxidative burst test, were all negative or within normal limits. Results of histopathology and microbiology showed necrosis with vascularized granulation tissue. A bone marrow trephine biopsy was negative. A whole body bone scintigraphy revealed a normal distribution of radiotracer uptake. Finally the patient confessed to recurrent injections with mineralized water within the subcutaneous fat tissue in the periarticular regions. The patients' final treatment involved behavioural therapy and referral to a psychiatrist.

**Conclusions:** Cutaneous self-inflicted behaviour in children is a very difficult diagnosis and should be considered when other skin conditions have been excluded. Patients with factitial panniculitis are mentally disturbed and psychiatric treatment is required.

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[284]

#### **Paraganglioma in children - report of two cases**

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**Trustee of the paper:** prof. Maciej Bałaj

**Background:** Paragangliomas are rare neuroendocrine neoplasms. They affect mainly adults between 40 and 50 years of age. Occurrence of the tumor in children is extremely rare. The literature about this type of cancer in young patients is scanty and consists predominantly of single case reports.

**Case:** Aim of study: Presentation of two cases of retroperitoneal tumor of paraganglioma type in children.

**Material and methods:** Retrospective analysis of medical files of two girls, aged 16 and 14 years operated on for retroperitoneal paraganglioma.

**Results:** In one girl retroperitoneal tumor was detected incidentally on abdominal US scan performed after blunt abdominal injury. The second patient detected herself the intraabdominal mass. In both patients, CT confirmed the presence of solid, well vascularised tumor in the retroperitoneal space. Both patients denied any cardiovascular symptoms. Urine concentration of vanillylmandelic acid was in both girls within normal range.

One patient underwent a midline laparotomy and total excision of the retroperitoneal mass. The second girl was subjected to laparotomy too, but due to intraoperative haemodynamic instability the first procedure was limited to open biopsy. She was found to have a very high urine concentration of noradrenaline (568,7ug/d). The second procedure consisted of total excision of the tumor. In both girls histology examination revealed paraganglioma.

On further follow-up both patients did not show any recurrence of retroperitoneal mass.

**Conclusions:** Paraganglioma should be taken into differential diagnosis in every child with retroperitoneal mass even of absence of cardiovascular symptoms. Estimation of urine concentration of catecholamines and their metabolites seems to be a crucial significance in preoperative diagnosis of paraganglioma. Surgical management of paraganglioma should be performed in the pediatric surgical centres of highest reference level.

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# Pediatrics

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[285]

### **Are the children with cancer always underweight? Weight disturbances at the moment of diagnosis in childhood cancer patients.**

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**Introduction:** Nutritional status at the time of the diagnosis is an important factor which influences the response to the treatment as well as the possibility of recovery. Nutritional status at the time of neoplasm diagnosis is dependent on a neoplasm type, its localization, clinical stage of the disease.

**Aim of the study:** The aim of this study is evaluation of prevalence of weight disturbances at the moment of diagnosis in childhood neoplasm patients.

**Material and methods:** The study included 734 patients (58%) at the age 1-20.25 years, with the diagnosis of neoplasm in the years 1986 – 2014, in Department of Pediatric Bone Marrow Transplantation, Oncology and Hematology, Wroclaw Medical University, in Wroclaw, Poland. The patients were divided into groups depending on the type of the diagnosis: 1)ALL, 2)ANLL, 3)HL, 4)NHL, 5) Wilms tumor, 6)Mesenchymal Malignant Tumor (MMT). To evaluate weight disturbances BMI SDS were calculated. The difference in the incidence of disorders in each group was examined.

**Results:** At cancer diagnosis moment, 21.5% of the patients were underweight, 64.7% weighed properly and 13.8% were overweight. Considering the type of diagnosis we did find differences between the groups in the prevalence of underweight. In the group with ALL underweight was found in 18.6% of the patients. Patients in the ALL were overweight more often than the rest of the neoplasm diseases (OR 2.01, CI 95% 1.32-3.08,  $p < 0.002$ ), 18.6% of them were overweight. Overweight was less common disturbance in patients with MMT than in the rest of study group (OR 0.33, CI 95% 0.13-0.83,  $p = 0.021$ ), only 5.4% children with MMT overweighted. There were no significant differences in the obesity frequency in other neoplasms groups.

**Conclusions:** Children with cancer are a higher risk of weight disturbances. Underweight is a common problem in patients with solid tumors, in contrary overweight or obesity are more common in hematological malignancies, especially in children with ALL.

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[286]

### **Birth weight and risk for childhood neoplasm.**

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**Introduction:** Biology of neoplasms occurring in paediatrics is still not fully known. High and low birth weight could be associated with the risk of developing childhood neoplasms.

**Aim of the study:** The research was conducted to verify the hypothesis of birth weight as a risk factor for childhood neoplasms.

**Material and methods:** Study group consisted of 1023 patients with diagnosed neoplasm aged 0-24 years (mean  $7,67 \pm 5,39$  yrs, median 6,50 yrs). Birth weight was obtained from patient's medical documentation. The data was compared to control group, consisted of 288 healthy subjects, without childhood neoplasm. The study group was divided into subgroups considering the types of cancer. To verify the hypothesis of high birth weight as risk factor, chi-square for trend, odds ratio with 95% confidence interval were calculated.

**Results:** In our study group 5.87% children were born with low birth weight (LBW-2500gm) and 13.69% with high birth weight (>4000gm). In control group 8.33% subjects had LBW and 8.33% had high birth weight. The patients with childhood neoplasm had higher risk for high birth weight than controls (OR 1.74, CI95% 1.1-2.75,  $p = 0.020$ ). We found statistically relevant risk of ALL ( $p$  trend=0,017), acute leukemias (ALL and ANLL together  $p$  trend=0,023) and Wilms' tumor ( $p$  trend 0,04) with increasing birth weight. We did not find relation between birth weight and neoplasms in pediatric patients in ANLL, HL, NHL, neuroblastoma, bone tumor, MMT and germ cell tumor.

**Conclusions:** The results of our study confirm the hypothesis of high birth weight as a risk factor for childhood cancer, especially ALL and Wilms tumor. Prenatal biologic mechanisms and pathways contributing to these findings ought to be thoroughly investigated in order to counteract the development of childhood cancers.

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[287]

**Characteristic of neoplasms in children from Greater Poland treated in Department of Pediatrics Oncology, Hematology and Transplantology University of Medical Sciences between 2004-2013.**

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**Introduction:** Every year in Poland 1100-1200 new neoplasms in children are diagnosed. Incidence rate is about 14/100 000 children.

**Aim of the study:** Characteristics of pediatrics neoplasms and child population treated in Department of Pediatrics Oncology, Hematology and Transplantology in Poznan between 2004-2013.

**Material and methods:** Medical documentations of 756 children aged 0-18 years with neoplasm were retrospectively analyzed. Type of neoplasm, sex, age at the moment of diagnosis and place of residence (city/village) in 35 counties of Greater Poland were taken into consideration. Because of incomplete data, analysis of place of residence was narrowed to 720 patients. Data were collected and analyzed in Excel.

**Results:** Out of 756 diagnosed neoplasms in children, there were in 2004- 83 (10,98%), 2005- 79 (10,45%), 2006- 69 (9,13%), 2007- 69 (9,13%), 2008- 67 (8,86%), 2009- 87 (11,51%), 2010- 74 (9,79%), 2011- 65 (8,60%), 2012- 84 (11,11%), 2013- 79 (10,45%). The most common were: leukemias- 264 (34,92%), lymphomas- 117 (15,48%), CNS tumors-111 (14,68%). The most dominant type of acute leukemias was acute lymphoblastic leukemia (ALL)- 192 (72,73%), acute myeloid leukemia (AML) was diagnosed in 45 (17,05%), chronic myeloid leukemia (CML) in 13 (4,92%) and other types in 5,30%. Among lymphomas the most common type was Hodgkin's lymphoma (HL)- 71 patients (60,68%), subsequently B-cell non-Hodgkin's lymphoma (B-NHL)- 31 (68,89%), T-cell NHL-7 (15,56%), anaplastic large cell lymphoma (ALCL)- 3 (6,67%) and others 5 (11,11%), In analyzed group males dominated- 430 (56,88%) and number of females was 326 (43,12%). Average age of patients at the moment of diagnosis of neoplasm was 8,20 years. Patients were separated into four age groups: 0 to 1 y. – 67 (8,86%), 1-5 y. – 244 (32,38%), 6-10 y. – 155 (20,50%), 11-18 y. – 290 (38,36%). From analyzed group 391 (54,31%) children lived in the village: 231 (59,08%) boys, 160 (40,92%) girls and 329 in the city: 184 (55,93%) boys and 145 (44,07%) girls.

**Conclusions:** In analyzed group the most common were leukemias, lymphomas and CNS tumors. The neoplasms were most often diagnosed in adolescents between 11-18 years old. Majority of patients lived in the village. Neoplastic disease were diagnosed more often in boys, despite the place of residence.

[288]

**The incidence and severity of diabetic ketoacidosis at type 1 diabetes onset among Polish children: a multicentre study.**

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**Introduction:** Diabetic ketoacidosis (DKA) is one of the most severe complications of type 1 diabetes (T1D) which may lead to central nervous system injury, cerebral edema and consequently to death. Despite the development of diagnostic and treatment methods, there are still many children with DKA at the T1D onset.

**Aim of the study:** Population data shows that there is a wide geographic variation in the frequency of DKA at T1D onset. The aim of our retrospective cohort study was to estimate the incidence rate of DKA in eastern and central Poland and evaluate the percentage of children with severe DKA.

**Material and methods:** The research includes 2100 children (976 females) aged 0 – 17 (mean age  $9.2 \pm 4.5$  years) with newly diagnosed T1D. The data was collected between 2010 – 2014 from six different regions of eastern and central Poland. According to ISPAD, we defined DKA as a venous  $pH < 7.3$  and severe DKA as  $pH < 7.1$ .

**Results:** The amount of new diagnoses of T1D trended upward throughout the years, from 345 in 2010 up to 474 in 2014. At the same time, after reaching the peak of 31.9 % in 2011, the percentage of DKA was constantly decreasing until 2014, when it was at the level of 25.7%. In our statistical sample, DKA was observed in 28,6% ( $p=0,387$ ) of newly diagnosed children. Nearly the quarter (23,7% -  $p=0,252$ ) of them suffered from severe DKA. Children with DKA were younger than those without DKA ( $8.8 \pm 4.6$  vs.  $9.4 \pm 4.5$  years,  $p=0.003$ ). There were also

differences of incident rate between the regions. The lowest incidence rate (24%) was in Lubelskie and the highest (32,4%) in Podkarpackie ( $p=0,632$ ).

**Conclusions:** Over the last five years the incidence rate of DKA in Poland is slightly decreasing. Nevertheless, the increased vigilance is strongly recommended especially among the group of younger children, who are at higher risk of developing severe DKA, on the other hand the symptoms in this age group are more difficult to recognized. More attention should be also paid to regions with the highest incidence rate.

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[289]

#### **Risk factors of overweight and obesity among children in Kudowa Zdrój.**

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**Introduction:** Overweight and obesity are increasing problems amongst children. Obesity in the family and bad nutrition habits among relatives may contribute to a more frequent occurrence of overweight/obesity. Both high (>4000g) and low (<2500g) birth weight are considered to be the risk factors. Breastfeeding was found to be protective.

**Aim of the study:** The aim of the study was the evaluation of the influence of these factors on the occurrences of overweight and obesity among children from Kudowa Zdrój.

**Material and methods:** The study group included 213 children (106 boys), aged 4.75-12.75, students of Primary School in Kudowa Zdrój. Body weight, height, and waist circumference were measured, BMI and waist-to-height ratio (WtHR) were calculated. All children were examined by members of Endocrinological Study Group. Results were presented using SDS values. Parents of the children were asked to fill in the questionnaire, which was composed of questions concerning the occurrence of overweight/obesity in the family, father's/mother's age, birth weight of the child and the duration of child's breastfeeding period.

**Results:** Overweight/obesity were stated in 24.41% of the children, 26.17% girls and 22.64% boys. Deficiency of body weight was observed in 8.45% and deficiency of height in 9.39% children. Waist circumference SDS was increased in 21.18% of the children. Increased WtHR ratio occurred in 10.9% children. Obesity in child's family occurred in 16.43% of students. Amongst the group of children with overweight/obesity, the obesity in family was observed in 19.23%. In the whole study group, 52.11 % of the children were not breastfed or were fed for a period shorter than recommended 6 months. In the whole study group 4.69% of the children had low birth weight and 2.82% of them had high birth weight. There was no significant difference in tested parameters (mother's age, father's age, duration of the breastfeeding period, birth weight) between children with overweight or obesity and children with normal body weight.

**Conclusions:** Overweight and obesity are significant problems in Kudowa Zdrój. In study group no correlation between the risk factors and occurrence of obesity was found. It is necessary to introduce the education about rules of healthy lifestyle and nutrition both amongst children and their parents.

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[290]

#### **Respiratory management in preterm neonates care.**

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**Introduction:** Ventilatory assistance is an important element of neonatal care. Substantial proportion of preterm infants may require ventilatory support from birth. Various factors have been suggested to influence the type of ventilation in these patients.

**Aim of the study:** The purpose of this study was to analyze selected perinatal factors and the mode of ventilation used in preterm neonates.

**Material and methods:** A retrospective analysis based on medical records was performed. Data of preterm newborns born <32 weeks gestational age in years 2003, 2008 and 2013 and hospitalized in the neonatal intensive care unit of a tertiary perinatal center were collected and statistically analyzed.

**Results:** The study included 682 newborns. Conventional ventilation (CMV) was applied in 339 (50.37%) and non-invasive ventilation (NIV) in 289 (42.94%) infants. 45 (6.68%) neonates did not require any type of ventilatory support after birth. Mean birth weight in the CMV group was 1126.08 g whereas in the NIV group it was 1423.84 g. Lower gestational age ( $p<0.001$ ) and lower birth weight ( $p<0.001$ ) were associated with more frequent use of CMV. Gestational age correlated with total length of ventilation ( $p<0.001$ ) - the lower the gestational age the longer the time of ventilation. Prenatal corticosteroid therapy was associated with the mode of ventilation ( $p=0.02$ ) as well as with total length of ventilation ( $p=0.02$ ). It was observed that prenatal corticosteroids were used more frequently among NIV supported neonates (84.76% vs 81.08% in the CMV group,  $p=0.02$ ). There was a significant correlation between administration of the exogenous surfactant ( $p<0.001$ ) and the mode of ventilation. Surfactant was administered in 31.64% of invasively and in 8.07% of non-invasively ventilated neonates ( $p<0.001$ ). Interestingly, single pregnancies were associated with longer period of ventilation ( $p<0.001$ ). Mean total time of ventilation in single pregnancies was 16.82 days, whereas in multiple pregnancies 11.04 days. CMV as a primary support rate in single pregnancies was 53.11% and NIV was rate 41.28%, whereas in multiple pregnancies NIV rate was higher than this of CMV (46.89% vs 43.5%,  $p=0.04$ ).

**Conclusions:** The majority of analyzed patients required CMV and its use was more common among the most premature infants. More mature patients can often be supported noninvasively. Prenatal steroids may increase the chance of successful application of NIV in the preterm neonates. NIV should be used whenever possible to reduce the risk of complications associated with CMV.

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[291]

### Parental beliefs and attitudes about e- cigarettes

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**Introduction:** The use of e-cigarettes has been dramatically rising in recent years among adults yet many parents who use e-cigarettes are not fully aware of the tobacco smoke exposure to children. Electronic cigarettes are battery-operated devices designed to deliver nicotine with flavorings to users in vapor instead of tobacco smoke and are often promoted as safer alternatives to traditional cigarettes.

**Aim of the study:** Describing parents' awareness of electronic cigarettes and to assess their attitudes toward parental use of e-cigarettes to better understand the safety risks posed to children.

**Material and methods:** 247 parents of children aged 0-18 years old were interviewed using a questionnaire between November 2015 and January 2016. Parents were asked about different aspects of e- cigarettes and to identify the harmfulness of "smoke" from the e-cigarette. The questionnaire consisted of 21 single and multiple choice questions.

**Results:** All of the respondents (247/247) were aware of the existence of electronic cigarettes. 47% of parents (116/247) has used e-cigarette at least once, and 11% (27/247) reported using the device on a regular basis. Reported reasons behind using e-cigarettes included smoking cessation for 21,5% (31/143) of respondents, tobacco smoke harm reduction for 33,3% (48/143), financial benefits for 30,8% (44/143) and following a trend or trying out of curiosity for 15,4% (22/143). Surprisingly 47,6% (118/247) of interviewed parents believed that using electronic cigarettes is less harmful to human health than smoking tobacco, while 34,2% (85/247) of the respondents believed that the device is equally or more harmful than smoking tobacco. Regarding second-hand exposure to the vapor produced by e-cigarettes, the majority (48,2%) of respondents identified it as less harmful than tobacco smoke, however 35,4% believed its harmfulness is similar.

**Conclusions:** The subject of electronic cigarettes is extremely controversial due to the lack of definitive results of the research on their impact on human health. While e-cigarettes are massively popular, parents' opinions on their harmfulness differ vastly. This situation constitutes the need for bringing out more thorough research on the matter, as well as stricter law regulations regarding access to the devices in order to prevent the youngest from a potential exposure.

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[292]

### Passive smoking among children: Parental knowledge

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**Introduction:** Passive smoking remains a serious public health issue, also in pediatric populations. It has been demonstrated to cause sudden infant death syndrome, low birth weight, recurrent infections and asthma. However, a significant number of parents remain unaware of detrimental effects that their smoking may have on their children's health. Therefore, it is advised, that parents should be counseled to the adverse effects of ETS on child health.

**Aim of the study:** To investigate parents' knowledge on side effects of passive smoking among children in Poland and to assess and compare rates of pediatrician and family practitioner screening and counseling for parental smoking.

**Material and methods:** 247 parents of children aged 0-18 years old were interviewed using a questionnaire between November 2015 and January 2016. Parents were asked about different aspects of parental tobacco smoke. The questionnaire consisted of 21 single and multiple choice questions.

**Results:** 59% (145/247) of parents declined smoking, the rest were smokers. 73% (184/247) of the respondents declined raising a subject of smoking in the child's household by their pediatrician in contrast to GPs, who asked about smoking 41% (101/247) of parents. Most of the respondents denied having a no smoking policy neither in the car used by their child 68% (168/247) nor in the household 73% (180/247). All parents believed that passive smoking could cause at least one harmful effect: the most common were more frequent respiratory infections (51%), asthma (46%) and low birth weight (38%). 40% (41/102) of smoking parents tried to quit smoking for their child's health sake. Surprisingly 23% (56/247) of respondents would accept that their child was a smoker. 67% (68/102) of smokers have never been suggested to quit smoking by their doctor.

**Conclusions:** Parents' understanding of passive smoking among children frequently differ from current medical knowledge. Rates of screening and counseling for parental smoking in pediatric and family practices in Poland are low. Nevertheless, significant opportunities exist to improve tobacco control activities in pediatric primary care settings.

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[293]

### New rehabilitation method outcomes in treating children with cerebral palsy.

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First Moscow State Medical University named after I.M. Sechenov, curative medicine

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**Introduction:** Cerebral Palsy (CP) is the most common physical disability in childhood. It appears due to perinatal brain injury, affects child development causing movement, posture and activity limitations. Neurorehabilitation in children with CP is based on the processes related to the high plasticity of the nerve tissue. LIFE –rehabilitation and education method includes 1)individual therapeutic and psychological approach 2)normalization of the internal functioning through diet, juicing and vitamin therapy 3)active functional training to stimulate changes in the internal pressure and organs, provide active tissues flexion 4)massage therapy 5)teaching parents to perform LIFE-method at home at the permanent daily bases.

**Aim of the study:** To evaluate quality and effectiveness of the new rehabilitation program (LIFE) for threatening CP.

**Material and methods:** 11 children (6 females, 5 males; aged 2-4) with bilateral spastic CP and a Gross Motor Function Classification System of level I were assigned to 1 month daily LIFE treatment in Health in Motion Rehabilitation Center (Toronto,Canada) with 2 month follow up. According to their parents and doctor's initial observation patients were not able to hold head, roll, crawl, stand and switch from one position to another, experienced drooling and constipation problems. LIFE-program intervention was provided 3-hours daily and was followed with 1-hour massage. All participants were evaluated initially and at the final assessment after LIFE program at the clinic and 2 month later after home training with parents. Changes in motor and functional abilities were assessed based on Gross Motor Function Measure-66.

**Results:** Patient defined participation improved and was accompanied by achievement of new transitional and functional movements in all cases. By the end of first month significant improvements were observed in Gross Motor Function Measure-66 results in all 11 patients - all children gained ability to roll and significantly improved their excretory function, head control and drooling, 4 children learnt to switch from laying to sitting position and 1 child – from sitting to kneeling and started to crawl. 2 month follow up after home training by parents proved that results did not regress.

**Conclusions:** One session LIFE-program induced significant changes in patient defined participation, positioning, functional mobility and motor functioning. LIFE-Rehabilitation may greatly help cerebral palsy patients achieve their full potential.

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[294]

### **Overweight as a complication of acute lymphoblastic leukemia therapy in paediatrics**

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**Introduction:** According to numerous publications, overweight is a widespread complication among children who have finished the therapy of acute lymphoblastic leukemia (ALL).

**Aim of the study:** Verification of the hypothesis assuming more frequent prevalence of overweight in the group of childhood ALL survivors than in the general population.

**Material and methods:** The study was carried out from March 2014 to December 2015 at the Department of Paediatric Oncology and Hematology, Medical University of Białystok. The study group consisted of 32 patients (16 girls and 16 boys). The criterion for the selection of the participants was completion of maintenance chemotherapy not more than 5 years before taking measurements. The control group consisted of 45 participants (25 girls and 20 boys) – patients' siblings and peers hospitalized for reasons other than neoplastic diseases. The mean age in the study group was 11.98 years (standard deviation – SD – 3.90) and in the control group – 12.09 years (SD – 3.51).

Measurements were taken with the InBody370 analyzer which uses the method of bioelectrical impedance. Following parameters were assessed: body mass index (BMI), percentage body fat (PBF) and waist-hip ratio (WHR). The results were presented using the formula: 0 – below average, 1 – age and gender norm, 2 – above average. The Mann-Whitney U Test was applied to perform a statistical analysis using StatSoft Statistica 12. Statistical significance level was 0.05.

**Results:** The study revealed that 37.50% of patients from the study group had a significantly increased BMI (15.56% in the control group,  $p=0.017$ ). 78.13% of ALL survivors had a raised PBF (24.44% in the control group,  $p=0.000018$ ) and 34.38% had an elevated WHR (11.11% in the control group,  $p=0.011$ ). This upward tendency was more distinctly marked among boys than among girls from the study group.

**Conclusions:** Assuming that overweight is defined as an excessive deposition of adipose tissue, the hypothesis implying higher prevalence of overweight among childhood ALL survivors should be considered true. In order to verify this conclusion and find possible reasons of such phenomenon, this research will be continued over the next years.

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[295]

### **NONINFERIORITY OF FIRST LINE ANTIBIOTIC THERAPIES IN PEDIATRIC PATIENTS WITH COMMUNITY ACQUIRED PNEUMONIA**

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**Introduction:** Lower respiratory tract infection (LRTI) represent one of the most frequent causes of hospitalization worldwide. The majority of RTIs are treated "blindly" because the establishment of an aetiological diagnosis is not possible in most cases. Antibiotics are the standard treatment for LRTIs and their choosing should be balanced between benefit, development of bacterial resistance and adverse effects.

**Aim of the study:** There is general consensus that beta lactam antibiotics maintain their position as the first line of therapy in RTIs. The aim of the study was to assess efficacy of first line therapeutic measures versus Clindamycin, in selected Community acquired pneumonia (CAP) patients and to establish if differences between the two groups may be of clinical value.

**Material and methods:** A retrospective study in the regional Pediatric Hospital Iasi, Romania, was conducted for a period of 9 months. Included in the study were only newly diagnosed CAP cases which received antibiotic therapy (n=235, 11% of the total inpatients), divided into two groups according to the first choice of treatment: a Beta Lactam antibiotic group (n=150, 92% Cephalosporins and 8% Penicillins) and a Clindamycin group (n=50). Children with underlying chronic respiratory illness, immunodeficiency, symptomatic congenital heart disease or a different approach in treatment were excluded from the study (n=35).

**Results:** Clinical response was defined as the absence of fever on day three. Descriptive statistics between groups were made as Mean hospitalisation days (7,88±2,06 days for Clindamycin group versus 8,23±2,83 days for the Beta Lactam group), Mann Whitney U test revealed no statistical evidence that an antibiotic is preferred to the other in reducing hospitalisation ( $p>0,05$ ; 95%CI). As pediatric population is prone to developing complications, to reduce bias we furthermore divided the pupils in 3 subgroups of age (years): 0-1 (n=85), 1-5 (n=76) and 5-18 (n=39) and an association between side effects (diarrhea, candidiasis, allergies, hepatocytolysis) and antibiotic therapy alone could not be established when comparing the two groups (Kruskal-Wallis test  $p>0,05$ ; 95%CI).

**Conclusions:** Clindamycin has an antimicrobial spectrum which makes it a possible alternative in CAP. However, as first choice therapy it should be reserved for cases of penicillin allergy, or cases of strongly suspected staphylococcal pneumonia. When comparing the two populations, beta lactamase class noninferiority efficacy was established.

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[296]

### Review of lumbar puncture in pediatrics – indications, patients characteristic and results

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**Introduction:** Various pathologies of central nervous system (CNS) affect the physical and chemical properties of the cerebrospinal fluid (CSF). Therefore lumbar puncture (LP) has become a common examination in pediatrics that facilitates an appropriate diagnosis and therapy. LP can be performed for diagnostic and therapeutic purposes.

**Aim of the study:** The purpose of this study was to investigate the indications and compare the results of LP with additional tests and the clinical assessment among children hospitalized at a pediatrics department, divided into different age groups.

**Material and methods:** The study population consisted of 122 children (65 male and 57 female patients) aged 7 days to 17 years old (the average equaled 2 years and 5 months) out of 6535 (1,86%) children hospitalized between January 2012 and December 2014 at the pediatrics ward of Bielański Hospital, Warsaw, Poland. LPs were performed to diagnose infections. The analyzed group consisted of 23 (19%) newborns, 16 (13%) infants <3 months, 30 (25%) infants aged between 3-12 months, 22 (18%) children aged between 2-3 years old and 31 (25%) children aged > 3 years old (the average age equaled 7 years and 9 months).

**Results:** The most important indication to LP performance was higher body temperature ( $>38^{\circ}\text{C}$ ) observed among 91 (74,5%) of the analyzed children. The most important laboratory indication were elevated levels of inflammation markers (CRP and PCT). Bacterial etiology was confirmed in 18 (15%) cases. This etiology was most common in children aged >3 months old (29%) while in newborns (4%) it was the rarest cause of pathology. Viral etiology was suspected in 16 (13%) children. However, no specific etiological factor was detected in any of these cases. Patients with the confirmed bacterial etiology presented with much higher inflammation markers than those with viral infections. Clinical condition of children with bacterial inflammation was described as moderate to severe or severe. Patients with viral etiology usually remained in good or good to moderate condition. Original location of inflammation was established in 52% of cases.

**Conclusions:** Indications to perform an LP vary between different age groups. Severe clinical condition, higher body temperature and raised inflammation markers correlate closely with bacterial etiology in children >1 month age. A newborn with a generalized infection can present with few or no symptoms regardless of the etiology. LP helps to determine infection's etiology and to instigate further therapeutic decisions.

[297]

### **The prevalence of autism spectrum disorders in offspring of mother diagnosed with gestational diabetes mellitus.**

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**Introduction:** Previous studies have shown some evidence of significant association between exposure to pregestational maternal diabetes and risk of autism spectrum disorders (ASD) in offspring. Less information is available on the association of exposure to maternal gestational diabetes mellitus (GDM) with risk of ASD.

**Aim of the study:** The aim of our study was to examine the prevalence ASD disorders in offspring of mothers diagnosed with GDM.

**Material and methods:** We analyzed data gathered from GDM patients (947 women; 1007 children aged 4-16 years) treated at the Department of Metabolic Diseases, Jagiellonian University Medical College in Kraków from 1999 to 2011. We conducted a telephone survey to collect clinical information (maternal and child age, pregnancy duration, diabetes treatment, pre-pregnancy body mass index (BMI), weight gain during pregnancy, type of delivery, birth weight, systolic and diastolic blood pressure (SBP and DBP respectively)) and biochemical parameters (HbA1c, TSH).

We performed significance test based on the exact binomial probability to assess if the prevalence rate of ASD in offspring of mothers with GDM was significantly different from available epidemiological data for children aged 0-18 years in Poland. Mann-Whitney U test was performed to check whether there are any significant factors discriminating the mothers and offspring with and without ASD.

**Results:** The mean prevalence of ASD in the offspring of mothers with GDM in our study (8/1007) was significantly higher than in children aged 0-18 years in Poland (17,6/10000;  $p=0.0004$ ). The mothers of children with ASD median pre-pregnancy BMI (20.862 vs. 23.529) and SBP (110 mmHg vs. 120 mmHg) were significantly lower vs. group without ASD ( $p=0.0349$ ; and  $p=0.0306$  respectively). Birth weight of ASD children was significantly higher vs group without ASD (3695 g vs. 3320 g,  $p=0,0482$ ).

**Conclusions:** The prevalence of ASD seems to be higher in offspring of mothers with GDM than in the general population. With the prevalence of ASD rapidly growing, studying the potential risk factors is crucial for better understanding of this phenomenon and it may be helpful in preventing it.

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[298]

### **EFFICACY OF OSTEOPATHIC MANIPULATIONS UPON CHILDREN WITH INITIAL ORTHOSTATIC HYPOTENTION**

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**Introduction:** Initial Orthostatic Hypotention (IOH) is defined as a transient blood pressure (BP) fall upon standing with symptoms of cerebral hypoperfusion: dizziness, light-headedness, headache, vision disturbances such as black spots. Which are also characteristic for pathology of cervical vertebrae. These symptoms may impair the quality of life and treatment is needed. Osteopathic manipulations are those of the most commonly used complementary approaches for neck dysfunctions in many countries.

**Aim of the study:** The aim was to study the influence of osteopathic manipulations on autonomic integrity in patients with IOH in a way to investigate the possibilities to improve their quality of life.

**Material and methods:** There were observed 60 children with IOH aged from 9 to 17. Patients who were receiving standard therapy (nootropics, mild sedative therapy,  $\beta$ -blockers, adaptogenic remedies, physiotherapy and physical exercises) formed control group (29). Study group was formed by children who were treated with osteopathic manipulations (functional techniques, stimulation of Chapman's reflex points) along with standard therapy. There was no statistically significant difference between boys/girls ratios in both groups. Median age of patients was 14,3 in control and study group. The main method of investigation was orthostatic probe (OP) during which after rest the patient stood up and the systolic BP (SBP), diastolic BP (DBP) and heart rate (HR) were measured every minute for 10 min. OP was held up before treatment and after. Major complaints were fixated before and after treatment to evaluate the quality of life. Validation of data was made by attaining statistical significance.

**Results:** In study group the increase of SBP ( $p < 0,05$ ) and decrease of HR ( $p < 0,05$ ) during interval of 1-2 min of upright standing at the end of treatment was observed. DBP remained at the same level ( $p < 0,05$ ). Statistical significance between study and control group was attained. Patients from study group reported the significant decrease in intensity and frequency of headache and dizziness on 3rd day of treatment. Subjects from control group – on the 10th day. These findings speak for mobilization of venous capacitance blood from peripheral to the central circulation and increase of cardiac output.

**Conclusions:** Thus, osteopathic manipulations contributed to better interaction between sympathetic and parasympathetic components of autonomic integrity. This complementary approach helped to reduce symptoms in shorter period of time and to improve quality of life.

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[299]

### **Viral and bacterial infection of the mucous membranes in children with chronic gastroduodenitis**

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**Trustee of the paper:** Yarmak Siarhei

**Introduction:** Current concepts of etiology and pathogenesis of stomach and duodenal chronic diseases are closely linked with the role of infectious factors in it. The contribution of viruses to the pathogenesis of cancer and chronic inflammatory diseases of gastrointestinal tract is discussed as well.

**Aim of the study:** To detect in stomach and duodenum mucosa the occurrence rate of the 1st and 2nd types viruses of simple herpes (HSV), the Epstein-Barr virus (EBV), cytomegalovirus (CMV), human papilloma virus (HPV) and *H. pylori* at children who suffer from chronic gastroduodenitis (HG).

**Material and methods:** On Grodno region children's clinical hospital basis there are 66 children aged 6 to 17 years with verified HG have been examined. In mucous membranes of the stomach (antrum and body) and duodenum by immunohistochemical method the antigens of HSV-1, HSV-2, EBV, CMV and HPV were determined. Using histological staining of obtained material according to Romanovsky-Giemz the diagnosis of *H. pylori* was made.

**Results:** At 57% (95% CI 45-70) of children` mucous membranes the viruses` anti-genes were found. HSV-1 was identified at 44% (95% CI 32-57) of children, HSV-2 – at 36% (95% CI 25-49), HPV – at 24% (95% CI 15-36), EBV – at 20% (95% CI 11-31) and CMV – at 6% (95% CI 2-15) of patients.

During the analysis of the infection combination it was revealed that *H. pylori* infection as a single agent was in 21% (95% CI 12-33) of children. In 32% (95% CI 21-44) of cases the mixed viruses and bacterial infection in stomach and duodenal mucosa was detected. The virus as a mono-infection occurred in 26% (95% CI 16-38) of cases. In 21% (95% CI 12-33) of cases in children` stomach and duodenal mucosa there were not any analyzed infectious agents found.

Analyzing how detected infections influence the morphological changes in each of the studied departments, in the antrum of stomach it was found the presence of significant positive correlation between the intensity of antigen expression of HSV-1 and the degree of mononuclear ( $R=0,39$ ,  $p=0,0009$ ) and neutrophilic ( $R=0,25$ ,  $p=0,04$ ) infiltration. The degree of antigen expression of HSV-2, EBV, CMV, HPV and colonization of *H. pylori* in the mucous membranes were not statistically significant associated with the degree of mononuclear and neutrophilic infiltration ( $p > 0,05$ ).

**Conclusions:** The viral infection of mucosa was found at 57% of children with CG. In these cases the HSV-1 has a more pronounced effect on the severity of mononuclear and neutrophilic infiltration of the stomach antrum.

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[300]

### Hypertrophic pyloric stenosis

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**Introduction:** Hypertrophic pyloric stenosis ( HPS) is the most common cause for stomach obstruction in infants. Incidence is approximately from 1:600 to 1:500. It usually occurs between first week to 3 months of age and has a male predilection (M: F-4:1).

**Aim of the study:** The aim of this study is to share the experience of the Pediatric Surgery Department of "St. George" University Hospital- Plovdiv, Bulgaria in diagnosing and treatment of Hypertrophic pyloric stenosis.

**Material and methods:** For a period of 5 years (from 2010 to 2015) in the Pediatric Surgery Department of "St. George" University Hospital- Plovdiv, Bulgaria 50 children were treated for Hypertrophic pyloric stenosis. 88% of the patients were male and 22%-female. Their age were raging between 3 and 72 days. The clinical presentation manifests with non-bilious vomiting, "hungry" stool and weight reduction. In 38(76%) of the cases these symptoms were presented by the first month after birth and in 12(24%) cases the manifestation was after the first month. In several cases the hypertro-phied pylorus was palpated as an olive sized mass in the right upper quadrant. According to the laboratory examination all of the infans had hyperbilirubinemia and signs of icterus. Ultrasonography(US) was the first choice to confirmed the diagnose. US represented thickening of the pyloric muscular wall with diameter above 14 mm. All children underwent an open surgery. The only method of surgical treatment is the exramucosal longitudinal pyloromyotomy of Fredet-Weber-Ramstedt. Before the operation electrolyte disturbances were corrected.

**Results:** Most of the children had uneventful early and late postoperative period and restored passage. The patients with postoperative complications (0.06% of the cases) were associated with lesion of the gastric mucosae and incomplete pyloromyotomy. These children underwent relaparotomy and have fully recovered.

**Conclusions:** The experience of the Department of Pediatric Surgery of "St. George" University Hospital- Plovdiv, Bulgaria in treatment of Hypertrophic pyloric stenosis proved that laparomyotomy is a surgical treatment without alternative. The operation is curative and has very low morbidity and complications.

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[301]

### Usage of vacuum assisted therapy in a newborn with omphalocele

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**Introduction:** Omphalocele is a congenital anomaly of the abdominal wall, of the median colostomy. Frequency is 1 in 4000 newborns. It is a defect in the umbilical ring through which abdominal content prolapses into an amniotic sac. The challenge for pediatric surgeons is conservative treatment in large omphalocele where reposition of the abdominal organs in the small abdominal cavity is impossible.

**Aim of the study:** The aim of this study is to share the experience of Pediatric Surgery Department of „St.George" University Hospital-Plovdiv, Bulgaria in usage of V.A.C. therapy in newborn with omphalocele.

**Material and methods:** In the Pediatric Surgery Department of "St. George" University Hospital- Plovdiv, Bulgaria was treated two full-term newborns with medium and large omphalocele. Anomaly of the anterior abdominal wall was found immediately after birth. The bad overall condition of the newborns and the large defect imposed the use of vacuum assisted technique. On the first newborn polyurethane sponge GranoFoam vacuum dressing was placed. Constant negative pressure of -40 mmHg was used. The second newborn was treated with Bayoban patch because of the large size defect. The constant negative pressure was -50 mmHg. This patient was operated two times because of presence of intestinal fistulas.

**Results:** The results were positive. The first newborn had a smooth post-operative wound healing period. The wound healed with primary closure. The second one, had underwent several reoperations. However the final result was good. The children were discharged healthy.

**Conclusions:** The experience in the use of vacuum assisted technology in neonatal period and in childhood is very limited in our country. This new technology gives promising results in the treatment of many surgical conditions. The period between the stages of surgical treatment has been reduced and infections has not developed.

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[302]

### **Correlation between endoscopy and histology in children with gastritis**

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**Trustee of the paper:** Juncu Maria

**Introduction:** The histologic examination is as important as endoscopic procedure in gastritis diagnostic. When children's are involved, the international experience is limited, because the standard in western countries is to perform endoscopic examination under general anesthesia, which is hard to be accepted in children's. In Romania, the endoscopic procedure is done only with a slight sedation.

**Aim of the study:** The aim of this study is to find out if there is a correlation between endoscopic (macroscopic) aspects and histology, based on a particularly reach local experience.

**Material and methods:** Our group of study consist in 175 children, with age between 1 and 19 years old, 114 of them being girls and the rest of 61 being boys, admitted in Pediatric Clinic 1 for gastroduodenal symptomatology between January 2011 and June 2013. The study group was extracted from the data base of anatomic pathology laboratory of the Children's Hospital Cluj, end introduced in an Excel sheet for statistic analysis. The endoscopic and microscopic descriptions where codified according to Sydney Classification of Gastritis.

**Results:** Erythematous gastritis, the most frequent endoscopic type of gastritis in children's is a highly nonspecific picture end at microscopic level are reported all types of gastritis. Erosive gastritis described at endoscopy is highly correlated ( $p < 0.01$ ) with microscopically acute reactive gastritis. The endoscopic atrophic gastritis are not well correlated ( $p > 0.05$ ) with atrophy at microscopic level. Reflux gastritis seen endoscopically correspond in 55% of cases with a microscopically reactive gastritis, the correlation being non-significantly ( $p > 0.05$ ). Comparing with a similar histological study conduced 15 years ago in the same hospital, the reactive gastritis rice in incidence from 22% to 43%, the infectious gastritis decreased from 33% to 18 and the mix gastritis decreased from 14% to 2%.

**Conclusions:** Despite all modern achievements in diagnostic, histologic examination of a gastric biopsy (multiple site biopsies) remains the golden standard in gastritis diagnostic. Also the ability to put an etiological diagnosis increased significantly.

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[303]

### **Congenital duodenal obstruction**

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**Trustee of the paper:** Prof. Penka Stefanova

**Introduction:** Congenital duodenal obstruction is a rare condition (1:10 000). It is characterized with high mortality which makes it important among the diseases of infancy. The most common cause of congenital duodenal obstruction is duodenal atresia.

**Aim of the study:** The aim of this study is to share the experience of Pediatric Surgery Department of „St. George” University Hospital-Plovdiv, Bulgaria in diagnosing and treatment of duodenal obstruction in infants.

**Material and methods:** A retrospective study of 32 patients with congenital duodenal obstruction treated in the Pediatric Surgery Department of “St. George” University Hospital- Plovdiv, Bulgaria has been conducted for a period of ten years between 2005 and 2015. 59% of the subjects are female and 41% of them are male, their age ranging between 8h and 18 days. The children were diagnosed with four different forms of duodenal obstruction-20 (63%) were caused by duodenal atresia. In addition, 8 patients (25%) were associated with annular pancreas and 4 patients (12%) with Ladd's membrane. The clinical presentation depends on the degree of the atresia and manifest during the first days with bilious vomiting. The clinical diagnosis was confirmed after the classical “double bubble” sign found on ultrasonography and X-ray. All children underwent an open surgery

where 41% of the patients with duodenal atresia and annular pancreas underwent duodeno-duodenal anastomosis and the "Diamond shape" anastomosis and 47% of them- duodeno-jejunal anastomosis. The rest of the patients (12%) with membranous mucosal atresia and Ladd's membrane had excision of the membrane.

**Results:** Most of the patients had uneventful early and late post-operative period and restored passage. The patients with postoperative complications are mainly associated with insufficiency of the anastomosis in the early postoperative period followed by reoperation and resuscitation. The high death rate 26% is due to multiple associated anomalies and severe postoperative sepsis.

**Conclusions:** Because of the condition's nature, imaging techniques are not always informative enough. An open surgery gives the opportunity for a detailed inspection and change of the surgical approach, depending on the finding.

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[304]

**Diagnosis delay in common variable immunodeficiency in pediatric patients - a retrospective study from years 2000-2015.**

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**Trustee of the paper:** Prof. Anna Pituch-Noworolska, MD, PhD

**Introduction:** Common variable immunodeficiency (CVID) is the most commonly diagnosed primary immunodeficiency (PID). It is most commonly defined as hypogammaglobulinemia and low production of specific antibodies following vaccination. The standard care in CVID is lifelong immunoglobulin substitution. As the symptoms of CVID begin gradually and may go unnoticed for a significant period, it is difficult to assess the diagnosis delay in individual cases. Current research indicates that the cellular immunity is also affected in patients with CVID. The cellular immunity can be assessed by calculating the CD4:CD8 ratio and comparing it to the reference range for the age in pediatric population. It has been proposed that the abnormalities of the cellular immunity may progress with the disease, but also that they may be corrected by the immunoglobulin substitution. Thus, it can be hypothesized that the poor CD4:CD8 ratio in the first year of the substitution suggests longer diagnosis delay.

**Aim of the study:** The aim of this retrospective study was to determine if the CD4:CD8 ratio in the first year of the substitution would correlate with the date of the diagnosis, this correlation being a premise for the fact that the diagnosis delay has diminished in time.

**Material and methods:** Pediatric patients diagnosed with CVID that were being treated in Immunology Station of University Children's Hospital of Cracow from 2000 to 2015 were identified from an existing clinical database. The study included 24 patients (18 boys, 6 girls). The number of CD3, CD4 and CD8 lymphocytes was assayed with flow cytometry. The T cell subpopulations ratio (CD4:CD8) was subsequently calculated. Only the assessments from the first year of substitution were taken into consideration.

**Results:** Mean age at the beginning of the substitution accounted 6.4 years (median 6.5, SD 3.7 years). A correlation of statistical significance was noted between the date of the beginning of the substitution and the CD4:CD8 ratio ( $r=0.75$ , 95% CI 0.48 – 0.89,  $p<0.01$ ).

**Conclusions:** The CD4:CD8 ratio was lower in patients who begun their substitution early when compared to those who were diagnosed only recently. Therefore, it can be hypothesized that the diagnosis delay of CVID in patients of Immunology Station of University Children's Hospital of Cracow has diminished from year 2000 to year 2015.

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[305]

### Seasonal variation of type 1 diabetes mellitus diagnosis in Polish children - a multicentre study.

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**Trustee of the paper:** Anna Ramotowska

**Introduction:** Type 1 diabetes (T1D) is immune-mediated multifactorial disease characterized by destruction of pancreatic beta cells insulin deficiency. The current concept of damage of beta cells includes environmental factors in genetically susceptible individuals. Among them the important role seems to be played by temperature and insolation. Weather conditions can regulate patient's level of vitamin D and increase risk of viral infection. Both of them might play important role in T1D development.

**Aim of the study:** The aim of the study was the evaluation of the seasonal variation of type 1 diabetes mellitus in Polish children <18 years of age.

**Material and methods:** The study group consisted of 2174 children (1007 girls) with the mean age 9.3 SD 4.5 years, with newly diagnosed T1D in the years 2010-2014. This study included data of children at the age of 0-17 years with newly recognized T1D correlated with weather conditions such as temperature and hours of sunshine. The data was obtained from east and central Poland, where lives 35% of the Polish population. The data was collected retrospectively patients' documentation or prospectively from electronic databases. In all centers T1D was diagnosed according to International Society for Pediatric and Adolescent Diabetes criteria. The meteorological data was provided by Institute of Meteorology and Water Management.

**Results:** We noted significant seasonality in the incidence of Type 1 diabetes ( $p < 0.001$ ). The lowest number of children was diagnosed with T1D during May, June and July and the highest incidence was observed from September to February with peak in January. 423 (19%) children were diagnosed in the warmest months (June to August with the mean temperature 16.8°C) compared to 636 (29%) recognised in the coldest months (December to February with the mean temperature -1.6°C),  $p < 0.0001$ . T1D onset was noted more frequently in Autumn-Winter (September to February) than in Spring-Summer (March to August); 1270 (58%) vs. 904 (42%) cases,  $p < 0.0001$ . The seasonal variation demonstrated different pattern in the youngest children 0-4 years of age than in older groups. There were no significant differences between boys and girls ( $p = 0.142$ ).

**Conclusions:** Significant seasonality in T1D onset with peak values during the cold month might support the hypothesis that some environmental factors (eg. infections) may interfere with T1D onset. Different seasonal variation pattern in younger ages suggests that environmental factors may have a different effect in the youngest children compared to older subjects.

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[306]

### Is the airway foreign body in children easy to detect?

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**Trustee of the paper:** Teresa Ryczer M.D.

**Introduction:** Children with suspected FBA (foreign body aspiration) present a challenge for all paediatricians, especially when FBA was not detected immediately after choking episode. The bronchoscopy remains a gold standard for FBA management.

**Aim of the study:** Our goal was to assess the correlation between the results of non-invasive medical examinations such as auscultation, chest x-ray and the bronchoscopy findings in order to determine their sensitivity and specificity.

**Material and methods:** We gathered clinical data of patients with an initial diagnosis of suspected FBA, hospitalised in the Department of Paediatric ENT of Medical University of Warsaw in years 2008-2012. The collected data included clinical signs and symptoms, auscultation findings, chest X-ray results, the localisation and type of foreign body found in bronchoscopy.

**Results:** 93 patients (37 girls), aged from 12 months to 8 years (mean age: 31 months, median age: 24 months), were included in our study. 63 (68%) patients had positive findings in bronchoscopy. In 33 cases (36%) bronchoscopies were performed within 24 hrs from FBA and over 80% of bronchoscopies were performed within 2 weeks after FBA episode. Only 3 patients were discharged within 24 hrs, the rest were hospitalised up to 10 days (mean: 3 days). In our study only 6 patients did not have any abnormal symptoms nor auscultation findings, with both normal and abnormal chest x-ray findings. Other presented: cough (53%), dyspnoea (37%), abnormal auscultation sounds (e.g. wheezes, ronchi) (49%), none of which were confirmed to be specific for FBA. There was a correlation between bronchoscopy and general auscultation findings ( $p=0.033$ ) and also between bronchoscopy and general chest x-ray findings ( $p=0.012$ ), in particular hyperinflation of the lungs ( $p=0.038$ ). Lateral decubitus chest x-ray results of air-trapping were extremely specific with 100% correctly recognized aspirated FBs in bronchoscopy ( $p=0.011$ ).

**Conclusions:** Positive medical history of choking episode is the key information for making initial diagnosis of FBA. The mean age of patients with FBA was 2 years. Numerous unspecific symptoms e.g. cough or dyspnea, and auscultation findings such as wheezes and ronchi are common in patients in case of FBA, but not specific. The only specific characteristics associated with bronchoscopy were chest X-ray results, especially, air-trapping evidence on lateral decubitus chest x-ray.

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[307]

### THE RELATIONSHIP OF INVASIVE AND NONINVASIVE RESPIRATORY THERAPY TO THE RISK OF DEVELOPING THE RETINOPATHY OF PREMATURITY (ROP)

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**Introduction:** Rethinopathy of prematurity (ROP) occurs in 95% of babies weighting less than 1000 g, all cases that had proceeded to the third stage will cause serious complications or complete blindness.

**Aim of the study:** To evaluate the degree of invasive and noninvasive respiratory therapy affection on the frequency and severity of ROP in the group of risk.

**Material and methods:** Retrospective analysis of examination of 217 newborn of the risk group. ( In Russian Federation all children under 35 weeks of gestation age or weighting below 2000 gr lie in the group of risk for ROP). Due to the development of Respiratory Distress Syndrome all children needed respiratory therapy on the first week of living. The patients were divided into 3 groups according to the kind of respiratory therapy received. 1st group ( n=86) received noninvasive respiratory therapy with Nosal Continuous Airway Pressure, 2nd group (n=69) – noninvasive therapy with Biphasic , and 3rd group (n=62) – invasive respiratory therapy with Artificial Respirating Unit.

**Results:** In 1st group we observed 0 cases of ROP, in 2nd - 3 cases were diagnosed , but all of them had a fast regression afterwards, in 3rd group – 20 children developed ROP, only 15 cases regressed and one child had to go through the laser coagulation of the retina vessels.

**Conclusions:** Changing from invasive to noninvasive forms of respiratory therapy may lead to significant decrease of the risk of ROP.

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# Pharmacy

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[308]

### **Taxus x media transgenic root cultures as a new source of lignans**

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**Trustee of the paper:** Łysik K.

**Introduction:** Lignans represent an abundant class of natural phenolic compounds, formed by dimerization of two coniferyl alcohol (AC) units, derived from L-phenylalanine (PHEN), to give pinoresinol [1, 2] and other lignans. A great number of pharmacological effects such as antibacterial, antifungal, antiviral, antioxidant, anticancer, and anti-inflammatory [3] were reported for various lignans found in plants.

**Aim of the study:** The production of (+) pinoresinol, (racemic) lariciresinol, (-) matairesinol, (racemic) secoisolariciresinol and (-) hydroxymatairesinol (HMR) in cultures of *Taxus x media* two transgenic root lines ATMA and KT were investigated.

**Material and methods:** The ATMA root line is carrying taxadiene transgene [4]. Transgenic roots were cultivated in hormone-free DCR-M medium [4] and supplemented on day 28 with an elicitor - methyl jasmonate (MJ, 100  $\mu$ M) and two precursors of lignan biosynthesis: PHEN (100  $\mu$ M) and AC (30  $\mu$ M). After 2 weeks of cultivation (on day 42) roots were harvested, lyophilized and subjected to HPLC-UV-DAD analyses [5].

**Results:** In control culture (without any supplementation) the roots of KT line demonstrated higher growth capabilities than ATMA roots. The recorded dry biomass increase was 3.3 and 2.3-fold, respectively. Application of the elicitor and precursors to the medium resulted in significant biomass reduction as compared to control culture, up to 33% and 70%, in cultures of KT and ATMA lines respectively.

The highest yield of lignans were determined under conditions of control cultures at the end of cultivation (on day 42) and their content was higher in roots of KT than ATMA line. The roots of KT line accumulated only free lignans: pinoresinol (9.7  $\mu$ g/g DW) and matairesinol (75.4  $\mu$ g/g DW). While in roots of ATMA line lariciresinol and HMR were detected as glucosides with the highest yield, 21.4 and 16.5  $\mu$ g/g DW, respectively. The medium supplementation with elicitor and precursors exerted a detrimental effect on lignan accumulation in cultures of both root lines.

**Conclusions:** The further optimization of culture conditions for improved lignan production in in vitro cultures of yew organs is necessary.

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[309]

### **A comparative study of phytochemical composition of extracts of *Ligustrum vulgare* L. leaves, fruits, seeds and flowers using HPLC-DAD-MS/MS method**

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**Trustee of the paper:** Anna Kiss, PhD

**Introduction:** *Ligustrum vulgare* (Oleaceae) is known decorative shrub distributed in Europe and Asia. Extracts from its leaves and flowers were used in oropharyngeal inflammations, aphthae and chronic tonsillitis in folk medicine. Fruits served as mildly laxative agent.

**Aim of the study:** The aim of the study was a comparison of the composition of aqueous and ethanolic extracts prepared from leaves, fruits, seeds and flowers of *L. vulgare* using HPLC-DAD-MS/MS method, as well as determination of total phenolic content in the preparations.

**Material and methods:** HPLC-DAD-MS/MS analysis was performed on a Zorbax SB C18 column. A linear gradient system of mobile phase A (water/acetonitrile/formic acid, 95:5:0.1, v/v/v) and mobile phase B (methanol) was used: 0-60 min., 1-60% B. The Folin-Ciocalteu method was used to determine the total phenolic content which was expressed as gallic acid equivalents.

**Results:** The phytochemical analysis confirmed the presence of oleuropein (secoiridoid) and echinacoside (phenylpropanoid) in all preparations. The major compound of flowers and leaves extracts is oleuropein. On the other hand, another secoiridoid nuhzenide dominates in fruits and seeds extracts. The highest total phenolic content was observed in the flower ethanolic ( $110.5 \pm 17.2$  mg/g) and aqueous ( $104.7 \pm 5.9$  mg/g) extracts.

**Conclusions:** In conclusion, the extracts from different parts of *L. vulgare* constitute a potential source of biologically active phenolic compounds from the groups of secoiridoids and phenylpropanoids, which might be responsible for effectiveness of this plant material in the treatment of disorders in folk medicine.

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[310]

#### GC-MS determination of bisphenol A in urine samples of healthy women

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**Trustee of the paper:** Prof. Natasa Milic

**Introduction:** Bisphenol A (BPA) is an organic compound which has been considered as a potential endocrine disruptor. BPA has been related to the various health problems due to its widespread use.

**Aim of the study:** The aim of the study was to determine the BPA occurrence in female urine and to evaluate the relation between the urinary BPA concentration and the obesity correlation to body mass index (BMI).

**Material and methods:** The morning urine samples taken from 50 healthy women aged from 21 to 59 were prepared according to method developed by Matsumoto et al. (2003) and analyzed with gas chromatography coupled to mass spectrometric detection.

**Results:** Total BPA concentration was above the limit of detection in 16 analyzed samples (32%) (4.64-28.15 µg/g creatinine). Body mass index of female volunteers was calculated and afterwards results were divided into three groups following the guidance of the World Health Organization. The mean BPA value in the urine samples of women with normal BMI (BMI<24.99) was 3.16 µg/g creatinine while in the overweight (BMI 25-29.99) and obese women (BMI≥30) the mean BPA concentrations were 5.73 and 3.25 µg/g creatinine, respectively. Although the mean values did not differ significantly, the highest frequency of BPA in urine was recorded in the group of overweight women (54.6%).

**Conclusions:** The obtained results suggest that higher incidence of BPA in urine could be related to the possible weight problems in women.

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[311]

#### Synthesis of molecularly imprinted polymers with ability to isolate and determine pentamidine and benzamidinie derivatives.

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**Trustee of the paper:** Piotr Luliński

**Introduction:** Molecularly imprinted polymers (MIPs) are the advanced materials designed with selective adsorption of the template molecule ability. To reach such material, the template molecule must interact non-covalently with functional monomers, creating a pre-polymerization complex. Afterwards in present of cross-linking monomers the complex is copolymerized and prepared polymeric structure washed from template molecules, forming active molecularly imprinted polymer able to rebind template or its structural analogues. MIPs are increasingly popular sorbents due to variety of applications in analytical technology (chromatography, solid phase extraction, biosensors studies), great stability in organic solvents and high temperatures and primarily high affinity and selectivity towards a specified analyte.

In the study we have focused on selective adsorption of pentamidine isethionate. This organic salt of pentamidine is a drug of choice against first stage sleeping sickness caused by human protozoan pathogens, exceptionally severe complication of acquired immunodeficiency syndrome (AIDS). Drug administration must be strictly clinical and laboratory monitored due to very frequent adverse reactions.

**Aim of the study:** Our goal was to design and synthesize new polymeric materials followed by the determination of MIP with the highest value of imprinting factor (IF) and the best binding ability to the template molecule and pentamidine isethionate.

**Material and methods:** During synthetic processes we have used 4-methoxybenzamidine as a template (a structural fragment of pentamidine), eight various functional monomers and ethylene glycol dimethacrylate acting as the cross-linking monomer. In polymerization process we have applied a bulk synthesis method with 1:4:16 - template : monomer : cross-linker ratio respectively. Simultaneously we have obtained a blank polymers

using the same synthetic scheme but without template addition. The adsorption properties of polymers have been determined in the dynamic procedure that mimics SPE and assisted by UV-Vis spectroscopy.

**Results:** Obtained results have confirmed that polymers formed with chosen template successfully and selectively adsorb both examined benzamidine derivatives and pentamidine isethionate. These results enabled to evaluate similar SPE protocols.

**Conclusions:** Such intelligent sorbents may find an application in medicine as a conventional SPE materials, especially in AIDS-caused protozoan and opportunistic fungal infections in order to customize pentamidine therapies.

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[312]

#### **EXPERIENCE OF APPLICATION OF THE PREDICTOR ANALYSIS OF PHARMACOLOGICAL ACTIVITY OXYDECAHYDROQUINOLINE'S DERIVATIVE FOR THE PURPOSE OF OPTIMISATION OF EXPERIMENTAL RESEARCHES**

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**Introduction:** Prediction of activity spectra for substances is hosted by the V.N. Orechovich Institute of Biomedical Chemistry under the aegis of the Russian Foundation of Basic Research. The web-based application predicts the biological activity spectrum of a compound based on its structure. Web tool has the ability to predict 3678 pharmacological effects; mechanisms and special toxicities of molecule.

**Aim of the study:** The aim was to spend the predictor analysis of pharmacological activity of decahydroquinoline's derivative PAS-68 for the definition of direction of experimental pharmacological screening. Object of research is the new decahydroquinoline's derivative synthesized in A.B. Bekturov Institute of Chemical Sciences, Kazakhstan. This compound was assigned the laboratory code PAS-68.

**Material and methods:** Preliminary modelling of pharmacological activity PAS-68 "in silico" was spent by means of a program complex PASS v.10.2. At studying antiarrhythmic activity PAS-68 experiments have been spent on white rats and white mice. Following experimental techniques were applied: experimental arrhythmia, caused by aconitine in white rats, experimental arrhythmia, caused by calcium chloride in white rats, experimental arrhythmia, caused by chloroform in white mice, experimental model of terminal anesthesia on conjunctiva of a rabbit.

**Results:** The analysis of results of conducted predictor analysis PAS-68 and also the literary data confirming presence of local anesthetic activity in some derivatives of decahydroquinoline allow to predict high probability of presence in PAS-68 anesthetizing action. It was experimentally established, that PAS-68 has an ability to cause terminal anesthesia on conjunctiva of a rabbit. Because local anesthetics, as well as antiarrhythmics Ib, block sodium channels, and also due to a presence of publications about antiarrhythmic activity in some derivatives of decahydroquinoline, it seems reasonable to conduct studies of PAS-68 for the presence of antiarrhythmic activity. It is experimentally established, that PAS-68 is active in chloroformic model of arrhythmia (antifibrillar properties), has moderate activity in aconitine's (atrioventricular) arrhythmia, and also it is effective enough in calcium chloride (ventricular) model of arrhythmia.

**Conclusions:** Preliminary modeling of pharmacological activity of PAS-68 has allowed to optimize pharmacological screening and, as consequence, has accelerated revealing and experimental confirmation of local anesthetic and antiarrhythmic activity in this compound.

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[313]

#### **"Synthesis of new pyrrolidine-2,5-dione derivatives with a long-chain arylpiperazine moiety"**

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**Trustee of the paper:** Martyna Wróbel

**Introduction:** Among 5-HT receptors, the 5-HT<sub>1A</sub>R is involved in psychiatric disorders such as an anxiety, a depression and a memory loss. The most promising group of 5-HT<sub>1A</sub> receptor ligands are Long-Chain Aryl-Piperazines (LCAPs) with several successfully developed drugs like buspirone, tandospirone or aripiprazole.

**Aim of the study:** The aim of current research was the synthesis of series of pyrrolidine-2,5-dione derivatives with a long-chain arylpiperazine moiety. The structure of synthesized compounds was based on the structure of previously described pyrrolidine-2,5-dione derivatives with a confirmed dual high affinity for the 5-HT1A receptor and SERT.

**Material and methods:** The series of 3-(1H-indol-3-yl)pyrrolidine-2,5-dione derivatives were synthesized. A number of modifications to the leading structure was designed focusing on one of main structural parts: the aryl group at N1 of the piperazine ring. The chemical structures of newly prepared compounds were confirmed by <sup>1</sup>H NMR, <sup>13</sup>C NMR and ESI-HRMS spectra.

**Results:** The obtained final compounds will be transferred for biological in vitro and in vivo tests.

**Conclusions:** The results of those biological tests will allow to assess the influence of planned modifications on the binding of 5-HT1A receptor, which in the future can contribute to the discovery of an efficient new drug.

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[314]

### **Molecular docking and microwave synthesis of new series of derivatives of 8-acetyl-4-methyl-7-(4-aryl-1-piperazinyl)propoxy- and butoxycoumarins as potential neuromodulation agents.**

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**Trustee of the paper:** Kinga Ostrowska, PhD

**Introduction:** Coumarins, derivatives of benzopyran with a substituted keto group on the pyran ring are chemical compounds found in plants. They were identified in more than eighty species in the families such as Poaceae, Orchidaceae or Fabaceae. Review of the scientific literature indicates a large diversity of biological activity of coumarins, including, among others, antimicrobial and antifungal activity, toxicity against tumors as well as neuroprotective activity.

**Aim of the study:** The molecular modeling of arylpiperazinyl derivatives indicates their potential biological activity and preliminary results show the this activity can be modulated by the length of the linker and the type of the substituent amine. Therefore, our goal was to investigate the potential of the new coumarin derivatives as new serotonergic agents.

**Material and methods:** The first part of the study of the arylpiperazinyl derivatives was performed using molecular modeling methods. Prediction of binding affinities for a series of derivatives against the 5-HT1A receptor using molecular docking methods can indicate a potential biological activity of the investigated derivatives. AutoDock Vina 4.2 software was employed for the molecular docking.

In the second part of the study we conducted the synthesis of two series of new 8-acetyl-4-methyl-7-(4-aryl-1-piperazinyl)propoxy- and butoxycoumarins with support of microwave radiation. Coumarins derivatives were synthesized in two stages: the first step was O-alkylation of starting compound with 1,3-dibromopropane or 1,4-dibromobutane. In the second step the obtained product underwent reaction with aryl- or heteroaryl piperazine.

An in vitro study of the biological activity of the compounds is planned to be performed in future.

**Results:** Molecular docking calculations aimed at finding compounds with the highest binding affinity for 5-HT1A receptors. The ligands showing the lowest values of the used scoring functions seem to possess the highest activity for protein binding. In the microwave synthesis part, we have obtained eighteen compounds and confirmed their structures using NMR and MS spectra.

**Conclusions:** We present a study on the synthesis of new propoxy- and butoxycoumarins with potential biological activity and molecular docking to a 5-HT1A receptor model. Interdisciplinary character of the work combining theoretical and experimental techniques allows for deep investigation of the topic giving much insight from different points of view.

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[315]

### **Influence of some elicitors on production of phenolic compounds in shoot cultures of *Polyscias filicifolia* Bailey**

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**Trustee of the paper:** K. Miszczak

**Introduction:** *Polyscias filicifolia* Bailey (Araliaceae) is a member of the *Polyscias* genus, which is comprised of about 150 species of evergreen shrubs to large trees. Due to their biological properties, *P. filicifolia* is included in the group of plants with immunomodulatory and anti-inflammatory activities. Moreover it protects the heart against anoxia - an absence of the oxygen [1].

**Aim of the study:** The aim of our study was to evaluate the content of phenolic acids: chlorogenic acid, caffeic acid and ferulic acid in shoots of *P. filicifolia* cultivated in vitro. These researches have been undertaken for the first time in species of genus *Polyscias*. Phenolic acids possess antibacterial, antifungal, antiviral, anti-cancer, hepatoprotective, immunomodulatory and anti-inflammatory activities. Their use has been proven in the treatment of asthma, allergies, diabetes, micro-blooding and other ailments [2].

**Material and methods:** *P. filicifolia* shoots were cultivated on Linsmaier and Skoog (LS, 1965) [3] medium with BAP 1.0 mg/l, Kin 0.5 mg/l, and solidified with Plant Propagation Agar 8g /l (control). Five-week-old shoots were transferred on the media modified by elicitors addition. Three elicitors were tested: salicylic acid (50, 100, 200  $\mu$ M), methyl jasmonate (50, 100, 200  $\mu$ M) and chitosan (1, 10, 100 mg/l). After one week of elicitation shoots were harvested, lyophilized and subjected to HPLC-UV-DAD analyses. The investigation was performed on column EC 250/4,6 Nucleosil 120 – 7 C18 (Macherey – Nagel). Gradient elution was employed with a mobile phase consisting of 0.04 M o-phosphoric acid (A) and acetonitrile (B) as follows: 90% A/ 10% B, 0-5 minutes; 45% A/ 55% B, 5-15 minutes, the follow rate was 1ml/min and determination was done at 327 nm [5]. The quantitative analysis of the three phenolic acids was based on a standard curve constructed for known amounts of the compounds.

**Results:** It was found that salicylic acid at concentration of 100  $\mu$ M resulted in the largest increase in chlorogenic acid (almost 4-fold) and caffeic acid (almost 5-fold) content above the control. While addition of methyl jasmonate (200  $\mu$ M) was more effective in enhancement of ferulic acid accumulation – 19-fold above the control.

**Conclusions:** These results suggest that the salicylic acid has the best effect on the production of phenolic acids in the shoot cultures of *P. filicifolia*.

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[316]

### **Study of acute toxicity of selenium-containing metal-complex compound $\pi$ Q2170**

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**Introduction:** It is known that in some crucial and extreme situations single-pass application of high performance substance of moderate toxicity is considered admissible provided that the preparation will allow to prevent development of more serious, irreversible consequences from the vital physiological systems of an organism. Absence of data on toxicity  $\pi$ Q2170 led to the experimental research.

**Aim of the study:** was to investigate acute toxicity of selenium-containing metal-complex compound  $\pi$ Q2170.

**Material and methods:** Study of acute toxicity were carried out on 80 mice weighing 18-20 g divided into series on 10 animals that were on a reference diet in the conditions of a vivarium. All investigations were conducted in winter time for elimination of influences of seasonal biorhythms of mice on results. The substance was entered intragastrally. Survived were placed into vivarium where they were observed for 14 days with daily weighing. After the end of survey mice were slaughtered with overdose of an etherization and subjected to autopsies. The obtained data are processed statistically.

**Results:** In our study we identified that at injection a dose of 10 mg/kg visual signs of compound's action are absent. A weak effect was observed only at the dose of 25 mg/kg. At a dose of 50 mg/kg in 50-60 minutes after an injection mice became slowed down, poorly reacted to tactile and painful irritants – this dose was considered

effective (the effect is observed at 90% of animals). The death of mice was recorded in 33% of cases. After injection of substance  $\pi$ Q2170 in a dose of 100 and 125 mg/kg in 10-15 minutes there came impellent excitation, there were convulsive twitchings. However in 20 minutes cramps ceased, and breathing was stopped. Within an hour animals perished, on autopsy signs of compound's action were absent. When the compound used at a dose of 75 mg / kg - 72% of the animals perished, and 18% - survived. Symptomatology of effect of the compound is retained but it is slightly different intensity of spasms and duration of dormancy. All survived animals (in all groups) at supervision within 2 weeks had normal appetite, dynamics of weight was absent. At autopsy a sign of toxic action of the substance is not revealed.

**Conclusions:** Our experiments demonstrate protective action of substance  $\pi$ Q2170 on model of a hypoxia came to light only in case of its application in a dose of the close to LD50 (LD50/ED50) which is equal 62,3+1,8 mg/kg. Taking into account it, the substance  $\pi$ Q2170 is characterized as a chemical compound of average toxicity.

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[317]

### **Computational study of fullerene derivatives of nucleoside reverse transcriptase inhibitors as potential anti-HIV drugs**

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**Trustee of the paper:** prof. dr hab. Aleksander Mazurek

**Introduction:** Nucleoside reverse transcriptase inhibitors (NRTI) are an important class of anti-human immunodeficiency virus (HIV) drugs. Because of their severe side effects and resistant HIV mutants there is a constant need to develop novel ones. Modifying existing NRTIs allows to alter their physicochemical properties and thus control cell absorption speed or reduce toxicity. Such effects may be obtained by addition of specific compounds' types. Fullerenes seem to be a promising direction as they influence drugs' lipophilicity and can be easily functionalized, while some of their derivatives act as potent HIV protease or non-nucleoside reverse transcriptase inhibitors. Fullerene derivatives of known NRTIs may potentially exhibit superior properties compared to their predecessors and create a new class of anti-HIV drugs.

**Aim of the study:** Appointment of most stable connection types between fullerene and NRTI. Verifying which derivatives bind to HIV reverse transcriptase (RT) active site and selection of those best suited for synthesis.

**Material and methods:** Several C60 fullerene derivatives of zidovudine, lamivudine and stavudine were designed according to RT active site shape and known NRTIs binding poses. Multiple ways of binding to fullerene are possible, therefore energies of optimized conformations of all designed compounds-C60 binding variants were calculated by quantum methods, using Density Functional Theory (DFT), EDF2 functional and 6-31G\* basis set, in Spartan '10. More stables ones were used for molecular docking to HIV-1 RT different conformations' models. It was performed in Discovery Studio 4.1 with Flexible Docking protocol and CHARMM force field. Protein models were based on crystal structures of HIV-1 RT with opened and closed binding pocket and refined  $\beta$ 3- $\beta$ 4 flexible loop conformations.

**Results:** The study concluded with appointing energetically favorable binding type to fullerene for each designed compound. Docking of chosen derivatives allowed to verify which fit RT active site and select most privileged complexes of compounds with enzyme and obtain their binding energies.

**Conclusions:** All the results gathered led to selection of derivatives best suitable for synthesis due to their properties. Computational studies allow to evaluate designed structures and their affinity towards target proteins before synthesis. It reduces costs, time and simplifies process of searching new drugs.

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[318]

### **Development and validation of a LC-MS/MS method for quantitative analysis of unbound fractions of p-cresol sulphate and indoxyl sulphate in serum using a cloud point extraction (CPE)**

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**Introduction:** P-cresol sulphate (pCS) and indoxyl sulphate (IS) are uraemic toxins, concentration of witch in serum correlate with the stage of chronic kidney disease and is related to increased risk of e.g. cardiovascular

events. These substances in 90% occur in blood plasma in a form bound to proteins. However, free fraction of these toxins is biologically active.

Currently, the most common and reliable method for determination of these metabolites in body fluids is liquid chromatography coupled to mass spectrometry (LC-MS). In order to measure the level of the unbound toxins ultrafiltration is used. However, this method is expensive. The alternative is inexpensive, simple and environmentally friendly method - cloud point extraction (CPE). CPE has not been applied yet in determination of free fraction of metabolites in biological matrix.

**Aim of the study:** The aim of this study was to develop and validate a novel LC-MS/MS method for determination of unbound fraction of pCS and IS in serum using a cloud point extraction (CPE).

**Material and methods:** Concentration of surfactant (Triton X-114) and temperature of extraction were optimised. The method was validated for e.g. linearity, precision, accuracy and matrix effect. Analyses were performed using the mass spectrometer QTRAP®4000 (AB SCIEX, Framingham, Massachusetts, U.S.). The validated procedure was applied to determination of free fraction of pCS and IS in human serum.

**Results:** The developed method fulfilled the analysed validation criteria, according to European Medicines Agency (EMA) and US Food and Drug Administration (FDA). The method was successfully applied to clinical samples.

**Conclusions:** Cloud point extraction can be used for sample preparation for determination of unbound fraction of pCS and IS in human serum.

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[319]

### **In vitro and in vivo evaluation of the extracts of *Geissospermum reticulatum* bark**

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**Trustee of the paper:** Joanna J. Sajkowska-Kozielewicz

**Introduction:** Natural medicines are becoming more popular but many studies are needed so that they can become an integral part of pharmacotherapy. Nowadays, nearly half of the world production of medicines is based on natural products. The most interesting are these known for long-term use as components of herbal mixtures or as the infusions of single plant, such as: *Geissospermum reticulatum*, *Uncaria tomentosa*, *Lepidium meyenii*, *Croton lechleri*.

**Aim of the study:** The objective of this study was to determine the antioxidant ability, anti-proliferative and cytotoxic effects of infusions, tinctures and ethanolic extracts of *Geissospermum reticulatum* barks in relation to the contents of total phenolics and flavonoids.

**Material and methods:** Seven samples of barks were collected in various regions of Peruvian Amazonia. The DPPH radical scavenging test, using electron spin resonance (ESR) spectroscopy, and the fluorimetric oxygen radical absorbance capacity (ORAC) assay were employed for the assessment of antioxidant properties of herbal remedies. The cytotoxic activity was tested against cells typifying acute monocytic leukemia (THP-1) and acute myeloid leukemia (HL-60). In addition, anti-proliferative actions of these extracts were assessed upon stimulated T-cells from healthy donors. The Zebrafish embryo developmental assay was used to test the extracts in in vivo model.

**Results:** We found that the amount of total phenolics in the studied products varied from  $212.40 \pm 0.69$  to  $1253.92 \pm 11.20$  mg GAE/kg. The values for total flavonoids in infusions were significantly lower, varied from  $17.16 \pm 0.24$  to  $94.44 \pm 0.35$  mg CAE/kg. In our study there is a correlation ( $R^2=0.7947$ ) between the results of antioxidants assays: FRAP and ORAC for tinctures, infusions and ethanolic extracts of *G. reticulatum* barks. We have also observed anti-proliferative activities of the ethanolic extracts on normal T-cells. These extracts have caused death on malignant cell lines (THP-1 and HL-60) and these data correlate well with their antioxidant capacity measured by ORAC method. Interestingly, the highest concentration of the ethanolic extract was not toxic in the Zebrafish embryo developmental assay.

**Conclusions:** Our results indicate that *G. reticulatum* is rich in antioxidants and have cytotoxic and anti-proliferative properties. The data suggest potential immunosuppressive role of the extracts.

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# PhD Basic Science

## **Jury:**

dr hab. n. med. Agnieszka Cudnoch-Jędrzejewska

dr hab. n. o zdr. Gabriela Olędzka

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**Date:**

Sunday, May 15th, 2016

**Location:**

Room 117, Library - CBI

**Regular:**

Joanna Stachura

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Anna Lenkiewicz

Michał Prendecki

**Short:**

Natalia Malikowska

Adrian Podkowa

Iwona Sidorkiewicz

Yuliya Timofeeva

Sabna Lichołai

Katarzyna Heryan

[320]

## EVALUATION OF VEGF-C INTERACTION WITH sVEGFR3- A POTENTIAL INHIBITOR OF PERITUMORAL LYMPHANGIOGENESIS

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**Introduction:** One of the main cause of cancer treatment failure is the ability of cancer cells to metastases to local and distant tissues and organs. The formation of metastasis is a multi-step process, in which blood and lymphatic circulation are believed to be the key channels for tumor cells spread. There are several lymphatic specific molecular markers involve in active role of lymphatic vasculature in metastatic spread which became valid therapeutic target to control metastatic cancer. One of them is vascular endothelial growth factor -C (VEGF-C), which stimulates development of lymphatic vessels and increases their permeability. It seems that in order to increase effectiveness of an antitumor therapy it may be crucial to limit VEGF-C activity. Presently, several specific anti-lymphangiogenic drugs are used in chemotherapies but they often cause side effect. Therefore, it is necessary to search for novel and effective treatment. One of them seems to be soluble form of VEGF receptor, naturally occurring in cornea. sVEGFR-3 binds to VEGF-C and leads to its inactivation. Therefore sVEGFR-3 is a potential compound of an antitumor therapy.

**Aim of the study:** The aim of the study was to obtain the cell line stably expressing the sVEGFR-3 gene and evaluation of potential interaction between receptor and VEGF-C.

**Material and methods:** DNA cloning of sVEGFR-3 gen was perform with lenitiviral vector (pLVX-IRES-Puro) in order to create cell line with stable expression of soluble receptor. The extracellular secretion of sVEGFR-3 as wells as its level in mice tumors were confirmed by Western Blotting techniques. Additionally, Co-immunoprecipitation was performed in order to evaluate interaction between sVEGFR-3 and VEGF-C.

**Results:** Our study confirm extracellular secretion of sVEGFR-3 and shows that extracellular sVEGFR-3 binds to VEGF-C pre-mature as well as mature form of this factor. Moreover, we confirm stable expression of sVEGFR-3 in mice tumor cells, as a model for investigation of sVEGFR-3 role in inhibition of peritumoral lymphangiogenesis.

**Conclusions:** sVEGFR-3 is a potential inhibitor of VEGF-C, which can be used in cancer therapy in order to decrease cancer metastasis.

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[321]

## High-level ciprofloxacin resistance among *Enterococcus faecalis* clinical isolates

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**Introduction:** The widespread use of fluoroquinolones has led to an increasing number of ciprofloxacin-resistant clinical strains of *Enterococcus faecalis*. This resistance is mostly connected with mutations in quinolone resistance determining regions (QRDR) of *gyrA* and *parC* genes.

**Aim of the study:** The aim of this study was to investigate the ciprofloxacin resistance, QRDR mutations and clonal structure of *E. faecalis* strains isolated from invasive nosocomial infections.

**Material and methods:** Thirty *E. faecalis* strains isolated from various materials from patients hospitalized in two University Hospitals in Białystok, since 12.2013-06.2014, were analysed. Each strain was identified by VITEK2 system and PCR targeted to *ddl* gene. Minimal Inhibitory Concentrations (MICs) of ciprofloxacin were determined by E-tests. Then, isolates were divided into two groups: ciprofloxacin resistant (CIP-R, n=17) and ciprofloxacin susceptible (CIP-S, n=13). The QRDRs of *gyrA* and *parC* were amplified by PCR method and sequenced. The sequences were aligned and compared with BLAST algorithm. *E. faecalis* ATCC 29212 was used as a control strain. Multilocus sequence typing (MLST) was performed according to the scheme described in <http://pubmlst.org/efaecalis/> database.

**Results:** All CIP-R strains had ciprofloxacin MIC values higher than 32 µg/mL. Sequence analysis of the QRDRs showed four different single and double amino acids changes in *gyrA* and *parC* genes. Thirteen CIP-R isolates had mutations in *parC*, leading to an amino acid change at codon 85 (Ser to Ile). In 12 of the 13 CIP-R strains with a mutation in *parC*, a secondary mutation was detected in *gyrA*, leading to an amino acid change at codon 84

(Ser to Ile [n=5] or Ser to Phe [n=6]) or codon 88 (Glu to Gly [n=1]). No amino acid changes were found in 4 CIP-R and all CIP-S isolates. Differences in the frequency of mutations between CIP-R and CIP-S groups were statistically significant ( $p < 0,001$ ). MLST genotyping revealed 13 different STs, of which 4 STs (especially ST6, n=13) were found exclusively among CIP-R and 8 STs were found only among CIP-S strains. Only 1 ST was found among both CIP-R and CIP-S isolates.

**Conclusions:** Our results showed that mutations within QDRDs in *gyrA* and *parC* genes are associated with high-level ciprofloxacin resistance. Analysis of *E. faecalis* population by MLST indicated that majority of CIP-R and CIP-S strains are genetically unrelated, and that high proportion of ciprofloxacin resistance is associated with certain sequence type - ST6 - belonging to clonal complex CC6.

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[322]

### Biochemical markers of endothelial dysfunction in children with Henoch-Schönlein purpura

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**Trustee of the paper:** Odynets Yu.

**Introduction:** Henoch-Schönlein purpura (HSP) is a leader in the structure of systemic vasculitis in children.

**Aim of the study:** The aim of the study was to investigate biochemical markers of endothelial dysfunction in children with HSP.

**Material and methods:** 60 children aged 1 to 17 years old (35 males, 25 females) with HSP were examined among them 8 (13,3%) patients with skin form (1st group), 24 (40%) patients with skin-articular form (2nd group), 19 (31,6%) patients with mixed form (skin-articular and abdominal syndrome) HSP (3rd group) and 9 (15%) patients had mixed form with renal syndrome (4th group). The control group included 17 healthy children. The serum levels of NO<sub>2</sub>, NO<sub>3</sub> and S-nitrosothiols were determined spectrophotometrically. Serum MCP-1 was measured at enrollment using a sensitive ELISA assay. The levels of Von Willebrand factor (vWF) were determined in plasma by a hemometric method. The data were analysed with StatSoft STATISTICA Version 8 (Tulsa, OK). Statistical significance was derived using non-parametric tests (Mann-Whitney test and Kruskal-Wallis test).

**Results:** The results of Kruskal-Wallis test for all parameters are significant, namely: NO<sub>2</sub> – H=18,7,  $p=0,0009$ , NO<sub>3</sub> – H=27,3,  $p=0,0000$ , S-nitrosothiol – H=29,7,  $p=0,0000$ , vWF – H=49,8,  $p=0,0000$ , MCP-1 – H=50,1,  $p=0,0000$ . As follows, statistical characteristics of indicators of different groups are statistically different, and the levels of parameters which were investigated, depend on form HSP. The serum levels nitric oxide metabolites levels (NO<sub>2</sub>, NO<sub>3</sub>, S-nitrosothiol) were significantly diminished in the patients of the 4th group ( $p_{c-4}=0,0000$ ,  $p_{c-4}=0,0000$ ,  $p_{c-4}=0,0000$ , respectively) compared with controls. The serum levels of nitric oxide metabolites were increased in the patients of 1st 2nd and 3rd groups compared with controls. The serum levels of vWF and MCP-1 were higher in the patients of all groups in comparison to the control children. ( $p_{c-1}=0,0000$ ,  $p_{c-2}=0,0000$ ,  $p_{c-3}=0,0000$ ,  $p_{c-4}=0,0000$ ;  $p_{c-1}=0,0000$ ,  $p_{c-2}=0,0000$ ,  $p_{c-3}=0,0000$ ,  $p_{c-4}=0,0000$ , respectively).

**Conclusions:** Biochemical markers of endothelial dysfunction in children depend of form HSP. The reduced levels nitric oxide metabolites levels in children with HSP may be early marker of kidney injury.

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[323]

### Ceragenin CSA-13 interferes with germination of *Bacillus subtilis* spores

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**Introduction:** Spore-forming bacteria are characterized by extremely high resistance to unfavorable environmental conditions. Importantly, some spores are transmissible and might be responsible for re-emergence of bacterial infections, mainly those caused by *Clostridium difficile*. It is suggested, that ceragenins as a novel class of antimicrobial agents with membrane-permeabilizing properties might be considered as novel sporicidal agents.

**Aim of the study:** The purpose of the study was to evaluate the anti-spore activity of ceragenin CSA-13 against model spore-forming bacteria *Bacillus subtilis* (ATCC6051) and to investigate mechanism of action of CSA-13 against vegetative and spore form of bacteria.

**Material and methods:** Activity of ceragenin CSA-13 was evaluated using MTT assay and rhodamine 6G efflux assay. Measurements of zeta potential were employed in order to investigate surface electrical properties of vegetative cells and spores. Affinity of CSA-13 to the outer membrane of bacteria and inner/outer membrane permeabilization of *Bacillus subtilis* cells were analyzed using colorimetric and fluorimetric method.

**Results:** Ceragenin CSA-13 demonstrated the ability to decrease metabolic activity of vegetative form of *Bacillus subtilis* and to inhibit germination of spores in appropriate environmental conditions. Zeta potential measurements revealed that bacterial spores possess more negatively charged cell surface than vegetative cells. Rhodamine 6G-based efflux assay show that activity of CSA-13 is conditioned by damage of bacterial membrane, which was additionally confirmed by colorimetric and fluorimetric-based permeabilization assays indicating loss of integrity of outer and inner membrane of *Bacillus subtilis* cells after treatment with CSA-13.

**Conclusions:** Ceragenin CSA-13 possesses the potential to be employed as sporicidal agent, which is conditioned by strong membrane activity of this compound.

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[324]

#### **Aortic allograft decellularization: first laboratory and preclinical results.**

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**Introduction:** Heart valve allografts are used in cardiac surgery as valve substitutes for more than 50 years with good clinical results. They have several advantages when compared to standard biological and mechanical prostheses. The main drawback of allografts is their limited longevity (up to 10-15 years) due structural changes, caused by cellular and humoral immune response. Decellularization process removes donor cells, DNA and RNA from allografts, leaving collagen and elastin matrix. After implantation connective tissue matrix is repopulated with recipients' cells and becomes a viable, self-regenerating aortic root.

**Aim of the study:** To compare four techniques of aortic allograft decellularization and to assess a possibility of decellularized tissue implantation in a systemic circuit.

**Material and methods:** We decellularized 12 aortic allografts using following reagents: 1) Triton X-100 0.5% (n=3); 2) Triton X-100 1% + EDTA 0.04% (n=3); 3) Triton X-100 5% + EDTA 0.04% (n=3); 4) sodium deoxycholate 0.5% + sodium dodecylsulfate 0.5% (n=3). Effectiveness of donor cells removal and preservation of matrix integrity were assessed by light microscopy (H&E, orcein, van Gieson, toluidine blue). We performed comparative strength testing of fresh (n=15), cryopreserved (n=15) and decellularized (n=10) allografts (hydraulic testing, material testing machine). In order to assess a possibility of decellularized allograft implantation in a systemic circuit we implanted a conduit, comprising two segments (cryopreserved and decellularized human aorta) in the infrarenal aorta of a dog (n=5). Follow-up period was 35-68 days, explanted conduits were assessed by light microscopy (H&E).

**Results:** Complete decellularization with preserved connective tissue matrix was achieved in sodium deoxycholate + sodium dodecylsulfate group. There were no statistically significant differences in tensile strength between fresh, cryopreserved and decellularized allografts ( $p > 0.05$ ). All operated animals survived and completed follow-up period. Histological examination of explanted conduits revealed endothelization of allografts' inner lumen and vasa vasorum migration from outside into the media layer.

**Conclusions:** Effective allograft decellularization can be achieved with sodium deoxycholate and sodium dodecylsulfate. Mechanical properties of allografts are not significantly affected by cryopreservation and decellularization. Decellularized allografts can be implanted in the systemic circuit with potential to revitalization with host cells.

[325]

### Genotype-phenotype correlations in migraine

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**Introduction:** Migraine is one of the most common neurological disorder that affects 11% of adults. Migraine with aura (MA) and without aura (MO) are two main clinical subtypes of this disease. Migraine is multifactorial disease with polygenetic conditions. It is believed that factors responsible for pain transmission and emotion such as: serotonin (5-HT) and hypocretin may be involved in pathomechanism of migraine. It is known that 5-HT inhibits activity of hypocretin neurons by serotonergic receptors and may play a role in appearance of the aura during migraine attack.

**Aim of the study:** The aim of the study was to analyze polymorphism G1222A of hypocretin receptor 1 gene (HCRTR1),

5-HTTLPR length polymorphism of serotonin transporter gene (SLC6A4) and their impact on hypocretin-1 and 5-HT plasma concentration.

**Material and methods:** The studies included 48 migraine patients (MA: 22, MO: 26) and 75 healthy controls. The mean age of migraine patients were 40±15 years, controls: 39 ± 14. Genotyping was performed using PCR, HRM and sequencing while 5-HT level was determined using HPLC/EC technique and hypocretin-1 level was obtained using ELISA.

**Results:** Genotype AA of HCRTR1 G1222A was more frequently in migraine group than in controls. The plasma concentration of hypocretin-1 was lower in migraine as compared to controls (p<0.05). The G allele of G1222A HCRTR1 was correlated with tendency to decrease hypocretin-1 level.

Short (S) allele of 5-HTTLPR polymorphism occurred more frequent in migraine than in control group and was associated with increased 5-HT plasma concentration tendency in migraine. While opposite trend was observed in control group.

The SL genotype of 5-HTTLPR polymorphism was associated with lower concentration of hypocretin-1 and higher 5-HT level in migraine as compared to controls (p<0.05).

**Conclusions:** The AA genotype of G1222A HCRTR1 seems to be a risk factor for migraine in Polish population.

The S variant of 5-HTTLPR is associated with higher 5-HT and lower hypocretin-1 plasma concentration in migraine group as compared to controls.

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[326]

### Cytoprotective role of Parkin against extracellular alpha-synuclein-induced PC12 cell damage. Relevance to Parkinson's disease and other neurodegenerative disorders.

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**Introduction:** Parkinson's disease (PD) and Alzheimer's disease (AD) as well as many other neurodegenerative disorders are often referred as 'protein misfolding diseases' because their pathogenesis involves misfolding and oligomerization/aggregation of proteins. The accumulation of misfolded proteins could occur due to a disruption of Parkin-mediated proteins clearance, and it is suggested that the failure of cells to cope with excess misfolded proteins may be a common pathological mechanism linking these clinically distinct diseases. Deposition of  $\alpha$ -synuclein (ASN) in Lewy bodies and Lewy neurites is a pathological hallmark of PD and some other neurodegenerative entities, collectively termed  $\alpha$ -synucleinopathies.

**Aim of the study:** The aim of the present study was to investigate the cytoprotective role of Parkin against extracellular ASN oligomers-induced toxicity in dopaminergic PC12 cells.

**Material and methods:** The experiments were performed using spectrophotometrical, spectrofluorometrical, immunochemical, immunocytochemical methods and real-time PCR analysis.

**Results:** Our results indicated, that extracellular ASN oligomers lead to increased cytoplasmic calcium concentration, nitric oxide (NO) and other free radicals generation as well as stress response genes activation. ASN-evoked oxidative-nitrosative stress downregulates Parkin via its S-nitrosylation what in consequence decreased this enzyme activity. Moreover, exogenous ASN oligomers treatment as well as Parkin knock-down increase mitochondrial superoxide level leading to impairment in mitochondrial membrane potential and decrease intracellular ATP level. All these events lead to dopaminergic PC12 cell death. Finally, we showed that Parkin overexpression prevents ASN-evoked mitochondria dysfunction and PC12 cell death.

**Conclusions:** Taken together, our results indicated that ASN oligomers evoke loss of protective Parkin function via its S-nitrosylation. ASN-dependent Parkin deregulation could contribute to mitochondrial impairment and accumulation of defective proteins, including ASN leading to dopaminergic cell death and in consequence to propagation of neurodegeneration. These findings may thus provide a molecular link between ASN oligomers toxicity, Parkin dysfunction and mitochondrial impairment in sporadic PD and other neurodegenerative disorders.

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[327]

### The APOE genotype and plasma apolipoprotein E concentration in Alzheimer's disease.

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**Introduction:** Alzheimer's disease (AD) is the most prevalent form of dementia, with 24 million cases worldwide. The disease is characterized by deposition of pathological aggregates in brain, such as senile plaques formed of amyloid beta (AB) and neurofibrillary tangles formed of hyperphosphorylated tau protein. The major genetic risk factor of sporadic AD is APOE, the gene coding for apolipoprotein E (apoE) accounting for more than 30% of cases. APOE has three common alleles: protective E2, pathogenic E4 and most common, neutral E3. The role of APOE in AD is not entirely understood. Possibly APOE is associated with AB clearance. This process may be imbalanced by high affinity of apoE e4 to AB in APOE E4 carriers.

**Aim of the study:** The aim of the study was the analysis of APOE genotype and apoE plasma level in AD patients and healthy controls.

**Material and methods:** The study was performed on samples gathered from 23 patients with AD, 27 age matched controls (UC) and 23 controls related to patients with AD in 1st and/or 2nd degree (RC). All participants were above 60 years of age. The APOE status was determined by mismatch primer qPCR on DNA extracted from blood and apoE plasma concentration was analyzed by ELISA.

**Results:** The APOE E4 genotype was significantly over-represented in AD and RC groups as compared to UC (43.5% and 34.4% vs 7.4%, respectively;  $p=0.0013$ , Chi2 test). The APOE E2 genotype occurred more frequently in UC group as compared to RC and AD groups (13.0% vs 6.5%,  $p=0.0013$ , Chi-squared test).

The mean plasma apoE level was significantly decreased in AD patients ( $1.50\pm 0.50$  mg/dL) as compared to controls ( $2.05\pm 0.66$  mg/dL,  $p=0.0096$ ), and was intermediary in RC group ( $1.87\pm 0.73$  mg/dL,  $p=0.1262$  vs AD and  $p=0.5395$  vs UC; one-way ANOVA, followed by Tukey's test). In APOE E4 carriers (E4+), the mean concentration of apoE was decreased as compared to noncarriers (E4-), ( $1.58\pm 0.64$  vs  $2.02\pm 0.63$  mg/dL, respectively;  $p=0.0040$ , Student's t-test). The apoE concentration was also decreased in AD group as compared to RC and UC, independently from APOE E4 genotype (E4+: AD  $1.45\pm 0.50$  vs RC  $1.77\pm 0.81$  vs UC  $1.61\pm 0.44$  mg/dL; E4-: AD  $1.71\pm 0.46$  vs RC  $2.01\pm 0.64$  vs UC  $2.13\pm 0.67$  mg/dL), however differences did not reach statistical significance, probably due to insufficient group size.

**Conclusions:** It seems that decreased apoE plasma concentration occurs more frequently in APOE E4 carriers and may be associated with increased risk of developing AD.

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[328]

### Procognitive effect of a non-imidazole histamine H3 ligand in mice.

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**Introduction:** Learning and memory are highly complex phenomena which involve many neurotransmitter pathways. In addition to a well-established role of cholinergic and GABAergic systems in memory formation, lately researchers have strongly highlighted the role of histamine. In rodent models the antagonists of type 3 histaminergic receptors present procognitive and anticonvulsant properties. Because currently available drugs used for the treatment of cognitive impairments do not display satisfactory activity, there is a strong medical demand for new memory-enhancing agents.

**Aim of the study:** This study was performed to assess the procognitive effects of a non-imidazole histamine H3 ligand – KW.

**Material and methods:** Behavioral experiments were performed in male Albino-Swiss mice. To assess the influence of KW\*\* on memory the passive avoidance task (PA) was used. In PA three doses of KW (5 mg/kg; 10 mg/kg; 30 mg/kg; ip injection) were tested. Memory impairments were induced using scopolamine hydrobromide (1 mg/kg; ip). Moreover, to exclude false positive results in this fear-motivated learning task locomotor activity test was utilized and animals' motor coordination was studied using the rotarod test.

**Results:** In the retention trial of PA task KW in a statistically significant ( $p < 0.001$ ) prolonged the step-through latency as compared to scopolamine-treated control. At doses tested in PA task, KW did not impair locomotor activity or motor coordination.

**Conclusions:** H3 receptor antagonists are a very potential procognitive agents. A novel non-imidazole representative of this group – KW, remains a promising lead structure in the search for future anti-amnesic drugs.

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[329]

### The comparison of the effects of inhibition of different gamma-aminobutyric acid transporter isoforms in mice

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**Trustee of the paper:** Adrian Podkowa

**Introduction:** Gamma-aminobutyric acid (GABA) plays a crucial role in the mammalian central nervous system (CNS), being the most abundant inhibitory neurotransmitter. Physiologically, GABA exerts anticonvulsant, antinociceptive and anxiolytic-like actions. GABAergic tone may be impaired in numerous psychiatric and neurological diseases, for instance anxiety, epilepsy or neuropathic pain. One of the ways to strengthen GABAergic neurotransmission is by the inhibition of its plasma membrane transporters (GAT). In mice four GAT subtypes have been identified: GAT1, GAT2, GAT3 and GAT4.

**Aim of the study:** The aim of the present study was to compare pharmacological effects resulting from the inhibition of different GAT isoforms. For this purpose, the activity of tiagabine (selective GAT1 inhibitor) and (S)-SNAP-5114 (semi-selective inhibitor of GAT3 and GAT4) was tested in several behavioral assays.

**Material and methods:** All tests were performed in male CD-1 mice. The following assays were performed: pilocarpine-induced seizure test to assess the anticonvulsant action, hot-plate test and formalin test to evaluate the antinociceptive effect, as well as elevated plus maze and four plate tests to assess the anxiolytic-like activity. To establish whether the investigated GAT inhibitors affect motor coordination, the rotarod test was performed.

**Results:** In the pilocarpine-induced seizures test both compounds exerted significant anticonvulsant activity, yet the action of tiagabine was more potent as it was active at lower doses than (S)-SNAP-5114. Tiagabine significantly prolonged the latency to nociceptive reaction in the hot-plate test and reduced the duration of pain reaction in the formalin test, whereas (S)-SNAP-5114 exerted no analgesic activity in these assays. A significant

anxiolytic-like activity was observed in the case of tiagabine, both in elevated plus maze and four plate tests. (S)-SNAP-5114 displayed less pronounced anxiolytic-like action in these assays. Motor deficits were observed in mice treated with tiagabine but not in those treated with (S)-SNAP-5114.

**Conclusions:** Concluding, selective inhibition of GAT1 leads to a more significant action in the CNS as compared to that resulting from GAT3 and GAT4 inhibition. Noteworthy, the blockade of GAT1 also results in more pronounced adverse effects, such as impairments of motor coordination.

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[330]

### **Structural bisphenol analogues differentially target steroidogenesis in BLTK1 cells**

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**Trustee of the paper:** Iwona Sidorkiewicz

**Introduction:** The industrialization is associated with human exposure to exogenous substances that can interfere with the hormonal regulation through interaction with steroid hormone receptors. These include bisphenol A (BPA) - an organic compound used in the industry to produce plastic products. Due to the emerging literature data confirming the negative effects of BPA on the balance of hormones, steps have been taken to reduce the exposure to the polymer by introducing alternatives such as bisphenol F (BPF) and bisphenol S (BPS). Their structural similarity to BPA and estradiol raises doubts about their safe use in the industry.

**Aim of the study:** The aim of the study was to evaluate the impact of BPF and BPS on steroidogenesis in BLTK1 Leydig cells and to compare them with the effects of BPA exposure

**Material and methods:** Mouse steroidogenic BLTK1 Leydig cell line was used as a research model. Cell viability was performed using MTT assay. Cells were treated for 24, 48 and 72 hours with different concentrations of compounds. Hormone release and changes in steroid gene expression using RT-qPCR after BPA, BPF and BPS exposure were also evaluated. Statistical analysis was performed by One-way ANOVA using GraphPad PRISM v.5.0 (GraphPad Software, Inc., San Diego, CA).

**Results:** Bisphenols, beside cytotoxic, also caused stimulating effects at different ranges of doses. Exposure to all studied compounds resulted in changes in steroidogenic genes expression. It has been demonstrated non statistically significant trend of BPA and BPS exposure to intensify CG-induced progesterone release.

**Conclusions:** It can be concluded that BPF and BPS are not necessarily 'safer' alternatives compared to BPA regarding their endocrine modulating capacity.

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[331]

### **Endoglycosidase activity in adenomyosis foci of reproductive-age women with uterine leiomyoma**

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**Trustee of the paper:** prof. Marinkin I.O., prof. Aidagulova S.V.

**Introduction:** Heparan sulphate proteoglycans (HPS) are the fundamental components of the extracellular matrix, where they interact with a number of physiologically important macromolecules; wherein the sulfation pattern of the HPS chains determines the interaction of proteoglycans and the maintenance of intercellular contacts. Thus, enzymatic degradation of HPS by heparanase-1 (HPSE-1) weakens the intercellular contacts and promotes a cellular migration activity.

**Aim of the study:** To investigate the HPSE-1 and HSP expression pattern in eutopic and heterotopic endometrium in reproductive-age women with adenomyosis and uterine leiomyoma.

**Material and methods:** . It was performed the immunohistochemical study of the HPSE-1 and HSP expression pattern in the surgical samples of 20 women. Patients were divided into two representative-age groups depending on uterine ultrasound volume: 10 women - the volume of the uterine body is up to 12 weeks of pregnancy and 10 - more than 12 weeks with rapidly increasing uterine volume at dynamic observation. Paraffin-embedded tissue specimens were studied using two-step streptavidin-biotin immunohistochemical analysis of HPSE-1 and HSP expression in solution 1:200. The microscope Axio Scope.A1, camera AxioCam MRc5 and

software ZEN (C.Zeiss) were used for the quantitative analysis of DAB-visualized area reaction products. For the further processing of the data the program Statistica 6.0 was used.

**Results:** At the corpus uteri volume up to 12 weeks and over 12 weeks of pregnancy the proliferative-phase eutopic endometrium is characterized by the minimal level of HPSE-1 expression: in sporadic stromal cells. In the adenomyosis foci HPSE-1 is expressed in the epithelium and subepithelial microvessels, and in proliferating growth pattern myoma cases with uterine body volume over 12 weeks, the HPSE-1 expression is significantly higher than in myoma cases with uterine volume up to 12 weeks ( $p < 0,001$ ). As expected, the HPSE-1 expression level was negatively correlated with the HPS expression one.

**Conclusions:** Up-regulation of HPSE-1 in the heterotopic endometrium can promote endometrial invasion into the myometrium following the adenomyosis development, and is associated with the proliferating growth pattern of the uterine leiomyomatosis.

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[332]

### Role of hsa-miR-21-5p in aneurysmal formation

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**Introduction:** Genetic background of TAA seems complex and has not been elucidated, which may suggest a role of epigenetic mechanisms in its pathogenesis. One of the most important epigenetic regulators of molecular pathways is microRNA. Our previous unbiased molecular screening revealed significant overexpression of hsa-miR-21-5p in human aneurysmal tissue. However, the precise mechanism of its contribution to TAA pathogenesis is unclear.

**Aim of the study:** The aim of this study was to explain the mechanism in which has-miR-21-5p participate in pathogenesis of thoracic aortic aneurysms.

**Material and methods:** Our previous study revealed that hsa-miR-21 was the most upregulated one in the aneurysmal tissue. Using bioinformatic tools and literature search we selected endothelial nitric oxide synthase gene (NOS3 gene) as putatively regulated by this microRNA. Human endothelial cell cultures and transfection with miR-21-5p mimic and miR-21-5p inhibitor respectively was used to confirm the role of has-miR-21-5p and NOS3 in aortic aneurysm formation. Expression of has-miR-21-5p and selected genes was assessed by quantitative real-time PCR. Spearman's correlation coefficient was used to measure correlation between microRNA and its putative mRNA targets.

**Results:** Average fold change for hsa-miR-21-5p in endothelial cells transfected with miR-21-5p mimic was 5.52 compared to the mock-transfected cells. Among cells transfected with miR-21-5p mimic RQ for NOS3 gene was 3.88, whereas in cells incubated with miR-21-5p inhibitor RQ was 0.28. In addition, there were statistically important correlations between hsa-miR-21-5p level and expression of NOS3 in endothelial cells transfected with miRNA mimic.

**Conclusions:** hsa-miR-21-5p was up-regulated in aneurysmal tissue and it acts indirectly by phosphorylation of NOS3 augmenting nitric oxide (NO) production. The role of NOS3 was studied in a mouse model of aortic aneurysm and increased expression of NOS3 was also documented in human TAA. NO is the major mediator causing relaxation of VSMC and delimited production of nitric oxide within the aneurysm may mechanistically explain aneurysm progression. In our study, NOS3 transcripts paralleled miR-21 in TAA tissue. Thus, miR-21 could be a molecule perpetuating NOS3 overexpression within aneurysm and causing the progression of the disease. Specificity of this miR-21 effect we confirmed experimentally using miR-21 mimic or antagonist introduced to the endothelial cell line.

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[333]

### **Segmentation and 3D visualization of key structures for planning the optimal surgical approach in partial nephrectomy**

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**Trustee of the paper:** Andrzej Skalski, EngD

**Introduction:** In recent years partial nephrectomy has become the preferred procedure to eliminate renal tumor. There are two reasons. Firstly, due to the development of medical imaging techniques, it is possible to detect these lesions at an early stage of development. Secondly, in comparison to radical nephrectomy, such procedure is much more beneficial for the patient as the recovery time is shorter and the functional outcome is significantly improved. For the partial nephrectomy the key elements are planning the optimal approach and detecting the possible conflicts with other structures.

**Aim of the study:** The aim of the study was the segmentation of vascular structures, renal pelvis, ureter, kidney and tumor. The information about their location and mutual position facilitate planning the optimal surgical approach and elimination of possible interference.

**Material and methods:** The research material included 15 3D abdominal CT scans of patients undergoing partial nephrectomy. The data set for each patient consisted of three phases (arterial, portal venous and delayed phase). The major challenge is the lack of synchronization between the contrast agent flow and the image acquisition time. This results in visualization of the undesired structures and poor recognition of target structures. Another difficulty was the administration of both the barium sulphate into the gastrointestinal tract and the intravenous iodine. As a result, the intestines were obscuring the target structures. It is an inconvenience for CT scan analysis by both surgeons and automatic image processing techniques. Such conditions required a multi-stage approach. The first stage involved the selection of the area of interest limited to the fragment of abdominal aorta, renal artery and kidney with the tumor to minimize the contrast agent influence in the intestines. In order to reduce the impact of the lack of synchronization the adaptive region growing technique was used. The initialization seeds were designated by binarization. The described procedure was applied in all three phases separately.

**Results:** In all 15 cases, this segmentation of the desired structures were obtained (kidney, tumor, vascular structures, renal pelvis, ureter). When performing simultaneous visualization of all those structures the critical areas are highlighted.

**Conclusions:** The proposed set of methods facilitate preoperative planning nephron sparing surgeries. Further research in this area are focused on designing a tool that enables the selection of the optimal surgical approach.

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[334]

### **Segmentation of renal vascular tree supported by the usage of the probabilistic model**

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**Introduction:** Although it is well known that renal vascular structures is patient specific there are some dependencies. Their origins are based on angiogenesis and vasculogenesis processes. This leads to occurrence of specific regularities. The information about these dependencies may serve as guidance in complex segmentation tasks. Segmentation of renal vasculature tree is highly important in preoperative planning of partial nephrectomy, especially when it comes to the recognition of the tumor supplying vessels. It is common that due to insufficient CT data resolution sometimes it impossible to visualize these vessels.

**Aim of the study:** The aim of the study was to investigate the renal vascular structure and analyze the common dependencies to further facilitate segmentation process of thin, inadequately visualized vascular structures in CT scans.

**Material and methods:** The research material consisted of 20 three-dimensional CT scans of anatomical preparations, each of them composed of renal pelvis, veins and arteries. This enabled usage of larger radiation dose then during patient CT scanning. Therefore higher data spatial resolution was achieved. Contrast agent was

injected to facilitate visualization of arteries. Unfortunately, in many cases due to blockage, the contrast agent was not propagating as expected and the gravitational retention was observed. In the first approach we applied sequentially the binarization and adaptive region growing technique. Due to occurrence of overlapping structures causing leakage during the segmentation process the probabilistic model was introduced. Training set consisted of 8000 voxel examples from two anatomical preparations classified as arteries or not. The positive examples consisted of voxels belonging to arteries with or without contrast agent and the boundaries. After the training phase the probability map for each voxel and each anatomical preparation was designated.

**Results:** In comparison to usage of only the locally adaptive region growing technique additional introduction of probabilistic model significantly enhanced the obtained results. What is more important it was possible to distinguish between veins, renal pelvis and arteries that overlap in many cases leading to leakage during the segmentation process. The 3D visualizations of renal vascular trees were obtained in each case.

**Conclusions:** The next stage of research will be to provide the graph – based representation of the segmented structures and analysis of the renal vasculature topology.

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# PhD Clinical Science

## **Jury:**

prof. dr hab. n. med. Piotr Andziak  
prof. dr hab. n. med. Teresa Jackowska  
prof. dr hab. n. med. Marek Kulus  
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dr hab. n. med. Paweł Piątkiewicz  
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## **Coordinator:**

Bartosz Siewiert

**Date:**

Sunday, May 15th, 2016

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Raisa Meshkova  
Iga Wąsowska  
Petr Nikiforovich  
Vladislav Podpalov  
Tomasz Tokarek  
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[335]

## FIGHT AGAINST MALNUTRITION (FAM): SELECTED RESULTS OF 2006 - 2012 NUTRITONDAY SURVEY IN POLAND

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**Introduction:** Prevalence of malnutrition among hospitalized patients is a common issue increasing the morbidity and mortality rate. In response to the aforementioned problem the European Society for Clinical Nutrition and Metabolism (ESPEN) stated an action plan to fight malnutrition and created in 2004 the global health project named NutritionDay (nD) - a single-day, population based, standardized, multinational cross-sectional audit which is performed worldwide in hospitals and nursing homes.

**Aim of the study:** To present selected NutritionDay (nD) results from Poland describing the nutritional situation of hospitalized patients in 2006 – 2012 compared to other countries participating in nD study.

**Material and methods:** Data were collected in nD study through voluntary participation all over the world during seven years - from 2006 to 2012. Data collection was performed on ward level by staff members and patients using standardized questionnaires. The data were analyzed by the Vienna coordinating centre using the Structured Query Language ("my SQL") - an open source relational database management system as well as the Statistical Analysis System version 9.2 (SAS).

**Results:** In Poland 2,830 patients were included in the study during a 7-year survey, while 5,597 units recruited 103,920 patients in the world (nD reference). About 45% of the patients had a weight loss within the last 3 months prior to admission (same for nD references); 58.34% reported a decrease in eating during last week (54.85% in case of nD references). Food intake at nD illustrated that 60.55% of the patients ate half to nothing of the served meal (58.37% in the case of nD references). For both Poland and other countries participated in audit at the time of detection of malnutrition on the half of hospital wards wasn't reported any action aimed at combating this phenomenon.

**Conclusions:** Malnutrition of hospitalized patients in Poland was found comparable to the rest of the world. These results reflects the fact that malnutrition is a common issue among hospitalized patients all over the world and it would be recommended to continue the action plan to fight against malnutrition commenced by the European Society for Clinical Nutrition and Metabolism (ESPEN) on international and national level.

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[336]

## Fatty acids profile in NAFLD patients - next step to understand the pathomechanism of the disease

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**Introduction:** Nonalcoholic fatty liver disease is a form of chronic liver conditions. The main causes of NAFLD are associated with insulin resistance, metabolic syndrome and serious lipid metabolism disorders. It is unknown whether the reduction of fatty liver in patients with non-alcoholic fatty liver disease (NAFLD) is associated with a change in the composition of fatty acids in the blood, and whether the extent of the reduction in steatosis influences the circulating fatty acid profiles.

**Aim of the study:** Analysis of the fatty acid profiles performed according to changes in liver steatosis (liver steatosis reduction by one and two degrees) after a six-month dietary intervention.

**Material and methods:** A group of 35 Caucasian individuals diagnosed with different levels of steatosis were prospectively enrolled in the present study. The diet helped reduce body mass in obese and overweight patients, and stabilize both glycemia and dyslipidemia. Fatty acids were extracted according to the Folch method and analyzed by gas chromatography.

**Results:** The results showed significant changes in patients who reduced liver steatosis by one, as well as two degrees. A reduction in liver steatosis by one degree caused a significant increase in the level of the n-3 family: eicosapentaenoic acid – EPA ( $p < 0.055$ ), docosapentaenoic acid - C 22:5 ( $p < 0.05$ ) and docosahexaenoic acid – DHA ( $p < 0.05$ ). We also noticed decrease concentration of TG ( $p < 0.05$ ) and insulin ( $p < 0.05$ ). A reduction in liver steatosis by two degrees caused a significant decrease in serum palmitoleic acid – C 16:1 ( $p < 0.05$ ). The

biochemical parameters showed lower level of insulin ( $p<0,05$ ), HOMA-IR( $p<0,05$ ), cholesterol ( $p<0,05$ ), ASP ( $P<0,05$ ) and ALT ( $P<0,05$ )

**Conclusions:** Liver steatosis reduction is associated with changes in fatty acid profiles, and these changes may reflect an alteration in fatty acids synthesis and metabolism. These findings may help better understand regression of NAFLD. Changes in patients with a slight reduction in liver steatosis showed elevated levels of the n 3 fatty acids family. This may decrease the amount of inflammatory mediators in the liver and indirectly result in a reduction of synthesis of fatty acids in the liver. We also noted that the main factors influencing the reduction in steatosis and reduced synthesis in the liver were insulin and cholesterol. According to the changes in fatty acid profiles, this was also confirmed in patients who reduced steatosis by two degrees.

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### [337]

#### Is the eicosanoids profile a helpful marker in the diagnosis of NAFLD progression?

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**Introduction:** Nonalcoholic fatty liver disease (NAFLD) is a spectrum of liver conditions related to fat infiltration in this organ. The disease affects 20-30% of adults in developed countries and become important clinical entity. NAFLD, similarly to metabolic syndrome is associated with: dyslipidemia, cardiovascular disease, obesity, type II diabetes and insulin resistance. There is a great need to find a noninvasive method which will be helpful in NAFLD evaluation.

**Aim of the study:** The study compared biochemical parameters and eicosanoid profile between first and second stage of hepatic steatosis and the effect of 6-months dietary intervention on various parameters

**Material and methods:** . A group of 24 patients diagnosed with stage I and II of NAFLD according to Hamaguchi score were enrolled. Eicosanoids profiles were extracted from the 0.5 ml of plasma by using solid-phase extraction RP-18 SPE columns (Agilent Technologies, UK). The HPLC separations were performed on an Agilent Technologies 1260 liquid chromatography. We analyzed the following eicosanoids: profiles 5(S),6(R)-Lipoxin A4, 5(S),6(R), 15(R)-Lipoxin A4, 5(S)-HETE, 5(S)-oxoETE, 12(S)-HETE, 15(S)-HETE, 16(R)/16(S)-HETE, 9(S)-HODE and 13(S)-HODE.

**Results:** Patients, with stage I of NAFLD showed significantly higher level of HDL cholesterol ( $p<0,05$ ), lower level of 5-HETE ( $p<0,05$ ) and 9-HODE ( $p<0,05$ ). After a six-month dietary intervention, all patients reported complete reduction of hepatic steatosis, which resulted in a significant decrease of the concentrations of all eicosanoids and key of biochemical parameters (ALT, AST, GGTP, HDL, insulin HOMA-IR,  $p<0,05$ ).

**Conclusions:** At the early stages of fatty liver the biochemical parameters may not be significantly impaired. In this case, the diagnosis based on non-invasive method, such as ultrasound became more difficult. 9-HODE can be produced during non-enzymatic oxidation of linoleic acid, or by 5 – lipoxygenase (5-LOX) conversion. 5-HETE is converted from AA by 5-LOX. It seems that 5-LOX activity is higher in patients with II degree of NAFLD than in patient with I degree of the disease. Furthermore, eicosanoid profile changes appear faster than changes in biochemical parameters. Our result shows that eicosanoids profile can be useful in NAFLD evaluation.

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### [338]

#### Endothelial function status in children with bronchial asthma in exacerbation and remission

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**Introduction:** Endothelial function status and its participation in the pathological process is of special interest in the course of bronchial asthma

**Aim of the study:** to determine the endothelial function status in children suffering from bronchial asthma (BA) in exacerbation and remission

**Material and methods:** 70 children with persistent bronchial asthma in exacerbation and remission period were examined. Among them 30 patients with mild persistent BA (1st group), 29 patients with moderate persistent (2nd group) and 11 patients with severe persistent (3rd group). In addition every group was divided into 2 subgroups such as A (exacerbation) and B (remission). 15 healthy children were served as the controls. The serum levels of soluble Vascular Cell Adhesion Molecule-1 (sVCAM-1) were determined by enzyme-linked immunosorbent assay (ELISA, catalog #BMS232, Austria). The ultrasound assessment of endothelium-dependent flow-mediated dilation of the brachial artery and calculation of percentage increase in brachial artery diameter (FMD%) (D.S. Celermajer et al., 1992) were carried out. The serum levels of NO<sub>2</sub> were determined spectrophotometrically. Statistical analysis was performed with StatSoft STATISTICA Version 8 (Tulsa, OK).

**Results:** The index of FMD% was significantly diminished in the patients of 1A,2A,3A groups compared with controls (pk-1A=0.0001, pk-2A=0.0003, pk-3A=0.0000) and stayed lower in the patients of all groups in remission (pk-1B=0.0012, pk-2B=0.0004, pk-3B=0.0000). The serum levels of NO<sub>2</sub> in the patients of all groups was significantly decreased in the exacerbation and remission (p<0,001). The serum levels of sVCAM-1 was significantly increased in patients of all groups in exacerbation (pk-1A=0.0000, pk-2A=0.0007, pk-3A=0.0002) and remission (pk-1B=0.0028, pk-2B=0.0011, pk-3B=0.0005) compared with controls. It was proved that levels of sVCAM-1 depend on BA severity in exacerbation (H=56.11, p=0.0001) and remission (H=50.68 p=0.0000).

**Conclusions:** endothelial dysfunction in children with BA were determined in the exacerbation and remission. Degree of endothelial dysfunction depends on the severity of the disease.

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[339]

### Factors of development bronchial asthma in children.

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**Introduction:** Bronchial asthma (BA) is one of the most common pediatric chronic diseases.

Late diagnosis of asthma in young children is a principal problem in the therapy of the early stages of the disease.

**Aim of the study:** to show the influence of factors in the development of asthma in children who have had wheezing to 6 years.

**Material and methods:** We analyzed data (anamnesis, comorbidity course of the disease) from 484 children who had hospitalization caused by wheeze and current wheeze or chronic cough (cough without colds or cough at night) in age from 6 months to 5 years old. At the age of 6 years old children were examined for diagnosis of asthma. Among them 87 (17.9%) children (1st group) had BA, and 397 (82.1%) children (2nd group) – without asthma. Asthma diagnosis was confirmed based on GINA 2015. Statistical analysis was performed with StatSoft STATISTICA Version 8 (Tulsa, OK).

**Results:** the number of boys in the 1st group was higher than in the 2nd group (68.0% and 49.6%, p= 0.0024, respectively; OR 2.1 [95%CI 1.3-3.4]; p <0.05). Children who have relatives with asthma prevailed in the 1 st group than children in the 2 nd group (20.7% and 2.0%, p =0.0000, respectively; OR 51.5 [95%CI 11.7-227.0]; p <0.05). Comorbidities as allergic rhinitis and atopic dermatitis was found in 60 children of 1 st group and only in 20 children of 2 nd group (68.9% and 5.0%, p=0.0000, respectively; OR 41.9 [95%CI 22.1-79.4]; p <0.05). Significantly, 78 children in 1 st group compared with the 45 children of the 2 nd group had two or more wheezing to 5 years (89.7% and 11.3%, p=0.0000, respectively; OR 67.8 [95%CI 31.8-144.5]; p <0.05). It was found with severity wheezing prevailed in children of the 1 st group than in children of the 2 nd group (91.9% and 23.2%, p=0.0000, respectively; OR 37.9 [95%CI 16.9-84.9]; p <0.05).

**Conclusions:** So, 17.9% of children who have had wheezing to 6 years form BA. The development of BA in children was associated with risk factors, which male sex, asthma in relatives, concomitant allergic diseases (allergic rhinitis and atopic dermatitis, recurrent episodes of wheezing (two or more wheezing) and severity of the wheezing episodes. These factors may be used for prognosis of the development of asthma.

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[340]

### **Calorie Restriction Diet or Mediterranean Diet is optimal strategies for the improvement of anthropometric and biochemical parameters among former athletes?**

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**Introduction:** The problem of overweight and obesity among former athletes is still treated marginally. At the same time, many former sportsmen are showing signs of the metabolic syndrome including abdominal fatness, hormone disorders, adverse lipid profile, and lipids metabolism.

**Aim of the study:** The objective of this study was to establish the best way to start successful weight reduction.

**Material and methods:** We compared a Calorie Restriction diet (CR) to a Mediterranean diet (MD). The CR diet was based on 30% calorie restrictions from the total metabolic rate. Randomized, controlled trial with assessments at baseline 6 weeks was conducted. Patients were divided into 3 groups: a) those that reduced body mass between 1.5 kg and 2.5 kg; b) between 2.5-3 kg and c) more than 3 kg in 6 weeks. Numbers of athletes that reduced body weight in that three categories were similar among CR and MD diets and were subsequently a) n=15, b) n=10 c) n=8. We evaluated the effects of CR vs. MD according to the following parameters: anthropometric measurements, insulin resistance, fasting glucose profile, lipids profile (total cholesterol, LDL-cholesterol, triglycerides, total lipids), adipokines (leptin, adiponectin) and IGF1. Mann-Whitney test for comparisons between groups, and  $p < 0.05$  was considered statistically significant.

**Results:** The results revealed that the CR diet significantly improved the following parameters: BMI, waist circumference, and the following biochemical parameters: fasting plasma insulin, HOMA-IR, total cholesterol, LDL-cholesterol, triglycerides and leptin. All of the parameters were improved in all categories regardless of mass reduction. Patients who followed the MD diet showed significant changes only in BMI, waist circumference, total lipids level and leptin content. Adiponectin level decreased in both CR and MD group regardless of body mass reduction. We did not observe changes in IGF-1 level.

**Conclusions:** The present study established that during the first 6 weeks the CR diet is successful in terms of the improvement of basic lipid parameters and insulin sensitivity. Basing on our research it seems that the CR diet is a good choice for the first phase of body mass reduction in contrast to the MD diet. The results are more visible among obese individuals. The study was conducted with a grant of NCN KB-0012/53/11.

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[341]

### **Are young people afraid of their health? - Results among young participants of Woodstock Festival Poland**

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**Introduction:** It is well known that aging increases the risk of diseases of civilization. Therefore, the percentage of young people who suffer from these problems is small compared to elderly people. Young people often think if they are not suffering from chronic diseases they do not have to worry about their health. However, many studies confirm that the initiation of healthy lifestyle (including physical activity and a well balanced diet) may delay the consequences of chronic diseases, such as: diabetes, cardiovascular disease, hypertension. There is a great need to find an effective way of educating young people in this field. We need to ask the question: how important is health for young people? This study helps to provide an answer.

**Aim of the study:** The aim of our study was to investigate the level of health concern among young Polish people.

**Material and methods:** The patients involved in the project were the participants of the Woodstock Festival Poland (30 July – 1 August 2015, Kostrzyn, Poland). A sample of 1316 Polish people aged 18-35 (750 men and 566 women) participated in this study. In order to evaluate the level of health concern, the Health Concern Scale (HCS), which was developed by Kähkönen and Tuorila, was used. The questionnaire allows to assess how much young people are afraid of chronic diseases (diabetes, cardiovascular disease) and how much they are afraid of negative effects of their diet.

**Results:** The results revealed a significant positive correlation between health concern and body mass index (BMI) ( $p < 0,01$ ). We also found a significant correlation between sex and health concerns. Women were more afraid of their health than men ( $p < 0,05$ ). Furthermore, we can see the positive correlation between health concerns and age ( $p < 0,05$ ). We observed that men were less worried about their health if they lived in a smaller city ( $p < 0,06$ ). The opposite trend was observed in women. We noticed a positive correlation between the level of education and health concerns among both women and men ( $p < 0,06$ ). It was observed that the bigger the waist circumference the greater the health concerns.

**Conclusions:** Women pay more attention to their health than men and they show this tendency lifelong. Their fear increases when they with the increase of waist circumference and body mass index. Men begin to worry more about health only when they are older or when they have problems with overweight and obesity. It seems that it would be worthwhile to start health education directed especially at young men.

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[342]

### 25-Hydroxyvitamin D2 in patients with chronic spontaneous urticaria and comorbidities atopic diseases

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**Introduction:** Vitamin D has an immunomodulatory activity and involved in pathogenesis of many diseases, including atopic diseases. In recent years it has been shown that in patients with chronic spontaneous urticaria (CSU) have a deficit of vitamin D, which is correlated with disease severity. However, the effect of atopy on the level of vitamin D in patients with CSU has not been studied.

**Aim of the study:** was to investigate the level of 25-hydroxy vitamin D2 (25OHD2) in patients with CSU and co-morbidities of IgE-mediated diseases.

**Material and methods:** The study involved 48 adult patients with CSU treated at the Smolensk Department of Allergy and Clinical Immunology in the period 2014-2015. All patients were divided into two groups: 1) 9 patients with CSU and comorbidities atopic diseases (allergic rhinitis, atopic asthma) – G1; 2) 39 patients with CSU and without atopy – G2. The patients were examined with clinical, instrumental and laboratory methods. Control group (G3) includes 33 healthy donors. In all groups women dominated (G1 included 88, 9% women, in G2 involved 71,8% women and in G3 - 72,8% women). The course of CSU in the G1 was  $16,67 \pm 2,93$  mon., in G2 was  $18,09 \pm 3,13$  mon. The level in blood serum of 25OHD2 was investigated with ELISA method (Cloud-Clone Corp. CEA921Ge 96 Tests, Enzyme-linked Immunosorbent Assay Kit for Vitamin D2).

**Results:** There were no differences between 25OHD2 level in blood serum in patients with CSU, regardless of comorbidities atopic diseases, from the patients in control group (25OHD2 level was in G1  $2,27 \pm 0,27$  ng/ml; in G2  $1,78 \pm 0,19$  ng/ml and in G3  $2,2 \pm 0,26$  ng / ml;  $p > 0,05$ ). The next stage of our research was analyzed the effect of atopy on the level of the 25OHD2 in blood serum in patients with CSU. We found that 25OHD2 in blood serum in patients with CSU and without atopy there is a significant decrease compared with patients with CSU and comorbidities of atopic diseases ( $1,78 \pm 0,19$  ng/ml vs  $2,27 \pm 0,27$  ng/ml,  $p < 0,05$ ). The results clearly demonstrate influence of atopy on 25OHD2 metabolism in patients with CSU.

**Conclusions:** In patients with CSU and without atopy 25OHD2 level in blood serum was significantly lower compared to those with CSU and comorbidities of atopic diseases, like allergic rhinitis and atopic asthma.

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[343]

### The effectiveness of telemedicine monitoring among patients with asthma.

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**Introduction:** Telemedicine has been a practice used by professional healthcare providers for the past forty years to provide treatment and diagnoses to patients in distant and remote locations. Nowadays, healthcare treatment is within reach of the closest mobile device. Telemedicine has dramatically changed the way medical professionals can interact with and treat.

**Aim of the study:** The aim of the study was to evaluate the effectiveness of remote monitoring device among patients with asthma

**Material and methods:** The double-blind research was carried out on the group of 44 patients with asthma. Patients were treated with corticosteroids, long-acting inhaled betamimetics and experimental biological drug. Participants were monitored remotely (evaluation of symptoms, PEF, FEV) for 14 months. The telemedicine system consisted of: web platform (for researchers – to receive alerts from patients), electronic peakflowmeters and smartphone (for patients – to complete and send questionnaires: ACQ,AQLQ, EQ-5D-5L)

**Results:** Mean asthma duration was 23,8 (SD=11,2). Mean PEF scores were 245,941 (SD=212,483). AQLQ result was divided into parts. Significant changes in activity limitation ( $p<0,001$ ) and subjectively assessed asthma symptoms ( $p<0,05$ ) was observed at baseline and after 14 months of asthma remote monitoring with electronic diary. No significant difference appeared between emotional function ( $p=0,061$ ) and environmental exposure ( $p=0,057$ ) at baseline and after 14 months of asthma remote monitoring with electronic diary. Participants reported decreased rescue medication use after 14months and increased level of asthma control that was associated with ( $r= -0,83$ ). ACQ score before and after study was significant increased.

**Conclusions:** The research showed that telemedicine monitoring is helpful for patients to restore the control of asthma. It decreases significantly rescue medication use and improves the daily activities.

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[344]

### Management of papillary thyroid carcinoma according to BRAF status

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**Introduction:** Papillary thyroid carcinoma (PTC) accounts for 90% of thyroid malignancies, with an increasing number of small thyroid cancers. BRAF (V600E) mutation is one of the most common oncogenic alteration in PTC. Various meta-analyses described different correlation levels between the BRAF (V600E) and prognostic factors of PTC.

**Aim of the study:** The aim of this study was to investigate the association between PTC presentation (according to clinicopathological prognostic factors) among patients with BRAF mutations. Based on this data patients with PTC were selected for surgery management.

**Material and methods:** The prospective study included 45 patients with PTC, who were treated at the Department of Microsurgery of P. Herzen Moscow Oncology Research Institute between 2014 and 2015. Clinicopathological features were compared between patients with and without the BRAFV600E mutation. Group I (with BRAFV600E mutation) – 35 patients. Group II (without BRAF mutation) – 10 patients. BRAFV600E mutation was detected by real-time PCR. Received data was assessed according to following prognostic factors: histologic subtype of PTC (papillar/follicular), capsule invasion (without and with intergrowth), lymph node involvement, distant metastasis, stage (TNM), frequency of recurrence and multifocality.

**Results:** Papillar subtype- 40%, follicular subtype - 60% in both groups. Capsule invasion: Group I (G I) -88%, Group II (G II) - 40%; capsule intergrowth: G I - 26%, G II - 10%, multifocality: I - 20%, II - 10%. Microcarcinomas (0,3- 1 cm): I - 57%, II - 60%, lymph node involvement - G I - 40 %, G II - 30%. Distant metastasis: G I - 5%, G II - 10 %. In Group I 51% of patients with pT1 have a capsule invasion. In 9% of patients of Group I stage T1-T2 was changed to pT3 after postoperative histology. Only capsular invasion has demonstrated the correlation with the mutation activity level ( $p<0,05$ ), whereas the association with lymph node involvement was not significant ( $p>0,05$ ).

**Conclusions:** Capsular invasion shows the strongest correlation with the presence of mutation, thus a more aggressive local surgery management in patients with PTC might be advisable (f.e. thyroidectomy instead of hemithyroidectomy).

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[345]

#### **Aortic valve replacement with homografts: mid-term outcomes**

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#### **Trustee of the paper:**

**Introduction:** Aortic valve replacement in patients with aortic valve infective endocarditis is usually performed using classical biological or mechanical prostheses. Prosthetic valve endocarditis after this operation is the most wide-spread complication. Improving postoperative outcome in this category of patients is still a matter of concern.

**Aim of the study:** To analyze short- and mid-term outcomes after surgical aortic valve replacement with homografts versus mechanical and biological prostheses in patients with infective and prosthetic aortic valve endocarditis.

**Material and methods:** Prospective single-center study was carried out conducted in the period 2009 – 2014. Patients with infective or prosthetic endocarditis underwent aortic valve replacement: the 1st group - 46 patients received aortic homografts (cryopreserved homografts - 36 patients (78,3%), homografts sterilized in antibiotics – 8 patients (17,4%), homovital valves – 2 patients (4,3%)), the 2nd group - 56 patients received mechanical or biological aortic prostheses. The indications for the operation were the following: infective endocarditis in 24 patients (52,2%), prosthesis endocarditis in 22 patients (47,8%) in the 1st group; infective endocarditis in 48 patients (86,3%), prosthesis endocarditis in 8 patients (13,7%) in the 2nd group of patients. Survival and freedom from recurrent infections were estimated during the follow-up period of 905±546 days.

**Results:** The 30-day postoperative mortality was 10,9% (5 patients) in the homografts group, 5,3% (3 patients) in the prostheses group, which wasn't statistically different ( $p>0,05$ ). In postoperative period actuarial survival was significantly higher in patients with homografts in comparison with patients with prostheses ( $p<0,05$ ). The reinfection rate was significantly lower for the the homograft group in comparison with the prostheses group of patients, 2,4% and 7,3% respectively ( $p<0,01$ ).

**Conclusions:** Aortic valve replacement surgery with homografts has better outcomes for survival and absence of reinfection in patients with infective and prosthetic aortic valve endocarditis in comparison with mechanical and biological prostheses. The perspectives of homografts use in other groups of patients should be analyzed.

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[346]

#### **Assessment of quality of life in patients after surgical and transcatheter aortic valve replacement**

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**Introduction:** Transcatheter aortic valve implantation (TAVI) and minimally invasive aortic valve replacement (MIAVR: mini-thoracotomy, mini-sternotomy) have become an appealing alternative to conventional surgical (SAVR) treatment of severe aortic stenosis (AS) in high-risk patients. Quality of life (QoL) after above mentioned treatment options have not been widely investigated.

**Aim of the study:** The aim of this study was to evaluate QoL in patients with diagnosed AS and treated with TAVI, SAVR, mini-thoracotomy and mini-sternotomy.

**Material and methods:** The study group consisted of 173 patients with symptomatic AS was enrolled in 2011-2013. TAVI group consisted of 39 patients (22.5%), mini-sternotomy was performed in 44 patients (25.5%), mini-thoracotomy in 50 (29%) and SAVR in 40 patients (23%). QoL was assessed perioperatively, 12 and 24 months after aortic valve replacement (AVR) by Minnesota Living with Heart Failure Questionnaire (MLHFQ) and EQ-5D-3L. All patients were operated by the same team of either cardiac surgeons (SAVR, mini-thoracotomy, mini-sternotomy) or interventional cardiologists with cardiac surgeons (TAVI).

**Results:** Median follow-up was 583.5 (IQR: 298-736) days. Improvement of health status after procedure in comparison with pre-operative period was significantly more often reported after TAVI in perioperative period (90.3%;  $p < 0.004$ ) and 12 months after procedure (100%,  $p < 0.02$ ). Global MLHFQ, physical and emotional dimension score at 30-day from AVR presented significant improvement after TAVI in comparison with surgical methods (respectively:  $8.3(\pm 8.6)$ ,  $p < 0.003$ ;  $4.1(\pm 5.9)$ ,  $p < 0.01$ ;  $1.5(\pm 2.6)$ ,  $p < 0.005$ ). Total MLHFQ score was significantly lower (better outcome) in TAVI patients one year after procedure ( $4.8(\pm 6.8)$ ,  $p < 0.004$ ), no differences in somatic and emotional component were found after one year observation. No differences were found in MLHFQ score 24 months after AVR. Data from EQ-D5-3L questionnaire demonstrated significant improvement of QoL at 30-day follow-up after TAVI in comparison with surgical methods ( $1.2(\pm 1.7)$ ,  $p < 0.0008$ ). No differences were found between analyzed groups in EQ-5D-3L questionnaire 12 and 24 months after procedure.

**Conclusions:** TAVI improves QoL in perioperative and 12 months observation in comparison with mini-thoracotomy, mini-sternotomy and SAVR. Improvement in QoL was obtained in both generic and disease specific questionnaires.

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[347]

### The influence of the variability of ALDH3A1 sequence on the risk of senile cataract

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**Trustee of the paper:** Piotr Wroczyński, Jerzy Szaflik, Cezary Żekanowski

**Introduction:** Oxidative stress has been implicated in the etiology of a large number of human degenerating diseases including cataract. The fact that the incidence of cataract is higher in the population that is more exposed to the sunlight impose the assumption that photocatalytic conversion of molecular oxygen to excited states (highly reactive as superoxide anion, hydrogen peroxide, hydroxyl radical), occurs.

ALDH3A1 (aldehyde dehydrogenase 3A1) plays a critical and multifunctional role against UV-induced oxidative stress. The mechanism include detoxification of highly reactive products of LPO, such as 4-hydroxy-2-nonenal (4-HNE). Additional functions of ocular ALDH3A1 include direct absorption of UV radiation, chaperone-like activity, scavenging of UV-generated ROS via the -SH groups of the cysteine and methionine residues and generation of NAD(P)H which is the reducing agent used by the GPX/GR system.

**Aim of the study:** The aim of our studies was to describe the influence of variation in ALDH3A1 region on the prevalence of senile cataract.

**Material and methods:** DNA was extracted from EDTA-blood samples collected from patients with diagnosed with senile cataract below the age of 63 yrs ( $n=21$ ) and healthy control ( $n=150$ ) using standard techniques. Genetic study included sequencing of promoter regions, 10 exons and intronic sequences flanking each exon of the ALDH3A1 gene was performed using fluorescent sequencing method (the examined group). Three the most promising single-nucleotide polymorphisms (SNPs) was determined in the control group using TaqMan SNP Genotyping Assays.

**Results:** Genotyping of the ALDH3A1 gene revealed no mutations in the analyzed region. However, we described 10 already known SNPs: 6 coding SNPs, 3 SNPs in introns and 1 SNP in 3'UTR. SNPs rs1042183, rs3826508, rs2072330 were in linkage disequilibrium and were organized in haplotype block. Two SNPs (rs2228100, rs1042183) have been shown to be a possible link with the risk of senile cataract below the age of 63yrs.

**Conclusions:** Catharact is rather not associated with mutation in ALDH3A1 region. However, the influence of the SNPs on the risk of the disease should be further examined.

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# Psychiatry & Clinical Psychology

## Jury:

prof. dr hab. n. med. Jacek Wciórka  
prof. dr hab. n. med. Marcin Wojnar  
prof. nadzw. dr hab. n. med. Maria Załuska

## Coordinator:

Zofia Bielik

## Scientific Patronage:

National Consultant in Psychiatry Asst. Prof. Piotr Gałecki MD PhD  
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Centrum Terapii Dialog  
Polskie Towarzystwo Psychoonkologiczne

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## Sponsor of the session:

Wydawnictwo Lekarskie PZWL



**PZWL**

**Date:**

Friday, May 13th, 2016

**Location:**

Room 139, Didactics Center

**Regular:**

Katarzyna Kruk

Małgorzata Koźma

Irina Tikhonova

Małgorzata Napierała

Benjamin Bochon

**Short:**

Aleksandra Gabrena

Alina Fesenko-Lisovska

Sofii Daniv

Emilija Ivančajić

Maria Gołębiowska

[348]

### The correlation between postpartum depression and breastfeeding

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**Trustee of the paper:** lek. med. Dorota Łucja Jarczewska

**Introduction:** Postpartum depression (PPD) is a significant affective disorder, which appears after labour not only within women but also within men. There are a lot of risk factors for PPD occurrence, so the treatment of this disease can be difficult. It seems that this illness may influence the infant's breastfeeding care, which is of great importance both for newborns and their mothers.

**Aim of the study:** The aim of this study was to investigate the correlation between the development of PPD in women and their breastfeeding efficacy.

**Material and methods:** The study took place in 7 clinics in Cracow in October and November 2015. 126 women, who visited their GPs during this time, were involved in it. To determine the risk of PPD Edinburgh Postpartum Depression Scale (EPDS) was used and to specify breastfeeding competence - Breastfeeding Self-Efficacy Scale (BSES).

**Results:** Higher risk of PPD development was detected among 20,6% of patients. The study revealed that PDD and breastfeeding are connected ( $p=0,35$ ). Moreover, BSES questionnaire's results are related to both the occurrence of PPD ( $p=0,023$ ) and EPDS questionnaire's results ( $p=0,00$ ,  $r= -0,46$ ). There is also a relationship between the risk of PPD and suffering from PPD in the past ( $p=0,026$ ). All those results are statistically significant. Due to the analysis women with higher scores in EPDS were also better educated, more often were employed and more often suffered from chronic diseases. They also had less children, chose rather artificial way of feeding their newborns and more frequently underwent cesarian section.

**Conclusions:** Women who are more likely to develop PPD are less satisfied with their infant's breastfeeding care or do not feed their children naturally at all. Also mothers who already suffered from PPD are at higher risk to suffer from it again. In addition to that, factors like mothers' age, newborns' age, education or the number of children seem to have no significant influence for PPD occurrence.

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[349]

### Assessment of health-related quality of life pre- and post- liver transplantation in patients with Primary Biliary Cirrhosis

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**Trustee of the paper:** dr n. med. Joanna Raszeja-Wyszomirska

**Introduction:** Primary biliary cirrhosis (PBC) is an autoimmune disease of liver causing significant impairment of patients' health-related quality of life (HRQoL). HRQoL in PBC can be assessed with disease-specific PBC-40 and with generic The Medical Outcomes Study Short Form (SF-36) questionnaires.

**Aim of the study:** The aim of this study was to analyze health-related quality of life before and after liver transplantation in patients with primary biliary cirrhosis.

**Material and methods:** Nineteen (15F, 4M) consecutive patients were included. The average time after the Ltx amounts to 9 months (median 7 months 15 days). SF-36 and PBC40 were used in the assessment of HRQoL.

**Results:** In PBC-40 questionnaire the following parameters: Cognitive ( $16,45\pm6,39$ , vs.  $12,35\pm6,71$ ,  $p=0,002$ ), Social and Emotional (median 37, range 19- 39 vs. 28, range 1-44,  $p=0,002$ ) were substantially higher before liver transplantation (OLT), while other parameters were statistically irrelevant. Moreover, in SF-36 questionnaire, a significant change in General Health after OLT was detected ( $39\pm23$  vs.  $51\pm23$ ,  $p=0,015$ ). No significant differences in other parameters were found.

**Conclusions:** PBC-40 and SF-36 questionnaires are efficient in detecting HRQoL impairment in primary biliary cirrhosis. In PBC-40 tool a significant improvement in Cognitive, Social and Emotional domains was detected, while SF-36 questionnaire pointed to a considerable improvement in General Health domain in patients after OLT.

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[350]

### Correlation of alexithymia and conflict levels in elderly people living in Geriatric Centers

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**Trustee of the paper:** Irina Osipenko

**Introduction:** Geriatric Centers and Hospitals for elderly people are under particular focus and care of the Government. Their functioning is connected with a number of significant social, economic and psychological issues associated with this age group.

However, cases of conflicts between residents of these institutions are not rare. To find the optimal solution of such conflicts, it's necessary to realize real causes and mechanisms of their development.

**Aim of the study:** was to identify correlation of alexithymia and inclination to conflicts in elderly people living in Geriatric Centers.

**Material and methods:**

We used the test "Assessment the level of inclination to conflicts" by Andreeva V.I, a diagnostic method "Toronto Alexithymia Scale (TAS)". The study was organized in Geriatric Center in Smolensk and included 30 elderly people aged 56-86.

We investigated alexithymia as a psychological characteristic of personality, characterized by difficulty in distinguishing between emotions and bodily sensations; difficulties in identifying the other person's feelings, defects in fantasy.

**Results:** Test "Assessing the level of conflict" revealed that 40% respondents had a moderate inclination to conflicts, in 23% individuals demonstrated a low level and 33% people had rather high level of inclination to conflicts. Very low and high values of this feature were not identified.

Alexithymia was diagnosed in 60% respondents, in 26.7% respondents alexithymia was not identified and 13.3% individuals characterized by an intermediate degree between the normal values and the presence of alexithymia. Thus, the correlation coefficient was equal to 0,397 ( $R = 0,397$  with  $p \leq 0,05$ ). The rank correlation between the scores on the two criteria was direct and significant.

**Conclusions:** The study confirms that the majority of residents of Geriatric Centers have alexithymia, indicating the inability of elderly people exactly recognize their emotional state, to differentiate feelings and bodily sensations, perceive emotions of others, concentration on the negative experiences. These qualities can lead to the difficulties in clear perception and assessment of life situation, consequently, and ultimately to conflicts in interpersonal relationships. Thus, conflict prevention in Geriatric Centres should be of prime importance and involve group psychological training to cope with negative emotions.

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[351]

### Stress, depression and anxiety among medicine students from various countries

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**Trustee of the paper:** dr n. hum., lek. Jarosław Sobieś

**Introduction:** Medicine is known to be one of the most demanding, absorbing and stressful faculties. Due to that fact, the students are prone to develop various disorders. This opinion is acknowledged around the world. However, the force of noxious factors is not equal in all countries.

**Aim of the study:** The aims of the study are to investigate the tendency to develop disorders like depression, stress and anxiety among medicine students, compare its intensity in various countries, name some possible reasons and suggest solutions.

**Material and methods:** We interrogated 408 medicine students using an internet questionnaire. We used the Depression Anxiety Stress Scale. The respondents answered 42 questions defining in a scale 0-3 how much the given statement applies to one's situation over the previous week. 30 additional questions concerned demographic data and opinions on the topic.

**Results:** The research reveals that the most common complaint among medicine students in all the studied countries is stress. Anxiety is more spread than depression. German students are the least affected group among the subjects while the Italian are the most vulnerable ones. Stress, depression and anxiety are most widely spread among the students who declared fear of the future, little free time, lack of practical training,

overwhelming amount of detailed theoretical knowledge and taking oral or practical exams. The disorders were more intense in the universities which do not provide psychological help.

**Conclusions:** Stress, depression and anxiety stand important issues among the medicine students. The respondents named the form of the exams, the lack of free time, the abundance of theoretical knowledge, the lack of practical training and the tutors' approach as possible reasons. However, some countries seem to have developed a less affecting system of education. In order to solve the problem, providing free psychological help and changing the studies' organisation are suggested.

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[352]

**The board game as training of cognitive functions in elderly people with mild cognitive impairment - pilot research.**

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**Introduction:** Mild cognitive impairment is an intermediate stage between the process of normal aging and dementia. Patients with mild cognitive impairment have an increased risk of dementia development. Training on the cognitive function is potentially an efficient method to improve the cognitive function among people with mild cognitive impairment.

**Aim of the study:** The aim of the study is to determine whether playing a dexterity board game has a positive influence on the cognitive functions of elderly people living in nursing homes and as a result of improving the range and comfort of their daily activities.

**Material and methods:** 15 residents of nursing homes who agreed to take part in the research and fulfilled the criteria of MCI (24 and more points in MMSE scale and less than 26 points in MoCA scale, took part in the one-hour meetings five times a week. Those individuals were playing a board game entitled Jungle Speed during 2 weeks.

The cognitive function was measured at the beginning and in the end of that research by Mini-Mental State Examination – MMSE and Montreal Cognitive Assessment – MoCA.

**Results:** In the observed group the score in MMSE and MoCa scale was substantially higher after 2 weeks of playing Jungle Speed game in comparison with the scores achieved before this research. It was 2 points more in MMSE scale and 3 points more in MoCA scale

**Conclusions:** Board games could be a successful method in improving the cognitive function of elderly with a mild cognitive impairment. A further research is required in this area.

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[353]

**Is it easy to identify delirium?**

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**Trustee of the paper:** Dr. Roberts Stašinskis

**Introduction:** Delirium defined as a disturbance of consciousness with inattention accompanied by a change in cognition or perceptual disturbance that develops over a short period of time (hours to days) and fluctuates over time. It is independently associated with significant increases in the length of hospital stay, inpatient mortality (10-26%), long term mortality, cognitive decline, requirement for institutional care, functional impairment, healthcare costs, distress to the patient and family distress. In view of the above, it is very important to identify and manage delirium to reduce morbidity and mortality in medically ill subjects.

**Aim of the study:** Find out if it is possible to apply description of patient to assessment scale and compare clinical diagnosis with scale result.

**Material and methods:** Retrospective study of 130 medical histories with diagnosis delirium, 101 of them were included in further analysis. Intensive Care Delirium Screening Checklist (ICDSC) was used to assess state of patients. Data analysis using SPSS program.

**Results:** Most common hospitalization causes in studied group of patients were poisoning (39,6%; 95% CI=30,7-49,5%), injury (23,8%; 95% CI=14,9-31,7%) and diseases of digestive system (15,8%; 95% CI=8,9-22,8%). According to ICDSC only 10,9% (95% CI=5,9-17,8%) had delirium, 76,2% (95% CI=67,3-84,2%) had subsyndromal delirium. 12,9% (95% CI=6,9-19,8%) were unable to assess by ICDSC with any of criteria. Two criteria of eight (sleep-awake cycle disturbance and symptom fluctuation) were not mentioned so that unable to value them in all patients.

**Conclusions:** Checklist provides more accurate diagnosis of delirium which affects further therapy tactics. It is possible to evaluate patient's state in progress by certain symptom. Checklist admits to assess patient in systemic way for better cooperation between medical professionals.

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[354]

### **Analysis of severity of post-stroke depression and localization of ischemic lesion in the brain.**

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**Introduction:** Poststroke depression refers to the most common complications of stroke. Despite of its high incidence and negative impact on overall survival in 50-80% of cases it is not diagnosed and therefore not treated.

**Aim of the study:** The aim of our study was to determine the characteristics, frequency and time of post-stroke depression, depending on the location and size of the lesions.

**Material and methods:** The study included 29 patients after ischemic stroke and suffered from post-stroke depression. All patients had held computer or magnetic resonance imaging, which confirmed the presence of focal vascular injury in the brain. Also was performed clinical neurological examination with BarChart assessment of disability using a scale NIHSS. To assess the ability of patients to perform vital functions used scale Barthel activities of daily life. As a screening test and assess the severity of depressive states used the Hamilton Depression Scale (HDRS), where the severity of depression was determined based on the value of the sum of the scale. To assess the dynamics of depressive disorders along with Hamilton depression scale used in the study, Hospital Anxiety and Depression Scale.

**Results:** Age of the patients was from 42 to 82 years. In the survey included 17 women, representing 58.6% and 12 men, representing 41.4% of patients. According to the clinical neurological examination and neuroimaging in 15 (51.7%) patients post-stroke focus was localized in the right hemisphere of the brain, in 14 (48.3%) - the left. Among these patients in 11 cases (37.9%) was observed frontal lesions, 10 (34.5%) - the temporal lobe and in 8 (27.6%) - thalamic areas of the brain. Neurological deficit was  $10,3 \pm 3,5$  points on a scale NIHSS, which corresponded to a stroke of moderate severity. The degree of functional maladjustment (Barthel scale) -  $55,8 \pm 15,6$  points. To study included patients with depression from mild to moderate severity (14 to 25 points). The average score on the Hamilton depression scale of patients was  $18,36 \pm 3,93$ , where in 18 (62.1%) patients had mild depression and in 11 (37.9%) - moderate.

**Conclusions:** Thus, the group examined patients with post-stroke depression frequently observed lesion in the left hemisphere of the frontal and temporal lobe on the background of diffuse subcortical changes. Severity of depression was mild to moderate, which dominated its manifestations such as difficulty concentrating, lethargy, slowness of thought and speech, impaired appetite, irritability, tearfulness and sleep disorders.

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[355]

### **Interconnection between the new born with adaptation disorders and psycho-emotional condition of their mothers**

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**Trustee of the paper:** Scientific advisor professor, doctor of medicine Koloskova O.K.

**Introduction:** Not only is the physical health status of the mother extremely important for the formation of the child's personality, but also her psychological health, harmonious relationships with others, the lack of fear about birth and life of her child, as well as lack of excessive emotional reactions to stress.

**Aim of the study:** To study the empirical interconnection between emotional and personal state of mothers and the severity of disorders in general condition of the newborn with intense adaptation under the conditions of in-patient treatment.

**Material and methods:** We conducted a survey of 39 mothers of newborn children who were treated at the neonatal unit of the regional hospital for the pathology of the early neonatal period. We used the "Clinical questionnaire for identifying and assessing neurotic states" (K.K Yakhyn, D.M Mendelevych, 1999) and a modified version of the technique "Unfinished sentences" (A.M. Shchetynina, 2000).

**Results:** In order to identify the interconnection between the studied characteristics of mothers and anamnestic-clinical findings of hospitalized children, we conducted a correlation analysis, which revealed a positive relationship between the mother's level of education with a sense of loneliness and indifference to herself ( $r = 0,4$ ,  $p < 0,05$ ) in this situation. Parents of children who were married were more energetic ( $r = 0,37$ ,  $p < 0,05$ ), less irritable and hot-tempered ( $r = 0,34$ ,  $p < 0,05$ ), they were rarely bothered with horrible dreams ( $r = -0,38$ ,  $p < 0,05$ ). The need for continued support of vital functions of newborns correlated with sleep disturbance in mothers ( $r = 0,34$ ,  $p < 0,05$ ), and, at the same time, determined a negative correlation between the severity of disturbances in general condition of the newborn in hospital and mother's depression in the form of higher fatigue and irritability ( $r = -0,31$ ,  $p < 0,05$ ), which may indicate their confidence in a successful outcome of the dynamics of the child's disease. A statistically significant positive correlation between gestational age of new-borns infants and a sense of fear in the mother as to the uncertain future prospects ( $r = -0,35$ ,  $p < 0,05$ ). The data can be explained by the fact that the greater the gestational age of the child, the less hope was for the possibility of a favorable adjustment period of postnatal development.

**Conclusions:** The conducted survey showed that the birth of a child with with impaired adaptation period changes the psycho-emotional state of the mother, which in turn affects further wellbeing in both psychological and physical development of children.

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[356]

#### DEPRESSION FROM THE NECK

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**Trustee of the paper:** MD, MSc, PhD Psychiatrist at Clinic of Psychiatry Andrej Ilankovic

**Introduction:** Introduction: Thyroid gland is one of the largest endocrine gland in the human body, it's sole function is to make thyroid hormone. This hormone has an effect on nearly all tissues in the body. The function of the gland is to regulate the body's metabolism. Based on numerous studies and tests of the thyroid gland it was determined there is a link between disorders in the thyroid gland and the occurrence of affective disorders. Affective disorders are a set of psychiatric disorders like depression, bipolar disorder and anxiety disorder.

**Aim of the study:** Aim: The aim of our study is to determine the link between thyroid disorders and the occurrence of affective disorders, on the basis of clinical and biochemical results of patients who were treated at the Clinic for Psychiatry at the Department of organic and mental disorders during the period from 2013. until 2015. Study included all the patients who are diagnosed with F31, F32, F33, F 0.6 and who also had some irregularities in the values of thyroid hormones, all the patients previously did not have any diagnosis of a disorder of the thyroid gland. Another objective of the research was to prove the assumption that a disorder of the thyroid gland occurs more frequently in women and that it is most common in conditions of depression. Also a question that was imposed during the study was: do antidepressants have some beneficial effect on dysfunctional thyroid gland and opposite can thyroid hormone therapy help with depressive patients?

**Material and methods:** Material and methods: The research was conducted at the Clinic for Psychiatry, Clinical Centre of Serbia (from year 2014. to 2015.). The study included 600 patients who had diagnosis of major depression and thyroid hormone levels outside the reference values according to the standards of American Health Organization for the thyroid gland.

**Results:** Results: The study included 600 patients with a diagnosis of affective disorder. Of these, 256 patients had levels of TSH, T3, T4 within the reference value, 111 patients had a diagnosis of a disorder of thyroid function, and for 233 patients there was no information about the values of thyroid hormones.

A total of 100 patients in our sample had at least one value of thyroid hormone outside the reference value, which makes up 27.4% of the examined, which is highly statistically significant (in the test sample,  $p = 0.0004$ ).

**Conclusions:** Conclusion: There is a link between thyroid gland disfunction and affective disorder, but further studies are much needed.

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[357]

### **War with the demons of human minds - transcranial magnetic stimulation**

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**Trustee of the paper:** Beata Gołębiowska MD, PhD

**Introduction:** The human mind for centuries has been fascinating scientists who want to understand the complexity of thought processes, and the causes of many neurodegenerative diseases - the reasons for their impairment. On the other hand, in the rushing machine of today's existence one can easily lose balance and peace of mind. Depression, addictions, anxiety disorders, obsessive-compulsive disorders more often steal human happiness in the chaos of the modern world, which in turn can destroy our present and put a shadow on our future.

However, there are daredevils who want to face the demons plaguing sick mind in terms of mental and neurological impairment.

**Aim of the study:** Progress of latest technology enables modern neurology and psychiatry to supplement the diagnostics of new examinations and to increase the range of therapeutic possibilities of many diseases of the human brain. One of the newest methods, combining both features is Transcranial Magnetic Stimulation. This non-invasive method uses electromagnetism to induce weak electric voltage by means of a rapidly changing magnetic field. The electric field causes changes in the transmembrane of the neuron, which leads to its depolarization or hyperpolarization and the firing of an action potential, which, depending on the area of application of the coil causes different clinically seen effect - primary motor cortex - motor evoked potential, occipital cortex - , 'occurrence of photosphenes' etc. The most important impact though is the invisible stimulation of deep brain regions, such as limbic system. This paper aims to present the latest developments in this field, and discuss the future direction of research on this method.

**Material and methods:** We analyzed articles on transcranial magnetic stimulation in neurological and psychiatric aspects over the years 1996-2015.

**Results:** In the last decade there has been a significant development of TMS, not only in terms of diagnostics of multiple sclerosis, ALS, motor neuron diseases, but above all in the treatment of depression, neuropathic pain, negative symptoms of schizophrenia, and current research looks for the impact of the method for treatment of addictions, obsessive-compulsive disorder.

**Conclusions:** TMS is a very promising method both diagnostic and therapeutic, despite numerous research is not still widespread in modern medicine, therefore latest developments and future direction of research will be presented.

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# Public & Global Health

## **Jury:**

prof. dr hab. n. med. Anna Barańczyk-Kuźma  
prof. dr hab. n. med. Bożena Czarkowska-Pączek  
dr hab. n. o zdr. Adam Fronczak  
prof. nadzw. dr hab. n. med. Jacek Klawe  
prof. dr hab. n. med. Jacek Przybylski  
prof. dr hab. n. med. Bolesław Samoliński  
dr hab. n. med. Katarzyna Szamotulska  
prof. dr hab. n. med. Andrzej Zieliński

## **Coordinators:**

Patrycja Potyrała  
Kinga Wilk

## **Scientific Patronage:**

Wojskowy Instytut Higieny i Epidemiologii



**Date:**

Friday, May 13th, 2016

**Location:**

Room 119, Library - CBI

**Regular:**

Vikram Bhat  
Joanna Śliwka  
Nathan Walker  
Maciej Rusiłowicz  
Aleksandra Kledyńska  
Joanna Kacperczyk  
Jan Skrzypczak  
Łukasz Samoliński  
Nathaniel Spencer  
Katarzyna Mendyk  
Hanna Wyleżoń

**Short:**

Yusran Fitrah  
Marko Kostovski  
Natalia Falkowska  
Agnieszka Hołodrowicz  
Katarzyna Ignasiak  
Thanveera Musthafa  
Olga Zdun  
Kinga Tyrąła  
Bohdan Karpenko  
Paula Drężek

[358]

### **Employer based Survey Evaluating Occupational Health Safety and Policies at Workplaces in Mangalore, India.**

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**Introduction:** Occupational health includes not only the health problems directly related to work, but also the so-called work-related diseases, problems of general health and working capacity. WHO estimates occupational health risks as the 10th leading cause of morbidity and mortality. However, due attention has not yet been given to the workers in the unorganized sector.

Mangalore, having a Special Economic Zone (SEZ) status is mushrooming with many industries. This study would give an insight as to the conditions in their workplaces and also to assess the regulations being implemented by the employers. It would also give information about the morbidity and the pattern of workplace injuries in this area.

**Aim of the study:** -To assess the occupational health safety measures employed in the workplace.

-To assess the various safety regulations implemented by the employers.

-To study the morbidity and workplace injuries related to sickness absenteeism.

**Material and methods:** A cross sectional study using convenience sampling was undertaken among the small scale industries located in and around Mangalore after obtaining their informed consent. 20 small scale industries were selected for the study. The information from the employers was collected using a semi structured proforma and the premises of the establishment was inspected in regards to the working and safety conditions and listed in the checklist for the establishment. Descriptive statistics, Chi-square (qualitative) and student 't' (quantitative) tests were applied using Statistical Package for the Social Sciences software version 11.5. The study was approved by the Institutional Ethics Committee.

**Results:** Twenty small scale industries were selected. Only 30% of the establishments were aware of the regulations they were required to adhere to with regards to injuries and accidents. 90% of the establishments do not report to the regulatory body. Five establishments do not have personnel to provide first aid. Use of gloves, eye and face shields, aprons and boots is not satisfactory. The staff facilities provided in the establishments were not hygienic.

**Conclusions:** Most of the establishments surveyed did not have satisfactory staff facilities and safety regulations. The establishments should have a proper method of recording and reporting workplace related injuries. Periodic awareness programs regarding health and injury related issues in workplaces should be conducted. Pre-placement and regular in-job medical examination of employees should be made mandatory.

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[359]

### **Knowledge, Attitude and Practice of Pharmacovigilance among Consultants in a Tertiary Care Hospital.**

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**Introduction:** Adverse Drug Reactions (ADRs) are one of the major healthcare problems occurring throughout the world, causing both morbidity and mortality. Voluntary ADR reporting is a fundamental tool of drug safety surveillance. It is estimated that only 6% of ADRs are reported worldwide. It is, therefore, important to identify the knowledge-gap and attitudes related to under-reporting. Hence this study was conducted to assess the knowledge, attitude and practice of pharmacovigilance among consultants.

**Aim of the study:** -To assess awareness about Pharmacovigilance among the Consultants.

-To assess the attitude among the Consultants towards Pharmacovigilance.

-To estimate the cross section of the study population reporting ADRs.

**Material and methods:** A suitable self-administered knowledge, attitude, practice (KAP) survey questionnaire was designed, validated and given to practicing physicians after obtaining their informed consent. Descriptive statistical methods were applied using SPSS (Statistical Package for the Social Sciences) software version 11.0. The study was approved by the Institutional Ethics committee.

**Results:** Out of the 140 consultants who were approached, 96 agreed to participate. Only 45.83% of the doctors could correctly define pharmacovigilance and 31.25% of them were aware of the location for International Pharmacovigilance Centre, whereas 48.95% of consultants were aware of the Central Drugs Standard Control Organization (CDSCO) in India. Reasonably, 65% of consultants felt that reporting of an ADR

has to be done by doctors, nurses, pharmacists and dentist. 78.12% of consultants had never been trained in reporting an ADR. 69.79% of the consultants prefer to have an ADR Monitoring Centre in every hospital and 67.71% of consultants would like to attend a training workshop. Also, 69.79% consultants expressed a professional obligation for reporting an ADR and 39.58% of consultants have not yet reported a single ADR.

**Conclusions:** Most of the consultants are unaware about pharmacovigilance and even among the ones who are aware many do not actively indulge themselves in reporting of ADRs. Hence, some initiative has to be taken to train the consultants about reporting an ADR. Regular workshops and training sessions have to be conducted and ADR monitoring centres have to be established in every hospital. Eventually, reporting of an ADR may be made compulsory.

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[360]

### **Awareness of Influenza and Attitude Towards the Influenza Vaccination Among Medical Students**

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**Introduction:** In Poland, influenza vaccination coverage among both the general population and healthcare workers is low.

**Aim of the study:** The aim of the study was to evaluate attitudes towards influenza vaccination among final-year medical students compared with first-year students at medical schools in Poland.

**Material and methods:** Students were asked about this season's influenza vaccination and what their reasons were for having the vaccination or not. Knowledge of influenza was assessed using a 10-point visual analogue scale. The study group consisted of 712 medical students, 404 in their first year and 308 in their final year (35% and 31% of all students in those years, respectively).

**Results:** Final-year students believed they had better knowledge of influenza (OR=3.33; CI 95%: 2.54-4.39). They answered questions about influenza immunizations (OR=0.59; CI 95%: 0.44-0.78) and vaccination recommendations in pregnant women correctly more frequently (OR=0.21; CI 95%: 0.16-0.28). Influenza vaccination rates among students in the 2014/2015 season were similar (17.1% in the first vs 15.9% in the final year, NS). Among final-year students, the reason for not having the vaccination was more frequently financial than other (OR=7.79 p=0.0001).

**Conclusions:** Although medical students' influenza knowledge increased during their studies it did not affect their attitude towards vaccination.

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[361]

### **What makes good e-learning software? A Medical Student Survey**

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**Introduction:** The vast majority of medical schools in the UK today have e-learning tutorials and software incorporated into their regular curricula. It is vital that software designers receive user feedback and students views on e-learning to shape their synthesis.

**Aim of the study:** We aimed to ask a focus group of medical students at the University of Bristol about their ideas around e-learning software and feedback upon how it could currently be improved.

**Material and methods:** A part qualitative, multi-format online questionnaire was published to 100 4th year medical students who have recently been using e-learning for the development of clinical skills at the University of Bristol. Questions explored several topics including what encouraged students to use e-learning tools and students views around virtual patients and the use of animation in e-learning.

**Results:** 42 students completed the survey. Over 68% of students said they found the use of patient avatars in e-learning modules to be either very useful or quite useful and 76% of students found the use of clinical cases to be very helpful. Over 76% of respondents found the use of virtual patients in modules to be either very or quite helpful. Students were encouraged by the easy accessibility of e-learning combined with interactive

software and instant feedback and assessment. Some students found their e-learning modules to be too information heavy, taking excessive time to load and being of a poor format.

**Conclusions:** Bristol medical students value e-learning as both an information source and as a method of assessment and feedback. E-learning designers should continue to develop easy access to software and interaction through clinical cases and animations whilst avoiding excessive information, making tools available in an easy to digest, non-load intensive format.

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[362]

### **Diseases of young people deceased in 50s and in recent years**

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**Introduction:** Considering the numerous breakthroughs in medical sciences that have greatly improved treatability of many diseases, one can expect major changes in frequency of medical conditions leading to young patients' deaths over years.

**Aim of the study:** The aim of our study is to analyze the leading diseases in deceased young patients (between 15-40 years) in two periods of time: years 1950-1966 and 1985-2014, and make comparisons.

**Material and methods:** We retrospectively reviewed 21642 examination records from autopsies performed at the Department of Pathology, Medical University of Warsaw. Out of these records we chose 989 within age range of 15-40 years, and gathered data on age, sex and leading diseases. Leading diseases were then divided into 9 groups: neoplasms, circulatory system diseases, generalized infections, respiratory system diseases, liver diseases, gastrointestinal tract diseases, urogenital system diseases, central nervous system diseases and others.

**Results:** In both 1950-1966 and 1985-2014 periods numbers of patients' records within chosen age range were similar (492 and 497). Circulatory system diseases were the most common leading diseases in both periods (25% and 19%). Data analysis showed a statistically significant dependence between the period of death and the leading disease (Pearson  $\chi^2=77.083$   $p<0.01$ ). In the past, young patients were more likely to die from urogenital system disease (5,5% vs 1,5%) nowadays they are more likely to die from liver diseases (4,3% vs.1%) and diseases classified as others (5,5%vs.1,7%).

**Conclusions:** - Despite considerable advances in medical knowledge, circulatory system diseases are still the most common conditions leading to death of young patients.

- Liver diseases and respiratory system diseases are more likely to be the cause of death nowadays

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[363]

### **The effect of the distance from reference center on general condition at the onset of type 1 diabetes (T1D) in children**

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**Introduction:** Typical symptoms of T1D are: polyuria, polydipsia, weight loss, fatigue. Unrecognized diabetes may result in the development of diabetic ketoacidosis (DKA), which is a life-threatening state. DKA is still too often the first manifestation of T1D in many pediatric patients. According to the ISPAD Guidelines, DKA should be treated in diabetic reference center. Therefore, the distance to reference center could be potentially protective factor in detection and minimise the severity of DKA.

**Aim of the study:** To assess the relationship between the distance from a reference center and the severity of the patient's condition at the time of T1D diagnosis.

**Material and methods:** The study group included 2082 children with newly diagnosed T1D, admitted to six referential university centers: Białystok, Warszawa, Rzeszów, Lublin, Kielce and Olsztyn. DKA was defined according to ISPAD Guidelines, as  $pH < 7.3$ . Clinical data were collected retrospectively from available medical

records. The distance between the patient's house and the hospital was calculated using a Google Maps-based distance calculator. The differences in laboratory parameters between the groups were assessed using Spearman correlation test. Statistical analyses were performed using GraphPad Prism6.

**Results:** The mean pH value in the study group was  $7.325 \pm 0.120$ . The average distance from the reference center was  $57.20 \text{ km} \pm 1.27 \text{ km}$ . DKA was observed in 28.05 % of patients ( $n = 584$ ). There was no correlation between the distance from the reference center and general condition expressed by pH value at diagnosis (95%CI from -0.05379 to 0.03465),  $r = -0.009587$ ,  $P = 0.6620$ . In the group of 138 children with severe ketoacidosis ( $\text{pH} < 7.1$ ) the correlation between these values was negligible (95%CI from -0.3145 to 0.02176),  $r = -0.1508$ ,  $P = 0.0776$ . Similarly in the group of 446 children with ketoacidosis of moderate and light severity ( $7.1 \leq \text{pH} < 7.3$ ) (95%CI from -0.07837 to 0.1127),  $r = 0.01734$ ,  $p = 0.7150$ . Additional analysis was performed for three groups of patients: living  $\geq 200$  km from reference center,  $< 200$  and  $\geq 100$  km and  $< 100$  km. The distance  $< 200$  km and  $\geq 100$  km from the reference centre was significant risk factor of DKA compared to other two groups ( $n = 303$ ; 95%CI from -0.2265 to 0.002499;  $r = -0.1135$ ,  $P = 0.0484$ ).

**Conclusions:** One third of patients have DKA at the onset of T1D. The closer distance from reference centre is not a protective factor. The recognition of diabetes should be faster and symptoms of diabetes should be diagnosed more carefully, despite of the living region.

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[364]

### Family history of cancer – does it influence patients' knowledge and preventive behavior?

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**Introduction:** Cervical cancer is the fourth most common cancer among women worldwide with 566 000 new cases detected in 2012. Cervical cancer screening programmes are effective systems of prevention and early detection of cervical pathology. Decrease in mortality rates in countries where population screening programmes are applied prove their significance in maintaining women reproductive health.

**Aim of the study:** The aim of this study was to compare knowledge about cervical cancer, use of preventive methods and exposure to risk factors among patients with positive family history of cervical cancer (group 1) and their peers with negative family history (group 2).

**Material and methods:** It was a cross-sectional study conducted by means of a questionnaire. The survey consisted of 4 parts including demographic information, short test of knowledge about HPV (Human papillomavirus) and cervical cancer, questions about applied prevention methods and possible risk factors among respondents. Altogether 2578 female students from Poland, France and Italy answered the survey. 175 (6.8%) reported positive family history of cervical cancer.

**Results:** Patients with positive family history of cervical cancer were more aware of the disease. Their knowledge concerning risk factors such as high number of sexual partners ( $p = 0.01$ ) or early sexual initiation ( $p = 0.005$ ) was better than among rest of the respondents. However, this did not lead to differences in cervical cancer prevention. Use of preventive methods including Pap smears, HPV tests and HPV vaccines was similar in both groups. There were also no significant differences in smoking.

**Conclusions:** Patients with positive family history of cervical cancer are more aware of the disease, however this does not seem to affect their behavior.

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[365]

### Chosen aspects of the Comprehensive Geriatric Assessment in participants of the „Medical University of Warsaw – for the Citizens of Warsaw” event.

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**Introduction:** Comprehensive Geriatric Assessment (CGA) is a multidimensional instrument designed to collect data on the medical, psychosocial and functional capabilities and limitations of elderly patients. It is useful

in developing treatment and care plans. In the present study it was a tool to obtain data on functional and cognitive performance of elderly citizens of Warsaw.

**Aim of the study:** To evaluate chosen aspects of the CGA in elderly citizens of Warsaw who participated in an outdoor health promotion event.

**Material and methods:** The participants included 87 people, who visited the stand of the Department of Geriatrics on May, 24, 2015 during the „Medical University of Warsaw – for the Citizens of Warsaw” health promotion event. The CGA methods included anthropometric measurements, FRAX (Fracture Risk Assessment Tool), Timed Up and Go Test (TUGT), 5 Times Sit-To-Stand Test, Mini-Mental State Examination (MMSE), Geriatric Depression Scale, hand grip strength, pulse oximetry, blood pressure measurement, peak expiratory flow and pulse. The CGA was performed by members of the Geriatric Student Interest Group. Each of the participants received an individual report with the CGA results and counseling.

**Results:** As the stand of the Department of Geriatrics was open to everyone, the age of the volunteers varied between 17 and 86 years, and the average age in the group of 60+ years old was 72. In 13 out of 34 people tested with FRAX, the 10-year risk of a major osteoporotic fracture was higher than 5%. Mild cognitive impairment was suspected in 14 out of 51 volunteers who scored 27 or lower in the MMSE. Twenty percent of the participants had elevated arterial blood pressure. Transcutaneous oxygen saturation was not lower than 93% in any of the participants. TUGT results were in normal range ( $\leq 10$  seconds) in majority of the subjects. Hand grip strength varied enormously from 10 to 54 kg, depending on age and sex.

**Conclusions:** Majority of elderly people who were voluntarily able to take part in outdoor activities were in good functional state. Various screening tests e.g. the MMSE enable easy diagnosis of problems affecting the elderly and seem useful in the context of the ageing society. Geriatric assessment and geriatrics in general attracted attention of younger people, not only the elderly.

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[366]

### **An attempt to evaluate the impact of extracurricular student activity on the employment of graduates in the field of public health.**

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**Introduction:** Studies on "Public Health" are offered by 17 public universities. Every year master's degree receives approx. 1700 graduates. Law of. 09.11.2015 r. on public health does not specify the competence of graduates of this direction and does not regulate the profession, which results in difficulties in finding employment by graduates in the area of public health.

**Aim of the study:** An attempt to assess the impact of the extracurricular activity in study time to find the employment by graduates in the area of public health.

**Material and methods:** 65 graduates (50 women) of Public Health (PH) from Medical University of Warsaw in the years 2006-2012,

2 groups: - working in PH (48.3%), II - working in other professions (51.7%). Author's questionnaire: 41 questions, 6 included in analysis. Respondents had access to the survey through the link: <http://moje-ankiety.pl/respond-45521/sec-mekugtsi.htm>, they were matched by a "snowball" method. The survey has been sent by social networking sites and email. Statistical analysis: SPSS Statistics, test of independence  $\chi^2$  Pearson,  $\alpha = 0.05$ . The study did not require the consent of the Bioethics Committee of the Medical University of Warsaw.

**Results:** In Group I 27.6% of people used to work in student government, in Group II - 6% ( $p < 0.05$ ). In Group I 20.7% of people held during their studies extracurricular internship in health care institutions, in Group II - 3.2% ( $p < 0.05$ ). In Group I 31% of people used to work in NGOs, in Group II - 6.5% ( $p < 0.05$ ). 45 of the respondents worked during the study: Group I 55% of people in the area of PH, Group II - 8% ( $p < 0.05$ ).

**Conclusions:** 1. In the focus group, the greatest impact on finding employment in accordance with the direction of the training was to work during their studies in this area.

2. Being active in the student government, carrying an optional internship and working in NGOs made job after graduation easier to find, therefore, there is a need to encourage students to extracurricular activities.

3. Research is a pilot, and therefore there is a need to continue it in order to identify other factors affecting finding work for graduates.

[367]

### Current factors influencing the infection control practices of medical students from different countries

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**Introduction:** Every year hundreds of millions of patients are adversely affected by nosocomial infections worldwide, significantly impacting mortality and morbidity. Healthcare workers are the most important factor responsible for transmission of nosocomial infections, with items commonly utilised in the patient environment such as stethoscopes and mobile phones implicated. Hand hygiene has been found to be the most effective infection control (IC) measure but compliance is reported to be low

**Aim of the study:** To identify the current IC practices of medical students and to determine the influencing factors and the role of medical university in the formation and application of IC practices

**Material and methods:** Clinical year medical students (n=93) in the English Division of the Medical University of Warsaw were surveyed anonymously by means of an original voluntary questionnaire

**Results:** Participants of 22 nationalities responded, however no correlation between nationality and IC practice was identified. Alcohol disinfectant was reported to always be accessible at the patient's environment by only 66% of students with 71% performing disinfection on entry, exit and between patients. Accessibility of handwashing facilities was reported at 52% and performed by 42%. Stethoscope disinfection after each use was reported by 72% of students, however the majority of students never disinfect keys, pens, notebooks (74%, 67% and 60% respectively) and 42% mobile phones. Only 22% of students indicated they always change footwear when entering a hospital, with less than half (47%) owning specified hospital shoes. Hospital clothing was washed less than once a week by 44% of students, with 55% never storing them at hospital. Students considered protecting themselves and patients as being the factors that most motivated them to follow IC procedures (78% and 80% respectively). Students considered upbringing, the example of clinicians and lectures to be the most important factors (54%, 45% and 43% respectively) influencing their current IC practices, although only 24% of students indicated that they observed clinicians following IC procedures consistently on all rotations

**Conclusions:** The accessibility of handwashing and alcohol disinfecting facilities must improve to enable greater compliance with IC procedures. The infrequent cleaning and daily transport of hospital clothing and poor uptake of shoe changing and disinfection of personal items presents a risk for transmission of nosocomial infections and must be addressed through education and example

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[368]

### Communication in medicine- similarities and differences between students in Poland, Bulgaria and Romania

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**Introduction:** The proper communication skills are an integral part of the work of a doctor. They are particularly relevant in the context of expanding autonomy and the patients' knowledge of their rights. Efficient communication can, on the one hand, help medical students understand the patient better and improve cooperation between them other members of medical staff. Although the principles of doctor-patient communication are an essential part of the medical profession in every part of the world, it can be assumed that there are differences in the education of medical students from different countries on this issue.

**Aim of the study:** Comparison between views of Bulgarian, Polish and Romanian medical students on the academic activities for acquiring communication skills. Indicating problematic issues in the relationship patient-doctor.

**Material and methods:** We have analyzed 1500 surveys (500 from each countries - Poland, Bulgaria and Romania). Questionnaires have been completed by medical students from every year of study. The participants had the multiple choice for some of the questions. The participation was voluntary and anonymous. Information has been developed in STATISTICA 10.0.

**Results:** 100% of Romanian students , 97% of Polish and 94 % of Bulgarian consider the ability to communicate properly with the patient is important for the daily practice. 42% students from Poland, 29% from Bulgaria and 28% from Romania think that there is no proper teaching in this area during the study. 56% of the

Polish and 50 % of the Bulgarian students think that the informed and aware patient is the most difficult to communicate with, but only 9.2% of Romanian students share the same idea. 36.8% of Romanian students think that the elderly patient is the most difficult to communicate with. Most of the Romanian students (59.2%), half of the Bulgarian (48%) and only 31% of the Polish students forget to present themselves to the patient. Half of students from all countries think that their communication skills are good.

**Conclusions:** The research shows the differences in the medical education in Poland, Bulgaria and Romania and the different difficulties faced by the students while communicating with the patient, as this aspect is usually ignored. Assessing and comparing the gaps of medical student-patient communication will lead to a better understanding and a better care and management of the patient.

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[369]

### **The assessment of knowledge concerning obesity among the adult Polish population – a preliminary study**

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**Introduction:** Obesity was recognized as a disease in 1988 by WHO. To the best of our knowledge, there has not yet been a study concerning the level of knowledge about this epidemic disease among the Polish population.

**Aim of the study:** The goal of this study was to assess the basic knowledge of obesity among the adult Polish population.

**Material and methods:** The study was conducted among 100 consecutive representatives of the Polish population during an event organized by the Medical University of Warsaw for the residents of Warsaw on 24 May 2015. All of the respondents completed a survey consisting of twelve questions concerning the causes (CofO), effects on health (EonH) and methods of treatment (MofT) of obesity. The results were correlated with sex, age, profession and health status. The results are presented as a percent of correct answers.

**Results:** The mean value of BMI in the study group was 25.1 kg/m<sup>2</sup> (range: 17.3–39.6). We recorded obesity among 13% and overweight among 37% of all respondents. This means that the level of overweight and obesity in the study group was comparable to the results of other studies which have assessed the incidence of overweight and obesity in the Polish population. However, in this study, only 28% of the respondents were male. The mean age among the respondents was 49 years (range: 20-89). The differences of the mean values of correct answers were observed in the study group. In the group of questions concerning the causes of obesity the mean value of correct answers was 91%, in the group of questions concerning the effects on health it was 55.3%, and in the group of questions concerning the methods of treatment of obesity it was 39.8%. We noticed a significant decrease of correct answers concerning the causes of obesity and methods of its treatment in the group with excessive body weight (CofO – 41%, MofT – 27.7%) in comparison to the group without excessive body weight (CofO – 51%, MofT – 50.5%). Similar differences were observed between the group of older respondents and the group of younger respondents.

**Conclusions:** In accordance to our preliminary study, we conclude that there is a lack of knowledge concerning the causes of obesity and the methods of its treatment, especially among the older population and people with excessive body weight. Interestingly, the level of knowledge concerning the awareness of the effects of obesity on health is very high.

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[370]

### **THE EFFECT OF AUDIO-VISUAL AND VISUAL MEDIA AS EDUCATIONAL METHOD IN IMPROVING THE LEVEL OF KNOWLEDGE ABOUT HIV/AIDS ON THE STUDENTS AT SMP NEGERI 30 MAKASSAR**

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**Introduction:** HIV / AIDS is a problem that threatens Indonesia and many countries around the world. According to WHO, in 2013 there are around 35 million people living with HIV/AIDS in worldwide. An increase of 17 percent compared to 2001, there are around 29.8 million people with HIV/AIDS. Data shows that the number of people living with HIV/AIDS continues to increase. Adolescence is a susceptible group infected with

HIV virus. Therefore, information and education toward this group are very important. The knowledge of adolescence of HIV/AIDS will vary depending on their environment. The better access to get the information can be conducive in improving the knowledge of students about HIV/AIDS.

**Aim of the study:** The study aimed to obtain information on the effect of audiovisual and visual media as educational method in improving the level of knowledge about HIV/AIDS of students at SMPN 30 Makassar.

**Material and methods:** This study is a quasi-experimental method. The population in this study were all students of SMPN 30 Makassar, with total sample of 292 students.

**Results:** The average mean score before is 22,26 and rose to 34,06 after the students received the counseling with audiovisual media. The average mean of students before received counseling with visual media of 21.55 and the score rose to 31.51 after counseling. On average, the respondent knowledge with audiovisual media is 186.17 while the respondent of visual media is 114.83.

**Conclusions:** It can be concluded that, based on the statistic analysis, the audiovisual media is more effective than visual media in improving the level of knowledge about HIV / AIDS.

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[371]

### Self medication practices among undergraduate medical and dentistry students

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**Introduction:** Although self medication is widely accepted practice, it should be done only following adequate patient education. The World Health Organization (WHO) has appropriately pointed out that responsible self-medication can help prevent and treat diseases that do not require medical consultation and provides a cheaper alternative for treating common illnesses.

**Aim of the study:** The aim of our study was to access and to evaluate self medication practices and patterns among undergraduate medical and dentistry students.

**Material and methods:** A cross sectional study was carried out on 104 medical students – MS and 88 dentistry students – DS (N=192), as well as a self-developed, prevalidated questionnaire consisting of 28 questions was created for data collection. The questionnaires were distributed to the students from the 1st to the 6th year of studies at the Medical Faculty – Skopje and Faculty of Dentistry – Skopje, Macedonia.

**Results:** Self-medication was reported by 77% MS and 80% DS. 37% MS and 40% DS do feel confident for practicing self medication, while 40% MS and 38% DS do not. Considering our results MS feel significantly more confident in taking medication for gastrointestinal – GI problems ( $p=0.006$ ,  $p<0.05$ ), while the difference was not significant considering the use of antihistamines ( $p=0.395$ ,  $p>0.05$ ). DS prefer to consult a doctor when experiencing allergy symptoms significantly more when compared to MS (positive answer - 62% MS, 80%DS vs. negative answer - 38% MS, 20% DS,  $p=0.009$ ,  $p<0.05$ ). MS feel significantly more confident over DS for self medication of allergy symptoms (positive answer - 38% MS, 24%DS vs. negative answer - 63% MS, 76% DS,  $p=0.04$ ,  $p<0.05$ ).

**Conclusions:** As future medical doctors this issue plays an important role in the health care system due to the responsibility that doctors should have. Taking this into consideration, the necessity of approaching the pattern and extent of self medication is crucial.

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[372]

### **Awareness of own blood group type and necessity of blood donation: A survey from Medical University of Warsaw.**

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**Introduction:** Transfusion of blood-derived products is often used as a life-saving treatment, and being a blood donor should be widely spread, especially in the group of medical professionals. Thus, an awareness of own blood group type in medical students should be common.

**Aim of the study:** Our aim was to assess if students of Medical University of Warsaw know their blood group type and how many of them are registered blood donors.

**Material and methods:** A survey was conducted in the group of 1121 students, of which 56.2% were from Faculty of Medicine, 24.5% from Faculty of Health Sciences, 16.3% from Faculty of Pharmacy and 3% from Faculty of Dentistry. A survey consisted of 12 questions and was carried out electronically and in a paper form during the second semester of 2014/15 academic year. Survey included questions about awareness of own blood group type, the frequency of blood groups in Poland, being a blood donor, methods to test blood group type and willingness to become a blood donor.

**Results:** Of all students 86.8% knew their blood group type and 13.2% did not. 30.2% of students in the survey declared that they are blood donors, 57.9% only consider to become a blood donor and 11.9% not even consider to become a blood donor. Of all non-donors 48.2% aver to have contraindications to become a blood donor, 11.5% is afraid of blood collection and 21.9% do not have time to register as a blood donor. Only 55.8% students knew what is the most common blood group type in Poland; and only 58.8% correctly marked which group type is known as a universal donor. Most of students (81%) declared that they could become a blood donor if someone closely-related would need a transfusion, and 5.2% declared that there is nothing what could force them to become a blood donor. Among students who knew their blood group type, they were as follows: 28.03% - A Rh(+), 24.33% O Rh(+), 15.4% B Rh(+), 10.37% O Rh(-), 8.01% AB Rh(+), 6.98% A Rh(-), 3.70% B Rh(-), and 3.18% AB Rh(-).

**Conclusions:** Comparing with Polish society, where less than 2% of people are the blood donors, medical students are significantly more aware of necessity of blood donation. They mostly know their blood group type, however do not know what is a frequency of each blood group type in Poland.

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[373]

### **Ethyl alcohol in the pathomechanism of death.**

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**Trustee of the paper:** Anna Smędra M.D., Ph.D.

**Introduction:** Nowadays, alcohol is the most popular and freely available psychoactive substance in Poland. Alcohol consumption, including beverages with a high percentage content of alcohol, has been increasing in the recent years. Consequently it is no surprise that WHO enumerates ethanol among the five most important risk factors of disease, disability and death. Alcohol abuse is a significant causative factor of many disorders, such as liver cirrhosis, neoplasms, acute pancreatitis and alcohol dependence syndrome. Moreover, high ethanol blood concentration increases the incidence of traffic accidents, suicides, drownings and accidents at work.

**Aim of the study:** The aim of the study was to conduct an analysis of the reasons of death among the intoxicated deceased based on post mortem examinations performed by the Department of Forensic Medicine in 2009.

**Material and methods:** The analysis was conducted on the basis of 576 post-mortem examinations performed in the Department of Forensic Medicine in Lodz in the year 2009. Out of that number, 218 cases were distinguished, which were characterized by ethanol concentration over 0,5‰, or by an assumption made on the basis of medical documentation that an event being a direct cause of death had occurred under the influence of alcohol. The level of ethyl alcohol was measured in blood, urine, and the vitreous body or thigh muscle. In the

case of people who had died during hospitalization, the opinion about insobriety was based on medical history of the patient.

**Results:** The analysis revealed that the cases with high alcohol concentration constituted 38% of all autopsies performed in the Department of Forensic Medicine in the year 2009. The highest ethyl alcohol concentration was 8.05‰ and the average concentration approximated 3.0‰. The youngest person covered by the study was 17 years old and the oldest was 84 years old. Moreover, only 20.2% of deaths occurred in the hospital, indicating that in the majority of cases prehospital medical care had been provided too late. Fatal acute ethanol intoxications represented 18% of all cases. It is also worth mentioning that traffic accidents were a very significant death reason, comprising 13.8% of all reasons.

**Conclusions:** The aforementioned statistics allow to conclude that ethanol abuse is a serious social problem and has significant influence on national mortality in Poland. It is also important to note that the presented age structure indicates that alcohol problem affects the whole cross-section of the population.

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[374]

#### **Epidemiology of type 1 diabetes mellitus among Polish children: multicenter study.**

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**Trustee of the paper:** Anna Ramotowska

**Introduction:** A dynamic increase of the incidence of type 1 diabetes (T1D) is observed as a worldwide trend in last decade. There are national databases in some of the countries, so it is easy to reported the epidemiology of the disease. So far we have some evidence about the prevalence of T1D in Poland, but the data is limited to one region.

**Aim of the study:** The aim of our study was to explore the epidemiology of T1D in Polish children during last 5 years, collecting the data from six regions (north-eastern Poland): Warmian-Masurian, Podlachian, Mazovian, Lublin, Holy Cross, Subcarpathian.

**Material and methods:** Study included the data of children up to the 18th with newly recognized T1D, which were admitted to paediatric hospitals in 6 polish centres between January 2010 and December 2014. They were divided into four age groups: 0-4; 5-9; 10-14; 15-18 years. Depending on the hospital, data was collected retrospectively from paper or electronic documentation or prospectively from electronic databases. The index of the incidence was the number of new-recognized type 1 diabetes mellitus cases during one year in the population of 100000. The number of population was taken from Central Statistical Office. The assumption that the data was sampled from a population following Gaussian distributions was tested using D'Agostino & Pearson omnibus normality test.

**Results:** In the north-eastern Poland, between 2010 and 2014, T1D was recognised in 2174 children (1006 female). The greatest number of new cases was observed in the group between 10 and 14 years old (789 subjects; 36,3%; 351 girls). The incidence in other age groups were respectively: 386 between 0 and 4 years old (17,8%; 191 girls), 657 subjects were newly diagnosed in the group between 5-9 years old (30,2% ; 324 girls), and 342 subjects in the oldest group (15-18 years old, 15,7%; 140 girls). The average annual index of the incidence for the 5-year period was 3.5. The highest index 3.69 was noted in 2013, the lowest 2.69 in 2010. The mean age at the onset of T1D was 9.25 years (mean 8.92 years for girls and 9.53 years for boys),  $p < 0,001$ .

**Conclusions:** During last 5 years in north-eastern region of Poland, T1D was most frequently diagnosed among patients in the age 10-14 years old. However, comparing to boys, the onset of the disease among girls is usually detected in the earlier age. The incidence rate is on the increase for both, girls and boys, which shows how important is the early diagnosis of the disease.

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[375]

**TITLE: A STUDY OF THE PROPORTION OF REFRACTIVE ERROR IN CHILDREN WITH UNDERNUTRITION COMING TO A TERTIARY CARE HOSPITAL**

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**Trustee of the paper:** THANVEERA MUSTHAFA.U.K

**Introduction:** Undernutrition is a major public health problem throughout the developing world. Undernutrition is very common in India. Undernourished children can also have deficiencies like vit A deficiency, which can lead to visual impairment. Refractive error leading to low vision is one of the most common problems of vision impairment especially in school going children. Child blindness and its prevention have great importance because increased number of disability years

**Aim of the study:** Objective To find the prevalence of refractive error in children with BMI < 5th percentile for their respective age and sex.

**Material and methods:** All children in the age group between 5 years and 15 years attending the Pediatric OPD of a tertiary care hospital (M.O.S.C Medical College Kolenchery) were recruited for the study. Informed consent was obtained from the parents. The demographic data of each child was obtained. Height and weight recorded and after calculating BMI, children with BMI < 5th percentile for their respective age and sex or BMI < 15 were taken for visual assessment. 37 children were taken.

**Results:** 37 children were taken for the study all having BMI < 5th percentile for their respective age and sex. Among this 17 (45.9%) were female and 20 (54.1) male. All belong to middle or low socio economic class. Among 37 children 2 (5.405%) were detected with refractive error.

**Conclusions:** Among 37 undernourished children participated in the study two had refractive error. No association with age, sex, socioeconomic status, father or mother education is shown.

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[376]

**Society's knowledge of cancer prevention**

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**Trustee of the paper:** Anna Badowska-Kozakiewicz PhD

**Introduction:** Despite advances in medicine, cancer is still the second most common cause of death in Poland. Therefore, knowledge of cancer prevention is crucial for patients regardless of age. Awareness of diagnostic tests or imaging methods and ability to perform breast self-examination allow to notice the problem earlier and result in more effective therapy.

**Aim of the study:** The aim of this study is to evaluate the knowledge about cancer prevention among people from different regions and with different level of education.

**Material and methods:** 106 women and 54 men aged 17-84 took part in the research. The survey was based on self-designed questionnaire which consisted of 30 questions. Participation in the research was voluntary and anonymous.

**Results:** 77% of respondents indicated the Internet as the main source of information about cancer. More than 90% of interviewees consider public awareness campaigns necessary and 81% indicate them as a good source of information. 80% of respondents believe that they have insufficient knowledge of cancer and its prevention. It was confirmed by their answers to questions concerning diagnostic test. Only 1/3 know the purpose of performing PSA and fecal occult blood tests. However, respondents showed better knowledge of imaging methods. Most of them (75%) correctly indicated, which methods are performed first in diagnosis in cases of breast, lungs and abdominal cancer.

**Conclusions:** Despite different places of residence and levels of education, society's knowledge of cancer is quite satisfactory. The respondents presented high level of knowledge of tumor detection with imaging techniques. Unfortunately, they seem not to be familiar with screening tests for colon and prostate cancer. On the other hand, apparently they are not familiar with screening tests for colon and prostate cancer. Results of the survey show that society considers social campaigns as a good source of information, so it would be worthwhile to consider a similar campaign about screening tests. The next stage of the research will be analysis, whether the theoretical knowledge is used by examined people in practice.

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[377]

### **Women's opinion on the use of emergency contraception.**

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**Trustee of the paper:** PhD Urszula Marcinkowska

**Introduction:** January 12, 2015, the European Commission allowed the non-prescription sale of pills ellaOne containing ulipristal acetate, used as emergency contraception. This decision encountered both the positive and negative social reception in Poland. Along with new regulations the legal and medical discussion concerning the use of contraceptives emerged.

**Aim of the study:** The aim of this study was to evaluate the views of Polish women on emergency postcoital contraception.

**Material and methods:** The research tool was an original questionnaire consisting of demographic data and questions regarding sexual life and contraception. 1213 women were surveyed. An average age of them was 24.2 years (SD 5.4 years).

**Results:** Among the respondents 76.4% use contraception. The most common forms of contraception are: condoms (50.1%) and oral contraceptives (40.8%). Half of the women surveyed declare that they experienced risky sexual behavior, but 72.5% of them did not search afterwards help of the gynecologist. 23.8% of respondents answered affirmatively to the question "have you ever applied the postcoital tablet?". 63.1% of respondents believe that the introduction of the pill as the drug available without a prescription is a right decision. According to 42%, minors should have access to this form of contraception without a prescription. More than half of respondents (57.4%) in the case of unprotected sex would like to use the tablet postcoital. The most frequently mentioned source of knowledge on contraception (35.5%) is a gynecologist.

**Conclusions:** Majority of women consider the introduction of "after tablet" as the drug available without a prescription, the right decision. More than half of the respondents would like to apply it, in the case of unprotected sex. Although the majority of women do not seek help from the gynecologist in the case of risky sexual behavior, gynecologist remains for them an important source of knowledge on contraception.

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[378]

### **SCIENTIFIC SUBSTANTIATION OF THE PROJECT OF CREATING A SINGLE LOGISTICS NET OF BLOOD SERVICE OF UKRAINE**

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**Introduction:** Blood transfusions only for health indicators, 30 000 transfusions are carried in a year 30 000 lives are sowed. At present time, in Ukraine the number of stocks of donor blood in Ukraine is almost two times lower than standards - this requires development of new methods of increase of efficiency of use of resources.

**Aim of the study:** Our work shows the prospects of the project implementation of an integrated logistics net of blood service in Ukraine .

**Material and methods:** The analyzes official statistics of the Ministry of health of Ukraine and indicators of blood service of Ukraine for 2013-2015 and the survey of the regional blood transfusion services. For the analysis was used the program SPSS STATISTICS.

**Results:** The reserve in Ukraine in 4 level then WHO recommended, written off average 21% per year. The indicator the regions of the plasmapheresis apparatus of 5.7 but coefficient variations 67,24 %. Through it, in the regions of Ukraine not covered by the plasmapheresis apparatus of the production of plasma by centrifugation , leads to the accumulation of unclaimed fully erythrocyte mass. The coefficient of variation do erythrocyte concentrate 67,14%.

Middle the amount written off for the year of erythrocyte concentrate at the end of shelf life. 22 500 liters. Price of 1 liter of erythrocyte concentrate 40 EUR. That is, in the case of separation of erythrocyte concentrate as needed to the regions can save 900 000 EUR.

The cost of the project consists of several items:

- the use of the system "1C-enterprise" the cost of 25 jobs is 4266,4 EUR;
- transport costs, based on the experience of Sumy station of blood does not exceed 10% of the value of the cargo - 90 000 EUR ;
- payment rate of 0.25 staff information pack - 6000 EUR.

The total cost of the project is about 100266,4 EUR.

Time of payback project less than 3 months. The normal functioning and development of the enterprise provides the level of return of 20 % in our case, the project is cost-effective at 88,86 % .

If we configure everything as described in the article and will use global system for logistics, we can:

- is extra vital to find blood all over Ukraine.

-to increase the percentage of the collateral components of blood by reducing scrapped product.

-save 799 740 EUR for the year.

**Conclusions:** After 5 years of operation of the project savings will be sufficient to double the number of plasmapheresis machines of Ukraine with new models of Haemonetics PCS 2 or the conversion for two points of the blood service in accordance with GMP.

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[379]

### **The Donation of the conditions of emergency**

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**Introduction:** At present time the numbers of blood stocks are below twice international standards in Ukraine. Thousands of Ukrainian are died because of the lack of blood every year.

In the times of military aggression, the donation of blood is increasing. It needs to attract people to the ranks of donors, because it can save lives.

**Aim of the study:** Identify the solutions dependency become the donor from awareness of extreme necessity.

**Material and methods:** A survey to 225 people, aged 18 to 65 years. For the analysis was used the program SPSS STATISTICS. The question was asked: Have you been a donor? Or would they become? Or would a donor in conditions of extreme necessity?

**Results:** To see if the population is ready to donate blood in case of the dependence of human life on their decision. After asking 225 people, aged 18 to 65 years, males - 57.33%, female 42.66%. The desire to become donors - 38.66%; but in case of emergency blood - 92%.

The men, who were donors (40%) agreed to donate blood - 53.33%, and in case of emergency to agreed - 96.66%.

Among respondents: 60% have never been donors, but 28.26% - would like to be donors, in case to the risk of human life, it would increase to 3 levels (86.95%).

In the case of emergency women - 93.75% and of men - 90.69% would give consent for blood donation; but in normal conditions women - 34.37% and men - 41.86%.

**Conclusions:** The creation of global authoritative authoritarian PR campaign would increase the level of reserves required life-blood.

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[380]

### **Nurse prescribing in Poland. Attitudes of Medical University of Warsaw students.**

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**Trustee of the paper:** Joanna Gotlib

**Introduction:** Under current law from the 1st January 2016 nurses and midwives (N&M) with appropriate education have the right to write out prescriptions for certain medicinal products and referral for diagnostic tests. The range of these medicinal products and diagnostic test is defined by Regulation of Minister of Health.

**Aim of the study:** The aim of study is to assess attitudes of different faculties students of Warsaw Medical University towards enhancing the professional competences of N&M.

**Material and methods:** In the study took part 417 (348 females and 67 males) students of Medical University of Warsaw, Students represented following fields of studies : medicine (M) – 144 (35%), nursing (N) – 107 (25%), midwifery (MW) – 80 (19%) and public health (PH) – 82 (20%). Average age of respondents was equal 23 year (min.: 18, max.: 58, median: 23). Authors prepared and validated own questionnaire, which contained statements assessed in Likert scale (1-5). Descriptive statistics.

**Results:** 77% of students, think that new competences of N&M will improve patient care (M-69%, N-72%, MW-89%, PH-88%). 34% are afraid of possible increasement of number of medical malpractice cases (M-53%, N-25%, MW-26%, PH-20%). 26% claim, that N&M are prepared to writing out prescriptions (M-9%, N-27%, MW-54%, PH-28%).

**Conclusions:** 1. Students of medicine, nursing, midwifery and public health have generally positive attitude to the amendment and agree that the changes are positive the patient.

2. Students are afraid of appropriate preparation of N&M to the ordination of medicines or refer patients for diagnostic tests. It refers particularly to medical students.

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# Pulmonology & Alergology

## **Jury:**

dr hab. n. med. Wojciech Feleszko  
prof. dr hab. n. med. Rafał Krenke  
prof. dr hab. n. med. Jerzy Kruszewski  
prof. dr hab. n. med. Marek Kulus  
prof. dr hab. n. med. Kazimierz Roszkowski-Śliż  
prof. dr hab. n. med. Bolesław Samoliński

## **Coordinators:**

Amarnani Diksha  
Marta Kocięcka

## **Scientific Patronage:**

National Consultant in Allergology Prof. Karina Jahnz-Różyk MD PhD

## **Sponsor of the session:**

Mead Johnson Nutrition



**Date:**

Saturday, May 14th, 2016

**Location:**

Room 141, Didactics Center

**Regular:**

Chukwuebuka Okoye

Karolina Dumycz

Ivana Ivin

Jennifer Bigaj

Natalie Czaicki

Piotr Jankowski

Monika Kowalik

[381]

### **INTENSITY OF BRONCHIAL OBSTRUCTION WITH REGARD TO GLN27GLU POLYMORPHISM IN THE $\beta$ 2-ADRENERGIC RECEPTOR GENE IN PATIENTS WITH BRONCHIAL ASTHMA**

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**Trustee of the paper:** OKOYE CHUKWUEBUKA DANIEL

**Introduction:** Respiration disturbance in bronchial asthma (BA) results from reversible airway obstruction, which is primarily manifested with a decrease in FEV1 and PEF. These parameters usually normalize due to regular bronchodilator use, but sometimes the improvement does not occur. Many foreign scientists impute that to Gln27Glu polymorphism in the  $\beta$ 2-adrenergic receptor (ADRB2) gene.

**Aim of the study:** Study objective was to analyze the association between bronchial obstruction intensity and Gln27Glu polymorphism in the ADRB2 gene in patients with BA and with regard to their sex.

**Material and methods:** We have examined 195 patients aged 18 to 70 with mild, moderate and severe persistent BA. They were diagnosed on the basis of the GINA recommendations (2011). Gln27Glu polymorphism in the ADRB2 gene was studied using polymerase chain reaction with subsequent restriction fragment. The control group comprised 95 apparently healthy individuals. Statistical analysis of the results was performed using SPSS-21 program. Patients with BA were divided into 3 groups with regard to the genotypes of ADRB2 gene. Group I consisted of 102 individuals who were carriers of Gln27Gln genotype of ADRB2 gene; group II comprised 73 carriers of Gln27Glu genotype and group III included 20 subjects with Glu27Glu genotype.

**Results:** During the study we found out that average values for FEV1 in group I were  $74 \pm 1.04\%$ , in group II –  $66 \pm 0.75\%$  and in group III they were  $50 \pm 1.45\%$  ( $p < 0.01$ ). The carriers of Glu27Glu genotype of ADRB2 gene had lower FEV1 values. With regard to sex, average values were distributed as follows: in group I women had  $73 \pm 1.47\%$  and men –  $75 \pm 1.27\%$ ; in group II women had  $64 \pm 0.9\%$  and men –  $68 \pm 1.5\%$ ; in group III women and men had  $50 \pm 1.96\%$  and  $51 \pm 2.76\%$ , respectively ( $p > 0.05$ ), with no significant difference observed. Average values for FEV1 were almost identical in men and women.

**Conclusions:** BA patients who are carriers of Glu27Glu genotype of ADRB2 gene have lower FEV1 values. No sex-associated laws were found in distribution of FEV1 average values. Further perspective study of Gln27Glu polymorphism in ADRB2 gene is required to evaluate its association with efficacy of BA background therapy.

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[382]

### **Contact allergens in topical corticosteroid vehicles available in Poland: analysis of products composition.**

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**Trustee of the paper:** Wojciech Feleszko MD, PhD

**Introduction:** Deficient skin barrier function in patients with inflammatory skin diseases pose a significant risk factor for contact sensitization to active ingredients of topical drugs. Contact allergy to vehicle ingredients (ie, excipients and preservatives) in topical steroids' vehicles is a known phenomenon however, the data on the most common problematic vehicle ingredients in Poland is lacking.

**Aim of the study:** The assessment of presence of allergenic vehicle ingredients listed in European Baseline Series in prescription topical corticosteroids.

**Material and methods:** We searched for all topical steroids cleared for sale in 2015 in Poland and generated an ingredients' list of the products on the basis of their package inserts.

**Results:** There are five main ingredients, identified in topical corticosteroid preparations, that are well-known allergens (according to EBS): neomycin (in 18% of products), parabens (in 16%), lanolin alcohols (6%), clioquinol (4%), formaldehyde releaser (1%) out of 82 analyzed products and 62% of them were found to be allergen free. According to topical steroids' form, all liquids and solutions were deprived of allergens whereas significant part (30-50%) of other forms (ie. ointments, creams, emulsions) contain them.

**Conclusions:** Most of topical corticosteroids in Poland are allergen free however, there is still a significant number of preparations that have the potential to cause allergic contact dermatitis owing to vehicle ingredients. Dermatologists and paediatricians should be aware of this facts and may consider not to recommend or prescribe medications that contain potentially allergenic ingredients.

[383]

### Socio-epidemiologic characteristics of patients with tuberculosis comparing to the healthy population

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**Trustee of the paper:** ass dr sci med Tatjana Adžić Vukičević

**Introduction:** Tuberculosis is a contagious disease caused by bacteria from the *Mycobacterium tuberculosis* complex. When not treated it is fatal in 50-65% of cases within 5 years.

**Aim of the study:** Comparison of socio-epidemiologic characteristics of tuberculosis patients in Serbia comparing to the general healthy population and a review of risk factors is the aim of this study.

**Material and methods:** Patients (n=23) which had a radiologic and sputum confirmation of the disease filled in a survey. Resistance was tested through sputum PCR and culture with an antibiogram. For the healthy population (n=47) we took a random sample of healthy individuals that were identical by gender and age to the first group, they were also surveyed.

**Results:** In the affected group of people 43,5% of them were unemployed, while in the healthy group most were employed in the private sector ( $p < 0,001$ ). The average home surface area in the affected group was 40-59m<sup>2</sup>, while the home surface area of the healthy group was 80-99m<sup>2</sup> ( $p = 0,025$ ). 51,1% of healthy interviewees reported that they travel by car to work, while 56,5% of the affected interviewees reported that they walk ( $p < 0,001$ ). There was a statistically significant difference in the level of education between the groups, so 36,2% of healthy interviewees reported high level of education, while that percent of the affected population was 4,3%. To supplement that, 78,3% of the affected, had only finished primary school ( $p < 0,001$ ). There was a statistical difference between the groups regarding previous contact with people that have tuberculosis, so 34,8% of the affected had previous contact, while only 10,6% of the healthy group reported so.

**Conclusions:** Our study finds that people that live in lower socio-economic conditions comparing to the healthy population have a higher risk of acquiring tuberculosis, so an adequate social support to vulnerable social groups would significantly help lower the incidence of tuberculosis in Serbia.

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[384]

### Factors affecting vaccination rates against influenza in adults with asthma.

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**Trustee of the paper:** Dr n. med. Tadeusz M Zielonka

**Introduction:** Asthma is considered one of the most common non-communicable diseases worldwide, with an incidence of 5.4% in the Polish, adult population. Symptoms of the disease can be triggered or worsened by a variety of factors including viral infection such as influenza, affirming the necessity for prophylactic vaccination. However, there is concern amongst the general population of the possibility of anaphylactic response to vaccination, which can deter patients with allergic asthma for fear of triggering exacerbation of their condition.

**Aim of the study:** The objective of this study was to determine the extent to which patients with asthma adhere to a schedule of recommended vaccinations. Also, it assessed the source of their knowledge and when applicable, what deterred them from following recommendations.

**Material and methods:** 50 patients were recruited from specialist outpatient clinics and general outpatient clinics in Warsaw to complete a voluntary questionnaire created for the purpose of this study.

**Results:** Preliminary results were obtained from 50 patients, of which 60% were female. About 70% reported having allergic asthma, and top triggers of exacerbation were allergens (20%), infections (24%), exercise (19%), weather (11%), and air pollution (11%). Within the past year 82% stated having at least one respiratory infection, but only 63% of patients were aware of the recommendation for yearly vaccination against the flu. Family doctors (29%) and pulmonologist (20%) were the most likely to have recommended vaccination, but 37% of patients reported no recommendation from any doctor. 46% reported receiving the flu vaccine more than once, and only 14% followed through with yearly vaccination. The most common sources of information about the importance of yearly flu vaccination were from their doctors (47%) and the media (34%). Also, 48% of patients reported never being vaccinated against the flu, with the most common reasons being lack of information of requirement (25%), fear of adverse effects (23%), lack of faith of effectiveness (23%), and fear of asthmatic reaction (15%).

**Conclusions:** Very few asthmatic patients in Warsaw get yearly flu vaccinations despite the recommendations. These results were mainly sourced due to uncorrected fears and a lack of information about the importance of prophylaxis in asthma. It is essential to create effective strategies to inform patients with asthma of the importance of yearly vaccinations.

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[385]

### **Pneumococcal Vaccine & Asthma in Adults**

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**Trustee of the paper:** Dr. n. med. Tadeusz Zielonka

**Introduction:** In Poland, approximately 4 million people suffer from asthma, which is about 5-7% of the general population. Asthma is a chronic inflammatory disease of the bronchial tubes of the lungs. When triggered by an irritant, the muscles around the bronchial tubes tighten, causing them to swell. Triggers include allergens, tobacco smoke, and viral or bacterial infections. Respiratory tract infections, such as *Streptococcus pneumoniae*, are one of the foremost reasons for asthma exacerbations. Officially, incidence of *S. pneumoniae* is low in Poland, where there were about 729 reported infections recorded between 2007 and 2009 with a fatality ratio of 38%. Incidence of this infection is more common among asthmatics than in the general population, making asthma a clear indication for the pneumococcal vaccine. However, in Poland the vaccine protecting against *S. pneumoniae* is recommended but not mandatory.

**Aim of the study:** The aim of this study was to establish the prevalence of asthmatics that complied with pneumococcal vaccine recommendations. Also, it investigated the knowledge of patients in regards to the benefits of vaccines, specifically in relation to asthma and the basis of this knowledge.

**Material and methods:** The study was conducted among patients at specialist and general outpatient clinics in the form of an anonymous survey that contained questions about asthma, vaccines and known irritants.

**Results:** 50 total surveys were conducted of which 30 patients were female and 46 with allergic asthma. 70% of patients reported at least one incident of exacerbation within the last two years. A staggering 92% of surveyed patients did not receive the pneumococcal vaccine and only 26% of patients were aware of the need for this vaccine. Most often, the reasons listed for not receiving the vaccine were due to lack of information. Three patients listed a belief that their asthma would be a contraindication for receiving the vaccine.

**Conclusions:** The awareness of pneumococcal vaccine recommendation is low in patients with asthma, mostly due to lack of information from any sources. Thus, the compliance of patients is very low. Additional reasons listed by patients were lack of faith in efficacy of the vaccine and side effects. It is worthwhile to educate patients on the benefits of receiving the pneumococcal vaccine, especially in relation to their asthma.

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[386]

### **The prevalence of airway obstruction among smoking passers-by at the Eastern Warsaw Railway Station – pilot study.**

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**Trustee of the paper:** Katarzyna Górka MD, PhD; Piotr Korczyński MD, PhD,

**Introduction:** Chronic Obstructive Pulmonary Disease (COPD) is one of the most common diseases worldwide. In Poland, about 17000 people die from COPD every year. According to Global Initiative for Chronic Obstructive Lung Disease (GOLD), spirometry is a gold standard in diagnostics of COPD. It identifies the lower airway obstruction, which plays an important role in COPD pathogenesis. In spite of high incidence, many people are still not aware neither of COPD, nor of danger related to smoking.

**Aim of the study:** The aim of the study was to evaluate the prevalence of airway obstruction among passers-by at the Eastern Warsaw Railway Station.

**Material and methods:** 56 smoking passers-by (mean aged 53.7 ± 9.8 years, 24 F) were examined at the Eastern Warsaw Railway Station. All the analyzed patients were older than 40 years of age and smoked at least 10 pack-years (mean 32 ± 16.9 pack-years). The patients' lung function was examined with an on-the-spot spirometry (the portable spirometer Viasys Micro Lab was used). A special poster was used to encourage the passers-by to take part in the study, the spirometry was performed in the central area of the Eastern Warsaw

Railway Station. Forced expiratory volume in one second expressed as percentage of the predicted value (%FEV1) and the Tiffeneau index (TI) were assessed. Smoking cessation and healthy lifestyle were promoted among study participants.

**Results:** Out of 56 smoking patients, 39 (70%) were able to perform the spirometry properly at least once, with the mean TI  $71.3 \pm 10.1$  and mean %FEV1  $88.6 \pm 21.2\%$ . In 16 (41%) participants airway obstruction (TI <70%) was found (mean TI  $62.7 \pm 8.9$  and %FEV1:  $73.9 \pm 16.9\%$ ). No significant differences between men and women were observed. No adverse effects of the examination were observed.

**Conclusions:** 1. In the group of smoking passers-by 70% of them were able to perform the spirometry properly.

2. Airway obstruction was found in 41% of study participants.

3. A study conducted in the public space has the screening value and could be used for promotion of a healthy lifestyle.

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[387]

### **Clinical manifestation of pulmonary embolism in patients hospitalized in the pneumonology department**

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**Trustee of the paper:** Marta Dąbrowska MD, PhD; Marta Maskey-Warzęchowska MD, PhD,

**Introduction:** The most common symptoms of pulmonary embolism (PE) - particularly non-high-risk PE – are similar to symptoms of lower respiratory tract infection, as well as to symptoms of chronic respiratory diseases, such as chronic obstructive pulmonary disease (COPD), asthma or interstitial lung diseases. Therefore, diagnosing PE in patients with symptoms of lower respiratory tract infection or chronic lung diseases may be particularly difficult.

**Aim of the study:** The aim of the study was to evaluate the incidence PE confirmed in computed tomography angiography (angio-CT) in patients hospitalized in the Department of Pneumology of the Medical University of Warsaw and to assess the presenting signs and symptoms in these patients.

**Material and methods:** We retrospectively analyzed the incidence PE confirmed in angio-CT in patients hospitalized in the Department of Pneumology of the Medical University of Warsaw in 2014. The presenting signs and symptoms were evaluated and their incidence was compared with the incidence reported in earlier studies.

**Results:** Angio-CT confirmed pulmonary embolism was diagnosed in 31 patients (0.8% of patients hospitalized in 2014).

The three most frequent symptoms of PE were dyspnea, pleuritic chest pain and signs of deep vein thrombosis and were reported by 60%, 37% and 30% of patients, respectively. Fever was present in 27% and cough in 23% of the patients. Hemoptysis occurred in 13% of cases. Syncope or hypotension was diagnosed in 7% of the patients. The incidence of PE and the frequency of the presenting symptoms were comparable to those reported in earlier studies (1-3).

**Conclusions:** The incidence, signs and symptoms of angio-CT confirmed PE in patients hospitalized in the pneumonology department do not differ from those reported in other groups of patients.

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[388]

### **Hospital acquired pneumonia and ventilator-associated pneumonia among adults hospitalized in the intensive care unit: aetiology, drug resistance of most common pathogens and methods of treatment**

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**Trustee of the paper:** Halina Pieciewicz-Szczęśna Ph. D

**Introduction:** Hospital acquired pneumonia (HAP) and ventilator-associated pneumonia (VAP) are relevant causes of morbidity and mortality among patients of intensive care units (ICU). They are second most common type of hospital-acquired infections and the first cause of morbidity associated with infections in intensive care units. Drug resistance among bacteria accounts for failure of treatment and higher mortality.

**Aim of the study:** To define aetiology of HAP and VAP in ICU and evaluate drug resistance among its causes. To analyse antibiotics used in the treatment of pneumonias.

**Material and methods:** The study was retrospective in nature and took place in the intensive care unit of Regional Specialist Hospital in Lublin. The study concerned 50 patients with HAP or VAP hospitalized in 2015.

**Results:** Men accounted for 68% of participants and women for 32%. The average age of men was 65 and the average age of women was 73. HAP accounted for 18% and VAP for 82% of all pneumonias. *A. baumannii* was isolated from 42% of patients. The subsequent most common strains were: *S. aureus* (10%), *K. pneumoniae* (8%), *E. coli* (6%), *P. aeruginosa* (2%), *P. mirabilis* (2%), *S. pneumoniae* (2%). From 6% of patients two or more strains were isolated. 36% of patients did not yield any pathogen.

Multidrug resistant bacteria accounted for 83% of all pathogens. The most common were carbapenem resistant *A. baumannii* (56%), ESBL-producing *K. pneumoniae* (11%), MRSA (8%), carbapenem sensitive *A. baumannii* resistant to two groups of antibiotics (3%), ESBL-producing *E. coli* (3%), carbapenem resistant *P. aeruginosa* (3%). All *A. baumannii* strains were colistin sensitive. Colistin was the first therapeutic option in 43% of cases. The next most commonly used antibiotics were ceftriaxone (14%), amoxicillin clavulanate, cefazolin, ciprofloxacin, vancomycin (6% each). 20% of patients were treated with more than one antibiotic. The average duration of antibiotics therapy was 13.5 days. 30% of patients died. The pneumonia was the main cause of death in 14% of cases.

**Conclusions:** Hospital acquired pneumonia and ventilator-associated pneumonia account for significant percent of hospital-acquired infections among adults in the intensive care unit. They are often characterized by high mortality. The knowledge about the most common aetiology of HAP and VAP as well as drug sensitivity of pathogens may help doctors in particular in ICU in the proper selection of empiric treatment and may contribute to the decrease of the number of drug resistant bacteria strains in hospitals.

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# Radiology

**Jury:**

dr n. med. Magdalena Januszewicz  
prof. dr hab. n. med. Olgierd Rowiński  
prof. dr hab. n. med. Jerzy Walecki

**Coordinator:**

Krzysztof Pieluszcak

**Scientific Patronage:**

National Consultant in Radiology and Imaging Diagnostics Prof. Jerzy Walecki MD PhD

Journal of Ultrasonography  
JOURNAL OF  
Ultrasonography

**Sponsor of the session:**

Wydawnictwo Lekarskie PZWL



**Date:**

Friday, May 13th, 2016

**Location:**

Room 141, Didactics Center

**Regular:**

Magdalena Czerzyńska

Łukasz Stopa

Sergejs Pavlovics

Szymon Ciuk

Marcin Niedbała

Marta Kołodkiewicz

Iwona Kucybała

[389]

### **What is the position of radiology technician in the medical health care? Patient opinion.**

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**Trustee of the paper:** Pasieka Ewa<sup>3</sup>, Milewska Anna Justyna<sup>4</sup>

**Introduction:** The basic role of radiology technician (RT) in the radiology room is making imaging diagnostics of medicinal procedures. The actions making by RT are related to take care and radiology safety for the patient, control radiology equipment and pay attention for the examinations quality.

**Aim of the study:** The aim of the study was to describe the RT position in medical trade based on patients opinion.

**Material and methods:** For our research 155 patients, diagnosed in Department of Radiology University Medical Hospital in Bialystok, were chosen to filled the questionnaires. The questionnaires consist into two parts: first one included standards sociometry questions (e.g. age, sex, place, education), second one included questions lead to RT characteristics and the way of patients viewing. The data was worked in Statistica 12.5 by Ch<sup>2</sup> Test ( $p < 0,001$ ).

**Results:** In the group of patients men was slightly dominated (82; 52,83%). The great amount of patients was patients between 41 and 60 years old (older adults; 82; 54,17%). The biggest percent of people (77; 48,4%) lives in cities. The medium education level was dominated/bestricted (77; 48,43%). The interviewee people from big cities statistical ( $p = 0,026$ ) more often than interviewee from medium cities couldn't explain the period of time that RT profession existed (51,52% vs. 27,27%). The investigated patients from small cities statistical rarely ( $p < 0,001$ ) than rural citizen, medium in size and big cities inhabitants had chosen social prestige and mass media opinion to RT position in medical trade (2,5%; 20,83% ; 5,88% ; 3,9%). The education level, working action specialty and superiors appreciation was the most important factors leading to RT position (place of residence-no relationship). Knowledge in medical fields was the property statistical more frequently chosen for patients with high education level and big city inhabitants ( $p = 0,003$ ).

**Conclusions:** A great amount of patients couldn't describe the period of time of RT working in medical trade. Despite the lack of better information about RT work they decided that the education level, working action specialty and superiors appreciation was included into the mainly factors which has impact to RT position in medical health care.

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[390]

### **The evaluation of the influence of the anatomical variations of the lateral pterygoid muscle on the disc position in the temporomandibular joint using magnetic resonance imaging**

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**Trustee of the paper:** Zygmunt Stopa

**Introduction:** There are three different anatomical types of the superior head of the human lateral pterygoid muscle (LPM). In type I the superior head consists of two bundles, one attached to the disc of the temporomandibular joint (TMJ) and the second to the condyle. In type II the superior head has only one bundle, which attaches to disc and condyle. In type III the superior head has one bundle, which inserts only to the disc. Patients suffering from temporomandibular disorders (TMD) can have a displacement of the intrarticular disc. It can be with or without reduction.

**Aim of the study:** The aim of the study was to evaluate the influence of the anatomical variations of the lateral pterygoid muscle on the disc position in the temporomandibular joint.

**Material and methods:** The anatomy of the LPM and the position of the disc in the TMJ were evaluated by means of magnetic resonance imaging (MRI) performed from 2014 to 2016. A total of 76 joints were evaluated. The examined group consisted of 38 patients (3 male and 35 female). The mean age of the patients was 44,2 years (varying from 20 to 82 years). The results were tested using the chi-squared test and the Fisher's exact test. The significance level was set to 0,05.

**Results:** Type I of the superior head of the LPM was observed in 58 of the joints (76,3%), type II in 10 (13,2%), type III in 8 (10,5%). Under the examined joints in 20 (26,3%) the disc was normal, in 30 (39,5%) displaced with reduction and in 26 (34,2%) displaced without reduction. Statistical tests proved a connection between the rarer anatomical types of the superior head of the LPM (type II and III taken as a whole) and the disc displacement, as well as the connection between the disc displacement and the atrophy of the superior head of the LPM.

**Conclusions:** Type II and III superior head of the LPM may contribute to the occurrence of disc displacement in the TMJ.

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[391]

### **Correlation between hepatic steatosis and coronary artery calcification on non-enhanced computed tomography.**

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**Trustee of the paper:** Maija Radzina

**Introduction:** Limited information is available on the prevalence of coronary artery calcification (CAC) in Latvia associated with hepatic steatosis (HS).

**Aim of the study:** To evaluate association between hepatic steatosis and coronary artery calcification evaluated by non-enhanced computed tomography (NECT).

**Material and methods:** Abdominal and thoracic NECT images of 211 patients (131 males, 80 females) with mean age 59 years were retrospectively reviewed for presence of hepatic steatosis and coronary artery calcification. Hepatic steatosis was defined as liver-spleen density difference greater than 10 Hounsfield units (HU) and the absolute density of the liver less than 40 HU. The presence of coronary artery calcification was defined as presence of calcium deposits in coronary arteries.

**Results:** HS was found in 137 patients, with mean hepatic density (MHD) 23.80 HU, 74 patients showed no signs of HS with MHD 57.6 HU.

In HS group, 27 patients (19.71%) had CAC, whereas in non-HS group 45 (60.81%) patients presented with CAC. MHD among patients (72 out of 211) with CAC was 45.06 HU, MHD in patients without CAC was 30.77 HU. HS was defined in 3 groups: (1) HD > 40 HU; (2) HD 20 – 40 HU and (3) HD < 20 HU, there was significant difference among groups ( $p < 0,001$ ). As well as in-between CAC groups ( $p < 0,001$ ) there was moderate correlation between presence of CAC in patients with HS ( $R_s = 0,4$ ;  $p < 0,001$ ), with tendency of CAC in patients with no signs of HS.

**Conclusions:** There is an association between hepatic steatosis and coronary artery calcification, although with a tendency of coronary artery calcification in patients without signs of hepatic steatosis.

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[392]

### **The effect of nasal septal deviation and presence of concha bullosa on development of maxillary sinusitis.**

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**Trustee of the paper:** Prof. Andrzej Urbanik MD, PhD

**Introduction:** Nasal septal deviation (NSD) and concha bullosa (CB) are considered as common anatomic variants in the population. Connection between these variants and prevalence of maxillary sinusitis is still to be investigated more thoroughly.

**Aim of the study:** The aim of this study was to evaluate the relationship between the nasal septal deviation and the presence of concha bullosa with incidence of maxillary sinusitis.

**Material and methods:** The study group consisted of 123 patients, who underwent paranasal sinus computed tomography in the period between 2015 and 2016 with the usage of Multiplanar Reconstructions. There were 71 females and 52 males with the mean age of  $47 \pm 16,6$  years (range from 18 to 83). Exclusion criteria included prior sinonasal surgery and variation of S-shaped nasal septum. Evaluation of each image was performed using IMPAX 6.4 software by two independent examiners. Statistical analysis was performed using Statistica v. 12.5 for Windows.

**Results:** Nasal septal deviation was found in the images of 82,93% of patients, it was left-sided in 48,04% of cases and right-sided in 51,96% of cases. Concha bullosa was present in 39,84% of patients. It was bilateral in 40,82%, only left-sided in 32,65% and only right-sided in 26,53% of cases. We observed that there is a connection between bilateral concha bullosa and increased risk of bilateral maxillary sinusitis in general (OR=3,13; p=0,03) and chronic sinusitis (OR=3,40; p=0,01). Nasal septal deviation didn't show any influence on the frequency of maxillary sinusitis, neither in general (OR=1,05; p=0,93) nor in chronic (OR=1,75; p=0,27) type. Also, there was no statistically significant association between the direction of septal deviation and the higher possibility of inflammation in ipsilateral maxillary sinus (left side: OR=0,86; p=0,69 and right side (OR=1,41; p=0,35).

**Conclusions:** Nasal septal deviation is very common finding among patients and it seems to be irrelevant for the incidences of maxillary sinusitis. On the other hand, there is an association between the presence of bilateral concha bullosa and bilateral maxillary sinusitis.

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[393]

### **Presentation of clinical features, treatment techniques and their possible complications in patients with Complex Intracranial Aneurysms**

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**Trustee of the paper:** Stanisław Kwiek MD, PhD; Prof. Piotr Bażowski MD, PhD; Prof. Jan Baron MD, PhD

**Introduction:** Complex Intracranial Aneurysms (CIAs) together form a very heterogeneous group of vascular malformations. Usually, they require a more thorough and cautious approach because of their uncommon localisation, size or morphology. Their treatment process is inevitably linked with a higher risk for patient, which means that the therapeutic team must possess great expertise to perform medical procedures relatively safely.

**Aim of the study:** This retrospective study was carried out to evaluate typical treatment methods of CIAs and their outcomes among our Clinic's patients.

**Material and methods:** From the overall number of patients who were hospitalised in the Clinic from 2008 till 2014, we separated a group of subjects who presented Complex Intracranial Aneurysms and were qualified for treatment. While working with medical records we had to create a classification method to designate CIAs from more regular aneurysms. Next step was to create a subgroup of subjects who suffered a subarachnoid haemorrhage (SAH). Both of the divided groups' outcomes were assessed using the Glasgow Outcome Scale (GOS). Moreover, all of the CIAs were thoroughly measured by students who were supervised by interventional radiologists.

**Results:** In almost 70 % of cases, the preferred treatment method was an endovascular embolization of an aneurysm. About half of these cases required the placement of stent inside the lumen of the vessel. Complete embolization was possible in approximately half of the interventions. About 23% of patients qualified for CIA treatment, suffered from a subarachnoid haemorrhage.

**Conclusions:** Complex Intracranial Aneurysms pose a difficult challenge for therapeutic team. CIAs are lacking clear classification guidelines, which may hinder their comparison between different studies. According to our research endovascular embolization is an effective treatment method.

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[394]

### **Endovascular embolization as a treatment of choice of unruptured intracranial aneurysms**

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**Trustee of the paper:** dr hab. n. med. Stanisław Kwiek, prof. dr hab. n. med. Piotr Bażowski, prof. dr hab. n. med. Jan Baron

**Introduction:** An aneurysm is a bulging, weakened area in the wall of an artery resulting in an abnormal widening or ballooning, which carries a risk of rupture, what in turn results in subarachnoid hemorrhage (SAH). This condition can lead to death or severe injury. Thus it is recommended to treat aneurysms before they burst. An unruptured aneurysm, therefore, is an aneurysm that has not ruptured yet. Based on aneurysm's localization, morphology, diameter and clinical features of the patient, an unruptured aneurysm may be qualified to endovascular embolization.

**Aim of the study:** We carried out this retrospective study to assess the impact of choosing endovascular procedure on treatment's effects of the unruptured aneurysms.

**Material and methods:** Between years 2008 and 2014, about 200 patients in our Clinic were diagnosed with unruptured aneurysms and initially qualified for endovascular embolization. Medical records and radiological images were reviewed for all the patients. Patients' cases were further analyzed on the outcome of the treatment (total occlusion or not), assessment of the patients' recovery (Glasgow Outcome Scale [GOS]), days spent in the hospital after the procedure with distinction between Intensive Care Unit [ICU] and Neurosurgery Department, and differences between cases where stents were used and where they were not. Aneurysms' morphologies were also assessed with measurements done by students supervised by experienced radiologists.

**Results:** On average, after the procedure patients spent in the hospital 6 days including one day at ICU. Mean GOS was 4,87 with only 6 patients (2,6%) scoring below 4. Complications occurred in 30,4% cases with 100% of them being early and 25,4% followed by late complications. In follow-up examinations, 78,4% patients presented with total occlusion of treated aneurysm. Stents were used in 63,8% patients.

**Conclusions:** Based on our material we have found radiological and clinical effects of embolization positive, with little complications, good recovery and fair success rate.

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[395]

### **The assessment of anatomical variants in renal vasculature using contrast-enhanced abdominal computed tomography.**

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**Trustee of the paper:** Professor Andrzej Urbanik, MD, PhD

**Introduction:** Levels of origin of the renal arteries from the aorta and their entrances to the hila of the kidneys are very important during surgical interventions. Knowing of their variability is crucial for many specialists such as surgeons, transplantologists and urologists and could prevent dangerous complications.

**Aim of the study:** The aim of the study was to assess the variability in levels at which renal arteries arise from the aorta and reach the hila of the kidneys on both sides of the body.

**Material and methods:** We included to the study 397 patients, who underwent contrast-enhanced computed tomography (CT) of the abdomen from September to November 2015. In every scan we assessed the level of the origin of renal artery from the aorta and its entrance to the hilum of the kidney, referring to the corresponding segment of thoraco-lumbar spine. We also counted number of the renal arteries on each side of the body. Every image was evaluated by two independent examiners using IMPAX 6.4 software and the statistical calculations were performed using Statistica v. 10.0 for Windows.

**Results:** A total of 397 patients had 782 kidneys. The right renal artery significantly more often entered the right kidney at levels L3 (26.15% vs. 19.90%,  $p = 0.019$ ) and L4 (3.33% vs. 0.77%,  $p = 0.034$ ), while the left renal artery more often entered the left kidney at L2 level (44.13% vs. 33.80%,  $p < 0.01$ ). We also observed that the right renal artery more frequently entered to the hilum of the right kidney at levels L3 / L4 (5.64% vs. 2.55%,  $p = 0.069$ ) and L2 / L3 (21.79% vs. 18.11%,  $P = 0.097$ ), but these results have only boundary statistical significance. Right renal artery more often arises from the aorta at L1 level compared to the left renal artery (32.05% vs. 26.02%,  $p = 0.0152$ ). Multiple renal arteries are observed more often on the left side ( $1.58 \pm 0.41$  vs.  $1.10 \pm 0.34$ ;  $p = 0.039$ ).

**Conclusions:** The left renal artery more frequently enters the corresponding kidney at L2 level, while the right one more often reaches right kidney at levels L3 and L4. The incidence of the multiple renal arteries is higher on the left side of the body than it is on the right side. This study tries to make numerous specialists aware of how important for proper planning of surgical interventions is assessment of the topography of the renal arteries with use of contrast-enhanced computed tomography.

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# Surgical Case Report

## Jury:

prof. nadzw. dr hab. n. med. Krzysztof Bielecki  
prof. dr hab. n. med. Borys Bilynsky  
prof. dr hab. n. med. Maciej Otto  
prof. dr hab. n. med. Andrzej Szawłowski

## Coordinators:

Stepan Feduniw  
Agata Nawrot  
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Milena Snopek

## Scientific Patronage:

National Consultant in General Surgery Prof. Grzegorz Wallner MD PhD

Polskie Towarzystwo Chirurgii Naczyniowej  
Towarzystwo Chirurgów Polskich  
Polskie Towarzystwo Chirurgii Ręki



**Date:**

Sunday, May 15th, 2016

**Location:**

Room 231+232, Didactics Center

**Case Report:**

Wojciech Korcz  
Gabriela Stępińska  
Marta Poręcka  
Aleksandra Zych  
Hanna Kozłowska  
Katarzyna Bartosiak  
Michał Kubisa  
Tomasz Lewczuk  
Tomasz Lewczuk  
Dmitrijs Lobovs  
Marina Eeva  
Piotr Szostek  
Iga Ruškowska  
Petr Nikiforovich  
Maria Zaborska  
Marta Korycka  
Kacper Koczyk  
Karolina Borowska  
Maciej Spałek  
Michał Mielnik  
Mgdalena Kicińska

[396]

**Intraoperative endoscopy to identify a vascular malformation as a source of bleeding from small intestine.**

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**Trustee of the paper:** Tomasz Guzel, MD

**Background:** In the small bowel, 30 to 40% of bleeding is caused by abnormal blood vessels in the wall of the bowel. In people over the age of 50 years, arteriovenous malformations (AVMs) are the most common cause of small bowel bleeding. AVMs in the gastrointestinal tract are uncommon and treatment is problematic because the small intestine is difficult to reach endoscopy and routine barium contrast studies fail to demonstrate the lesion.

**Case:** A 68-year-old man with a history of hypertension and ingestion of NSAIDs (aspirin) was admitted to the hospital due to recurrent gastrointestinal (GI) bleeding, melena for 2 weeks, progressive weakness and anemia. In history the patient reported similar episode of GI bleeding. It was two years prior to admission to our hospital, gastroscopy and colonoscopy were performed – cause of bleeding was not shown. On examination, he was pale and had mild tenderness in the upper abdomen. Laboratory investigations revealed RBC of  $2,49 \times 10^6/\text{mm}^3$ , a hemoglobin level of 7.5 g/dl. Emergency vascular computed tomography detected an active suffusion of contrast from one of the jejunum's loops. Laparotomy with intraoperative endoscopy revealed the place of active arterial bleeding- segmental resection of three loops of jejunum was performed. Histopathology of resected specimen revealed arteriovenous malformation as mucosa thinning, edema and fat metaplasia. The post-surgery course was complicated with a slow intestinal transit moreover without any complication. 17th day the patient was discharged from the hospital in a good condition. 15-month follow-up proceeded unreservedly.

**Conclusions:** 10% of patients with GI tract hemorrhage bleed from a source distal to the ligament of Treitz and only 1% of this group will bleed from small bowel. The small intestine is approximately 5-6 m long and occupies a large area in the abdominal cavity. These factors preclude the use of ordinary endoscopy and X-ray to thoroughly examine the small intestine for bleeding of vascular malformations. If the small intestinal source is suspected, then intraoperative enteroscopy may be beneficial and it is an important adjunct to surgical therapeutics. Vascular malformations can be located and marked with a suture or clip so that resection, accurate pathological examination and diagnosis can be made.

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[397]

**Approaching problem of non-resectability : associated liver partition and portal vein ligation for staged hepatectomy (ALPPS) for treating liver metastases of colon cancer: a case report.**

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**Trustee of the paper:** Prof. dr. hab n. med. Rafał Paluszkiwicz, dr. n. med. Piotr Kalinowski

**Background:** Resection is the only curative treatment option for colorectal liver metastases. Unfortunately it is often limited due to the postoperative liver failure consequent to insufficient volume of the future liver remnant (FLR).

In order to tackle this problem, several strategies have been developed. The most recent of these entails associating liver partition and portal vein ligation for staged hepatectomy (ALPPS). This method enables rapid and profound growth of the parenchyma for patients whose tumors had been formerly considered non-resectable. In addition to the portal vein occlusion, the parenchyma is transected to prevent interparenchymal vascular connection, which in turn arrests tumor progression.

**Case:** This report describes a 60-year-old male with sigmoid colon cancer and synchronous multiple liver metastasis. The patient underwent resection of the primary lesion, followed by chemotherapy. The only curative treatment, though, was resection of the metastases in both liver lobes. CT volumetry showed a very small FLR (422 ml, 0,44% of total body weight), which required sufficient hypertrophy, therefore ALPPS was performed.

During the first stage, tumors from 5 segments were resected. The liver was partitioned, and the right portal vein was ligated. Post-surgery liver function tests peaked and the patient's general condition was poor, but it improved overtime. CT on postoperative day 24 showed sufficient FLR increase (from 422 ml to 564 ml, or from 0.44% to 0.66% of total body weight). The second stage of ALPPS was on postoperative day 32, completing

resection of the metastases. The patient now receives neoadjuvant therapy. He is free of tumor recurrence 12 months after ALPPS.

**Conclusions:** For instances of multiple liver metastases, in which there is also a small future liver remnant (FLR), associating liver partition and portal vein ligation for staged hepatectomy (ALPPS) has proven the most effective method of treatment. Consequently, ALPPS is further a possible solution for cases that had been previously thought inoperable.

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[398]

**Hepato-atrial anastomosis through a peritoneal pericardial window as a way to overcome technical difficulties during Liver Re-ReTransplantation: a case report.**

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**Trustee of the paper:** Konrad Kobryń, MD

**Background:** Liver retransplantation (ReLT) is the last and only treatment in patients with irreversible graft failure. It is recognized as a high risk procedure, thus surgical difficulties are multiplied with every successive liver transplantation (LTx). Second and third liver transplantations are associated with respectively higher morbidity and intra-operative mortality. ReLT is a demanding technical procedure for the surgeon with no guarantee of post-operative and long term survival.

**Case:** A 29 year old male patient underwent LTx in April 2009 due to primary sclerosing cholangitis (PSC) with overlapping autoimmune hepatitis (AIH). ReLT took place in May 2012 due to graft failure. After discharge the patient was hospitalized several times due to recurring biliary infections, ascites, and chronic renal dysfunction. Recurrence of PSC qualified him for a third LTx, which was carried out in April 2013. Re-re-Ltx was performed using temporary veno-venous bypass and hemodialysis (SLEDD). The graft was removed along with the extrahepatic IVC. The inflammatory process involving the IVC and diaphragm forced the surgeon to open the pericardium from the diaphragm and clamp the cuff of the right atrium of the heart. Only such a technique allowed preparation of the IVC cuff for anastomosis. After the operation pleural drainage to the right pleural cavity was applied, a window was left in the diaphragm for easier communication of the fluid. The next steps were performed typically for a LTx. The patient was extubated in the Surgical ICU on the same day of the operation where he spent thirteen days. An echocardiography was performed on the second post-operative day (POD) which confirmed good cardiac function and ruled out any disabilities. The pleural drainage was removed on the third POD and a chest X-ray confirmed no signs of pneumothorax nor hydrothorax. With good general results he was discharged on the nineteenth POD. Follow up period is nearly 3 years and results are good.

**Conclusions:** When performing graftectomy with the excision of the intrahepatic IVC and later end to end anastomosis a pericardial window for the extension of the recipients' IVC cuff is feasible and a hepato-atrial anastomosis is proves good overall outcome. An ethical question, of whether or not should we transplant 2, 3 or more liver grafts in one recipient when there are so many patients on the waiting list, comes back now and then like a boomerang, but we should always try to do our best to help the patient.

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[399]

**Maximal thymectomy in a patient with myasthenia gravis**

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**Background:** Myasthenia gravis (MG) is a neuromuscular disorder caused by autoantibodies which block acetylcholine receptors in the neuromuscular junction. The disease manifests as fatigability that is tendency to deterioration in activity and its effects can be observed in the articulatory, respiratory, limb and eye-movement muscles. Approximately 10-15% of patients with myasthenia present thymoma and it is an indication for thymectomy. However, this surgery is also recommended for patients without thymoma, resulting in a decreased incidence of exacerbations and a reduction of medications requirements, as well as a higher incidence

of long-term remission. The purpose of our case is to present modified videothoracoscopic maximal thymectomy in our patient with MG and to show advantages of VATS in faster recovery and better cosmetic effect.

**Case:** A 58-year-old male patient was referred to Department of General Surgery, Oncology, Metabolic and Thoracic Surgery - Military Institute of Medicine in Warsaw for a thymectomy in myasthenia gravis. After mediastinoscopy he was qualified to operation. Thymectomy was performed via Kocher's incision and substernal incision using bilateral videothoracoscopy. Surgery was carried by removal of whole thymus and perithymic, mediastinal and cervical fat. Limits of the removal tissue were determined by: superiorly - inferior horns of thymus, laterally – phrenics nerves, inferiorly– dome of diaphragm. Using this new modified surgery gives possibility to reveal mediastinum, all pathology in them as well as sampling tissue for histopathology examination. In postoperative RTG there were any abnormalities. The patient was discharged after 3 days in a good condition.

**Conclusions:** Total thymectomy, despite postoperative complications such as perioperative respiratory failure against pneumonia, bleeding or infection complications like mediastinitis and pleural empyema, is one of the best treatments in MG. Owing to the possibility of implementing minimally invasive techniques in thymus operations, the necessity for sternotomy which puts additional burden on the patient, can be eliminated.

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[400]

### **Rupture of splenic artery aneurysm in pregnancy – a report of two cases.**

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**Background:** Although splenic artery aneurysms account for circa 60% of all visceral arterial aneurysms they remain a rare condition. Splenic artery aneurysm tends to be asymptomatic until rupture which causes life-threatening haemorrhage. It occurs more frequently in women in child bearing age, up to 95% during the pregnancy. Rupture is connected with high maternal and fetal mortality. It is not yet clear why pregnancy increases the prevalence of SAA formation and rupture but risk factors include hemodynamic and hormonal changes during the pregnancy.

**Case:** 37-year-old woman was presented to the emergency room with symptoms of internal bleeding (in hypovolemic shock). Patient was at 27 weeks' gestation of first pregnancy. She complained of abdominal pain and had collapsed at home. No bleeding from genital tract was observed. An ultrasound showed massive amount of fluid around the fetus. Placental abruption was suspected and subsequently emergency caesarean section was performed. The uterus was intact on examination. Despite the arrival of surgical, gynaecology and obstetrics consultants inspection of the abdomen was ineffective. Doctors were unable to stop the bleeding and both patient and her premature born son died. Autopsy was performed and rupture of splenic artery was identified as the source of the haemorrhage.

Another case is the case of a young woman who collapsed and died despite reanimation. Autopsy indicated that the cause of death was rupture of aortic dissection leading to cardiac tamponade. Significantly, 2 years earlier the patient experienced rupture of SAA during pregnancy and therefore underwent splenectomy. For a few months before death she had been suffering from chest pains. The patient was misdiagnosed with intercostal neuralgia and no vascular diagnostic exams were introduced.

**Conclusions:** The risk of occurrence and rupture of SAA is higher in pregnant women than in the overall population. High mortality rate is associated with asymptomatic initial phase and rapid deterioration after rupture. These case studies indicate that awareness of SAA should be raised among gynaecologists as well as surgeons. Splenic artery aneurysm ought to be considered in the differential diagnosis of obstetric emergencies like placental abruption, uterine rupture or amniotic fluid embolism. For surgeons finding of SAA in a pregnant patient should be a recommendation for observation in terms of vascular pathologies.

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[401]

**Carcinoid tumor in accidental Meckel's diverticulum.**

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**Trustee of the paper:** Prof. Krzysztof Paśnik, MD, PhD, Prof. Edward Stanowski, MD, PhD, Michał Janik, MD

**Background:** Meckel's diverticulum is found in approximately 2% of population and represents the most common true diverticulum of the gastrointestinal tract. The large majority are asymptomatic and found incidentally during surgical exploration or radiographic study of the small intestine. Meckel's diverticulum is a very rare localization for adenocarcinoma. The authors report the case of patient who was operated due to tumor in ascending colon and a Meckel's diverticulum was accidentally noted and removed. As a surprise, the pathological examination of the diverticulum proved carcinoid tumor.

**Case:** A 69-year-old man patient was admitted to Clinic due to perform right-sided hemicolectomy. Patient was diagnosed with adenocarcinoma in ascending colon and he was reported to hospital for surgical treatment. Laparotomy was performed. Intraoperatively it was found large tumor in ascending colon invades the mesentery. During the operation, Meckel's diverticulum without any sign of pathology was found and wedge excision was performed. Patient passed a smooth post-operative period and was discharged with no complains. Pathological work-up of resected Meckel's diverticulum revealed adenocarcinoma G2 with metastases in lymph nodes.

**Conclusions:** There is still debate about the recommendation whether asymptomatic Meckel's diverticulum should be removed if found accidentally. Although based on one case we should not make any definite recommendation, however our example rather supports the opinion that it is worth to perform resection also in asymptomatic cases. It can prevent the complications potentially occurring throughout life and it can also reveal malignant transformation.

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[402]

**Interpretation of highly elevated CA 19-9 levels in a patient with recurrent cholangitis and cholestasis after bile duct reconstruction.**

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**Background:** CA 19-9 is a marker which is observed in many types of the gastrointestinal malignant tumor e.g. pancreatic, colorectal and hepatobiliary malignancies, indicating poor survival rate. Approximately 60% of patients suffering from cholangiocellular carcinoma develop elevated CA 19-9 levels. Increased CA 19-9 is also observed in the non-malignant hepatobiliary diseases, pneumonia and pancreatic inflammation. The subject of our case had iatrogenic benign stricture of the common bile duct. Importantly, these constrictions are associated in 90% with surgical procedures.

**Case:** A 68 year old woman was admitted to the Department with recurrent cholangitis. On admission, physical examination showed jaundice, fever and shivering. The biochemical examination showed significantly elevated markers: CA 19-9 35496 IU/ml (normal values: <39,0 IU/ml), ALP of 577 IU/l, total bilirubin 6.8 mg/dl, GGTP 1127 U/l, AST 115 U/l, ALT 73 U/l. Almost over 1000 times elevated CA 19-9 suggested malignant nature of the constriction. Patients' surgical history included laparoscopic cholecystectomy with third grade (Stewart – Way classification) bile duct lesion as complication one year before. Her bile duct was reconstructed then performing Roux-en-Y hepaticojejunostomy.

The patient was referred to USG, angio – CT and MRCP, which showed dilated intrahepatic bile ducts of no neoplastic etiology. Shortly after admission, patient underwent laparotomy with recreation of hepatojejunostomy using previous Roux-en-Y jejunal loop. During the operation biliary sludge and inflammatory bile ducts obstruction was confirmed, but the intraoperative histopathological examination denied any neoplastic malformation. Post operational process was complicated by severe E.Coli wound infection cured with Amoxicillin. Control cholangiography on POD6 showed normal configuration of the intrahepatic bile ducts and wide, fitting hepatojejunal juncture. On discharge CA 19-9 and other markers fell significantly: CA 19-9 <39,0 IU/ml; total bilirubin 0,67 mg/dl; AST 39 U/l; ALT 30 U/l; GGTP 209 U/l.

**Conclusions:** The presented case emphasizes that extremely high serum CA 19–9 levels are not always associated with cholangiocellular carcinoma. Elevated CA 19–9 should be carefully interpreted especially in patients with chronic cholangiotitis and cholestasis, as it may wrongly suggest malignancies in patients with benign bile duct diseases, such as iatrogenic obstruction, which was the subject of this case.

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[403]

**--Lung necrosis with multiple abscesses and pleural empyema as trauma complications which led to pneumonectomy.**

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**Background:** Common consequence of chest trauma is a pulmonary contusion which usually is resorbed with no further complications. However - in rare cases - it can develop into lung abscess and cause pleural empyema. We would like to present a case of patient with extensive damage of the lung and pneumonectomy as only curative option for such condition.

**Case:** 40 year old homeless patient was admitted to emergency unit with symptoms of: dyspnoea, high fever with shivering, purulent sputum expectoration, weakness and loss of appetite. Patient had history of fight 7 days before. CT scan showed massive contusion of upper and middle lobes of right lung. In case of rapid progression of symptoms (respiratory failure and septic condition) patient was treated with antibiotics, mechanical ventilation and pleural drainage (4l of purulent liquid).

Despite of therapy patient was not getting better so he was admitted to Thoracic Surgery Unit. Performed surgery was based on antero-lateral right thoracotomy with debridement of pleural cavity and decortication of right lung. During operation there was massive necrosis of upper and middle lobe confirmed. However in case of patient's severe condition (septic shock) pneumonectomy was delayed.

After surgery patient was treated at ICU with: targeted antibiotics against *Klebsiella pneumoniae*, parenteral nutrition, blood transfusion and pleural drainage. After patient's compensation he was reoperated. Because of massive necrosis in all lobes, multiple abscesses and fistulas pneumonectomy was performed. There was also made chest wall fenestration to prevent healing complications. Implementation of such therapy led to control of serious infection and enabled patient's recovery. In two months there was planned mioplastic operation in order to close fenestration. Due to not sufficient patients social conditions - homeless patient - and everyday dressing change necessity he stayed in hospital until that time.

**Conclusions:** Presented case shows us rare complication of chest trauma (lung necrosis with multiple abscesses and pneumo-pleural fistulas). Conservative treatment (pleural drainage and antibioticotherapy) in that cases is usually ineffective and only pneumonectomy (with high risk of bronchial stump fistula) could save patients life. Performing one time fenestration may prevent tragic bronchopleural fistula complications (ventillation problems due to air leakage, postresectional cavity empyema and severe second lung pneumonia).

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[404]

**22-year old men with huge mediastinal cavernous haemangioma involving both pleural cavities.**

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**Background:** Mediastinal haemangioma is a rare clinical finding. The prevalence of mediastinal haemangioma is less than 0,5% of all mediastinal tumours. Unusual clinical manifestation of mediastinal haemangioma is dyspnoea. It can be then an evidence of large tumour volume and mass.

**Case:** 22-year old male patient was referred from local hospital to the department of thoracic surgery. The patient presented 2-weeks history of increasing dyspnoea – at the beginning exertional and later also at rest. Patient presented decreased respiratory sufficiency. He presented no history of serious illnesses in the past. CT scan showed large tumour of the anterior mediastinum involving both pleural cavities. There was performed video-assisted thoracoscopic surgery that revealed large cystic smoothly encapsulated tumour nearly completely filling left pleural cavity. Tumour was attached neither to thoracic wall nor to diaphragm. After incision of the capsula there was observed constant leakage of bloody fluid. After conversion to open left thoracotomy it was

possible to resect the entire cystic tumour attached to the pericardium and to the brachiocephalic vein. There was evacuated 6,2 litres of fluid from the tumour during operation, in which was 1,5 litre of bloody fluid. Patient required red blood cells transfusion. There was necessary postoperative drainage of both pleural cavities. Postoperative period was uneventful. There was performed rehabilitation – cough and expectoration education and active respiratory exercises. Wound was healed without complications. Patient was discharged home in good general condition 13 days after surgery. Patients complaints resolved completely. Histopatologic examination established diagnosis of haemangioma.

**Conclusions:** Presented case is interesting because of unusual clinical presentation of rare type of tumour localized in atypical place and involving both pleural cavities. Although haemangioma is a rare mediastinal tumour, it should be also considered in the diagnosis of dyspnoea especially when the tumour has large size. Although tumour seemed to be non-operative before performing diagnostic VATS after intraoperative histopathologic examination it proved to be haemangioma. In presented case size of the tumour is extraordinary large. According to the literature there was not previously reported such a big mediastinal haemangioma in such a young patient.

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[405]

### **Two-stage hepatectomy of patient with initially unresectable liver metastases of colorectal cancer.**

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**Background:** Patients with multiple liver colorectal metastases are not candidates for a radical therapy by a single hepatectomy. In some patients with initially unresectable liver metastases, the two-stage hepatectomy is last chance to increase survival rate.

**Case:** A 52 years old male was referred to Oncology Centre of Latvia with changes in bowel habit. After examination was discovered sigmoid colon adenocarcinoma with synchronous bilobar multiples liver metastases. Patient underwent sigmoid colon resection with adjuvant chemotherapy. After nine courses of chemotherapy with FOLFOX was observed liver metastases progression and was discovered BRAS, KRAS wild type antigens. The chemotherapy regime was changed on FOLFIRI and Bevacizumab, and after four courses was observed tumor response, and as a result, liver metastases regression. In this positive dynamic patient underwent four atypical resection from three segments (Sg2, Sg3 and Sg4) and right portal branch ligation simultaneously. After surgery also was appointed two chemotherapy courses with FOLFIRI and Bevacizumab. After two months on CT scan was observed left liver lobe hypertrophy without metastases, biloma in third segment and metastases only in right lobe. Afterwards patient underwent right hemihepatectomy and atypical resection from fourth segment. As a result, patient remains well without recurrence at 14 months after the last surgery.

**Conclusions:** In this case, can see how two-stage hepatectomy for colorectal metastases with chemotherapy allow survival rate increasing in certain patients with initially unresectable liver colorectal metastases.

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[406]

### **Struma cordis**

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**Background:** Introduction: We report a case of ectopic thyroid tissue of the heart (struma cordis), which is an exceptionally rare defect in the embryonic development of the primitive gut tube. The most common location in the heart is the right side of the ventricular septum and the right ventricular outflow tract (RVOT). Extirpation of a tumor can be performed under total cardiopulmonary bypass (CBP).

**Case:** Diagnosis: The patient is 57 year old woman, presenting with symptoms of heart failure and a systolic murmur best heard at second left intercostal space. Echocardiography visualized enlarged right heart cavities and an obstructing mass in the RVOT sized 30/30 mm with a peak gradient of 55 mmHg and turbulent flow. The patient had right ventricular hypertrophy measuring 9 mm in thickness.

Histological diagnosis: It confirmed differentiated thyroid tissue in the tumor - macro and microfollicular goiter with cholesterol deposits and PAS-positive for colloid.

Differential diagnosis: First of all we excluded metastatic thyroid carcinoma. Because of the lack of history of deep venous thrombosis and the location of the tumor in an area with high rate of the blood flow, we ruled out the possibility of intraventricular thrombus and suggested neoplasm.

**Conclusions:** Discussion: The most common primary tumor of the heart is left atrial myxoma. The primary thyroid tumor (struma cordis) is one of the rarest tumors of the heart. More common is metastatic thyroid cancer.

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[407]

**'Ubi pus, ibi evacua'- not always.**

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**Trustee of the paper:** Paweł Świercz MD, PhD

**Background:** Sweet's syndrome is a rare disorder of unknown etiology associated with the autoimmune process. Surgical treatment causes symptoms of the disease to aggravate. We present the case of a patient who was initially diagnosed as phlegmone and treated surgically with no recovery. Since difficult clinical problem was diagnosed as Sweet's syndrome, and appropriate therapy was introduced, rapid improvement was observed.

**Case:** 32 year old women after leg abscess drainage, was readmitted to the Department two days after discharge, due to leg oedema and pain. No fever. Distinct inflammatory oedema with exudate and pain were present in the site of left leg abscess incision-phlegmone signs. Similar change on forearm appeared subsequently. Extensive incision and drainage of subcutaneous tissue phlegmone was done. The following day laparotomy was performed because of acute abdomen but no pathology was found. Appendectomy and peritoneal drainage were done. Due to lack of improvement of local and general condition the incision and drainage were extended several times. The treatment in the hyperbaric chamber was implemented. The consultation with participation of dermatologists, internists and surgeons was held. Because of clinical and pathological manifestation being incoherent, numerous diagnosis were considered including proliferative hematological diseases, systemic and autoimmune diseases. Ultimately Sweet's syndrome or pyoderma gangrenosum was suggested. Immunosuppressive therapy was implemented (glucocorticoids and tacrolimus). In the following days, significant improvement of healing was observed. Then dressings with silver ions were applied and exchanged in the operating room conditions. After the disappearance of the inflammatory signs the vast ulceration was covered with intermediate thickness skin graft which healed properly. Relaparotomy was done to release post-surgical adhesions. Patient was discharged in good general condition with leg wound completely healed after 3 months of hospitalisation.

**Conclusions:** Very rare dermatological syndromes can cause major diagnostic problem. Their clinical manifestations can mimic common diseases, routinely treated surgically, such as soft tissue phlegmone. In these cases surgical treatment is contradicted. The only effective treatment is immunosuppressive therapy. In ambiguous cases including commonly looking diseases with atypical manifestations the cooperation of a multidisciplinary team is essential for therapeutic success.

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[408]

**The innovative approach of the treatment described in case of 64-years-old female with critical lower limb ischemia and necrosis on the right heel.**

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**Background:** Nowadays, the endovascular procedures are no longer limited to the vessels of the calf. The presence of the arcuate artery of the foot gives us an opportunity to undertake innovative solutions in order to reinstate the normal blood flow in the lower extremities.

**Case:** A 64-year-old women with hypertension, hypercholesterolemia and diabetes mellitus type 2, suffered from diabetic foot syndrome with ischemic etiology. Patient was diagnosed with critical ischemia of the foot and lower-extremity atherosclerotic arterial disease with Rutherford grade 6, and was qualified to the amputation of the right calf. A physical examination revealed cold right foot with vast liquefactive necrosis of the right heel. Radiogram showed degenerative changes. Blood glucose values were unstable. The arteriography showed that

the iliac, femoral, popliteal arteries, tibial-fibular trunk and tibial posterior artery were unobstructed without significant stenosis. The tibial anterior artery had an occlusion in distal 1/3 of the length. The fibular artery was occluded, partially contrasted. However the dorsal artery was unobstructed, the medial plantar artery and the lateral plantar artery manifested significant obstructions in the proximal segment as well as in distal segment of the lateral plantar artery. Ineffective attempt of revascularization of the lateral plantar artery, in accordance with blood flow was performed. Therefore the doctors planned to perform angioplasty of the tibial anterior artery and displaced the balloon catheter through the dorsal artery and deep plantar artery to the lateral plantar artery. The angioplasty with recurrent approach was performed successfully. On the first day after procedure foot was warm and the blood flow was detectable. The 6-month follow-up showed us healed ulceration of the right heel. The normalization of the blood glucose values was acknowledged.

**Conclusions:** More and more often pedal arch is being compared to the circle of Willis in the cerebral circulation, and it is used to find modern and improved approaches of the diagnostic and treatment of critical ischemia of lower extremities. In this particular case, it allowed our patient to prevent the amputation, and increased her quality of life.

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[409]

**Simultaneous thyroidectomy with complete removal of the sternum and resection of the anterior chest wall in patient with distant metastases of differentiated thyroid carcinoma**

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**Background:** The number of patients with distant metastases of differentiated thyroid carcinoma (DTC) is 10%. A significant number of these cases have a resistance for radioiodine therapy. The two most frequent sites of distant metastases are lungs and bones, their synchronous lesion is noted in 16%. Complex therapy is a gold standard of the management of DTC. It includes: surgery, radioiodine therapy, radiation therapy or thermal ablation. However, when strictly considering bone metastasis originating from DTC, the impact of treatment strategies has been poorly investigated. Successful surgical management of distant metastasis in sternum is described in no more than 10 articles (PubMed).

**Case:** Patient 64 years old with follicular thyroid carcinoma IVc cT4N1bM1 (distant metastasis in lungs and sternum) was presented to our hospital in August 2015. CT described lungs metastasis (both sides); sternum metastasis, which has a size 78x56x175 mm, with involvement of the 1-6 costal cartilages on both sides, which spreads to the sternum, to the mediastinum. Neck ultrasonography described thyroid nodes, suspicious lesions of right neck lymph nodes. Fine needle aspiration (cytology) revealed thyroid follicular carcinoma. Sternum biopsy (histology) revealed distant metastasis of follicular carcinoma. 01/10/2015 thyroidectomy with central neck lymphadenectomy was performed with the resection of the anterior chest wall, with the total resection of sternum and fragments of (1-7) ribs at the both sides. Reconstructive step was performed with displaced omentum flap and titanium mesh implants. Intraoperative histology revealed highly differentiated follicular carcinoma without extra capsule invasion in the the left lobe of the thyroid gland. Metastasis of follicular cancer with similar structure infiltrated the sternum with areas of necrosis, complete destruction of the sternum, growing into sternal ends of the ribs and intercostal muscle tissue. The surgical margins were without tumor growth. The patient was discharged on the 30th day after the operation. Currently she receives radioiodine therapy.

**Conclusions:** This clinical report shows the actuality of surgery management in group of patients with distant metastasis of DTC as a first step of complex treatment.

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[410]

**Serious thrombotic complications after liver transplantation in a patient with Budd-Chiari syndrome caused by polycythemia vera. Case report.**

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**Background:** Budd-Chiari syndrome is an obstruction of hepatic venous outflow, what can lead to fulminant disease or decompensated cirrhosis. The origin can be located anywhere from the small intra-hepatic veins to the inferior vena cava and right atrium. Liver transplantation may be a lifesaving procedure. One of the most common cause of a primary Budd-Chiari syndrome is polycythemia vera (PV). PV is an idiopathic, chronic myeloproliferative disorder that involves increased production of all cell lines, including RBCs, WBCs, and platelets. Incidence is estimated to be 2/100,000.

**Case:** A 34-year-old female who suffered from a Budd-Chiari syndrome caused by polycythemia vera (Jak2 mutation) underwent an orthotopic liver transplantation from a deceased donor on 21st March 2014. One week later performed CT Angiography revealed a hepatic artery thrombosis accompanied by a massive liquefactive necrosis of a graft. On 2nd April 2014 a urgent re-transplantation with thrombectomy of recipient portal vein were performed. After the re-transplantation flow in vessels surrounding graft was normal. In following Doppler US scans flow in a portal vein started to decrease gradually. On 17th April a US scan showed no flow in VP what was confirmed by CT Angiography. During re-operation thrombectomies of a portal vein (VP), splenic vein (SP) and superior mesenteric vein (SMV). As a complication of a postoperative more intensive antycoagulation treatment intra-abdominal bleeding occurred. During performed laparotomy with Lavage flow in HA and VP were normal. Further recovery of a patient was uneventful, the flows in vessels continue to be normal what was confirmed in a Doppler US scans.

**Conclusions:** Polycythemia vera should be considered as a risk factor for a variety of thrombotic complications after liver transplantation.

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[411]

**Middle-lower bilobectomy in patient with subsequent mucoepidermoid lung carcinoma following Hodgkin's disease.**

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**Background:** Patients who suffered from Hodgkin's disease in childhood are at approximately 18-fold increased risk of developing subsequent cancers compared with the general population.

The most commonly occurring solid malignancies in those patients include breast cancer, thyroid cancer, bone tumors, colorectal and lung cancers. Main risk factors for subsequent tumors are young age at Hodgkin's disease as well as radiation-based therapy.

**Case:** We would like to present a case of a 31-old male patient diagnosed with pulmonary mucoepidermoid carcinoma affecting the middle and the inferior lobar bronchus of the right lung. The patient gave history of Hodgkin's disease at the age of 12 treated with chemoradiotherapy. At the age of 29 he underwent strumectomy due to follicular thyroid carcinoma. As the result of the adverse localization of the lung tumor, in 2012 middle-lower bilobectomy was performed. No postoperative complications occurred. Although the patient presented with haemoptysis twice after the surgery, no bleeding from the tracheobronchial tree was detected. Furthermore, repeated bronchofiberoscopy showed no sign of recurrence of the disease.

**Conclusions:** Bilobectomy is considered a high-risk procedure for the increased incidence of postoperative complications. Survival rate strictly relates to disease stage and N status. Subsequent neoplasms and heart disease are among the most significant long-term effects of treatment of childhood cancers and represent a major source of morbidity and mortality in survivors of childhood Hodgkin's disease.

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[412]

### **Hemi-hypoglossal facial anastomosis in patient with nuclear facial palsy due to brainstem cavernous malformation**

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**Background:** Hemi-hypoglossal facial anastomosis is a reconstruction technique used in treatment of facial paralysis most commonly due to peripheral nerve injury after iatrogenic trauma during schwannoma resection. Peripheral facial palsy is far more disabling than central facial palsy as it includes all the muscles of facial expression at one side – similar symptoms are caused by damage to the facial nerve nucleus as in this case of a brainstem cavernous malformation. According to literature, hypoglossal-facial anastomosis was used only in 4 cases to treat facial nerve palsy due to damage to the facial nerve nucleus.

**Case:** A 30-year-old woman was admitted to our neurosurgical institution with a previously diagnosed cavernous malformation of the brainstem in the left part of the fourth ventricle floor. Patient underwent two episodes of bleeding from the malformation – after the first bleeding, a year before admission, the patient was not qualified to surgical treatment in another institution. The patient underwent resection of the cavernous malformation via telovelar approach. After the surgery the patient experienced multiple transient neurological deficits and permanent V and VII cranial nerves paresis on the left. Especially the facial nerve paresis was diminishing patient's quality of life as it was graded VI in House-Brackmann facial nerve grading system. Due to clinical and neurophysiological lack of improvement in the facial nerve function the patient was qualified to hemi-hypoglossal facial anastomosis 20 months after the first surgery. The patient underwent the anastomosis of facial nerve to half of hypoglossal nerve on the left and 6 months later showed first symptoms of reinnervation. The patient experienced no involuntary muscles contractions or hemifacial spasm, reported no troubles with swallowing and showed limited tongue hemiatrophy with no deviation in the midline (grade 2 in Martins scale). After 12 months the patient's score in House-Brackmann system improved to III.

**Conclusions:** Hemi-hypoglossal facial anastomosis is an effective treatment method of facial nerve paresis, not only in patients with facial nerve damage but also in patients with damage to the facial nerve nucleus.

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[413]

### **A suspicious find in a thyroid bed – is that always metastasis? A case report.**

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**Trustee of the paper:** Anna Gumińska MD

**Background:** The most common tumors that metastasize to the thyroid gland are renal cell carcinoma, colorectal carcinoma, lung carcinoma, breast carcinoma, and sarcoma. Lesions that could imitating local or distant metastases in the thyroid bed included: remnant thyroidal tissue, postoperative fibrosis, suture granuloma, not fully absorbed hemostatic agents, strap muscle with nodular contour, reactive lymph nodes, cysts, tracheal cartilage and fat necrosis.

**Case:** We report a case of 52-years-old woman who in 2005 underwent a thyroidectomy and central lymphadenectomy due to papillary thyroid cancer. Three months later an ultrasonography (USG) control revealed a suspicious mass with heterogeneous echogenicity located in the left postoperative thyroid bed, what was diagnosed as an organizing haematoma. Eighteen months later, because of hematuria, she underwent diagnostic imaging, what revealed the presence of tumor in the left kidney. Partial nephrectomy was performed and histopathology revealed a papillary cancer of the left kidney. In 2012 a control neck USG showed an enlargement of the previously described mass. The lesion showed no radioiodine uptake on scintigraphy, and the concentrations of serum thyroglobulin and antithyroglobulin antibodies were undetectable. Fine-needle aspiration biopsy of the tumor was performed and showed multinucleated giant cells, which suggested a distant metastasis of renal cancer to the thyroid bed. Because of negative results of immunohistopathological staining (CKAE1/3 and CD10) and careful analysis of all medical records, the final diagnosis of a benign lesion – a resorptive granuloma around the hemostatic agent – was established.

**Conclusions:** Absorbable haemostatic agents are often used in thyroid surgery, and inflammatory tumors caused by hemostatic agents that had not been fully absorbed are quite often observed. Although a resorptive granuloma is a typical lesion in the thyroid bed, having both – such a lesion and a history of renal carcinoma – is an unusual situation. This case is atypical and showed a particularly importance of the pathological differential diagnosis, especially in patients with a diagnosis of thyroid cancer or other cancers metastasizing to the thyroid bed.

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[414]

**Surgically treated recurring lipoma and liposarcoma of the mediastinum.**

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**Trustee of the paper:** Kasprzyk Mariusz MD

**Background:** Liposarcoma is the most common soft tissue sarcoma in adults. It localizes mostly in retroperitoneum and limbs. Surgical resection of the tumour is the main form of treatment.

**Case:** This paper presents a case of a 59-years-old patient who underwent three excisions of mediastinal tumours. In 2005 she was admitted to hospital with dry cough and dyspnoea. There was tumor of the left pleural cavity visible in chest x-ray. The patient underwent left thoracotomy. Histopathology showed lipoma with microfoci of liposarcoma. In 2011 the patient had local recurrence of tumour in the anterior mediastinum. Sternotomy and excision of the tumour was performed. Histopathology results indicated lipoma. In 2015 the patient had local recurrence of the tumour in the anterior mediastinum. The patient underwent right thoracotomy. No postoperative complications occurred. Liposarcoma was found in histopathology. The patient had adjuvant chemotherapy. She was released home in a good condition.

**Conclusions:** It might be quite problematic to differentiate liposarcoma from lipoma even for experienced pathologists. Liposarcoma rarely develops from preexisting lipoma but when it does it is associated with severe consequences.

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[415]

**Secondary cardiac tumor - an underestimated reason for a more precise follow up of oncological patients.**

**Case report.**

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**Background:** Metastases in heart appear much more often than previously assumed. Depending on the source they affect even 18,3 % of patients with neoplastic history. Due to tremendous development of oncological treatment, the problem is to increase. Symptoms are unspecific and these issues may easily be confused with any condition, not only cardiologic.

**Case:** We present the case of a female patient with neoplastic history of leiomyosarcoma of vagina resected in 2008 and three separate resections of metastases in the lungs, who was admitted to the hospital after a collapse on the previous day. Physical examination revealed ataxia in right arm and leg. Thoracic CT showed an elongated multifocal mass in the right upper lobe in direct continuity with one of the right superior pulmonary veins, left atrium and left ventricle. The patient underwent another stroke during her stay on a ward and was qualified for an urgent surgery. During the procedure a big mass occupying the left atrium was found and resected.

**Conclusions:** According to increased survival of patients with the history of cancer, the chances for development of metastases in different parts of their bodies, including heart, rise significantly. However, like in this case, metastases in heart can give no chest symptoms, hence the follow up of oncological patients must be more precise and include heart investigation.

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**Negative pressure wound therapy use in the treatment of patient with an active process of anal cancer in order to the further treatment - case report.**

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**Background:** Anal cancer occurs very rare in our population. Its treatment depends on the advancement of the process. Most of advanced lesions are treated by radiotherapy and chemotherapy, combined with surgical removal. Sometimes the combination therapy is difficult to perform, in cases when there is no possibility to protect the bowels against the direct side effects of radiotherapy due to wide excision. In most complicated and non-healing wounds, negative pressure wound therapy (NPWT) significantly improves treatment results. This kind of treatment has also its restrictions: main contraindication is an active malignant process, however, it is reported that in some cases it has achieved positive effects.

**Case:** 68 years-old man was admitted to the Proctological Outpatient Office because of perianal genital warts, which were resected using electrocoagulation and in histological examination diagnosed as condylomata acuminata. The patient reported back to the same Outpatient Office in 2 years with giant perianal tumor. Because of severe problems with passing stool, size of the lesions, sphincter infiltration and its full dysfunction, abdominoperineal rectal resection with end colostomy was performed. In the histological examination anal cancer was recognized: stage IIIA: T3N1M0 and further radiotherapy and chemotherapy were indicated. An open, non-healing wound was a contraindication for radiotherapy. Despite the potential malignancy in the wound, NPWT (with the continuous pressure -100 mmHg) was introduced. After 20 days, the wound was closed by granulation. Patient was qualified to the radiation therapy (60 Gy) combined with 5-FU and Mitomycin C, with good results. Till now the condition of the patient is good, no signs of recurrence, distal metastases, or lymph node involvement have been observed.

**Conclusions:** NPWT is an effective tool in the management of postoperative wound problems, however, the main contraindication is the potentially angiogenic effect which can aggravate malignancy or recurrence of the cancer. On the other hand, in last years some cases of using NPWT in the treatment of patients with malignant tumors has been observed. In our case, applying NPWT allowed closing the wound and introducing the main way of healing- radiotherapy. In some selected cases of oncologic patients after the surgery this method can be considered, even when the proliferation of neoplastic tissues does not affect the duration of life (paliative treatment, morbidity, old age etc.)