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The paradoxical effect of pharmacological JNK inhibition in neuroblastoma cells

Zuzanna Granek

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Introduction: c-Jun N-terminal kinase (JNK) is a well-evidenced apoptotic kinase, which plays a crucial role in executing cell death in response to a variety of apoptotic stimuli. However, under specific stress conditions in tumours, JNK may paradoxically evoke the opposite, anti-apoptotic effect while its inhibition induces apoptosis, which sheds light on the novel therapeutic potential.

Aim of the study: The primary objective of the study was to evaluate the effect of pharmacological JNK inhibition in human neuroblastoma (NB) cell line SH-SY5Y.

Materials and methods: The JNK inhibition was achieved using the small-molecule JNK inhibitor V (JNK V). XTT colorimetric assay was used for cytotoxicity analysis. SH-SY5Y cells were exposed to JNK V at 0.1-100 μM or 0.01% DMSO (solvent). Cells treated with 20% DMSO served as a positive control. In all experiments untreated cells served as a negative control. Caspase-3 colorimetric assay was performed to assess the apoptosis induction. Cells were treated with JNK V at 0.75-100 μM and 0.01% DMSO. Positive control constituted cells treated with 10μM staurosporine. The Agilent Seahorse XF Cell Mito Stress Assay was used to study mitochondrial bioenergetics. Cells were treated with JNK V at 1-100μM. The mitochondrial oxygen consumption rate (OCR) values and extracellular acidification rate (ECAR) were obtained during baseline measurements and after the addition of 2.5 μM oligomycin, 2 μM FCCP and 0.5 μM rotenone/antimycin A.

Results: XTT test demonstrated a significant cytotoxic effect of JNK V towards SH-SY5Y cells at concentrations as low as 0.75μM and higher. Importantly, the viability of cells exposed to 100μM JNK V was significantly decreased by 92% compared to the negative control. Caspase-3 assay revealed a significant increase of apoptosis induction after cell treatment with JNK V at concentrations ≥6μM as compared to the negative control. Seahorse Mito Stress Assay demonstrated that JNK V treatment significantly decreased mitochondrial OCR and ECAR values, and thus it impaired mitochondrial function in the SH-SY5Y cells in comparison to control. Surprisingly, treatment with JNK V at 25 μM decreased OCR more than 50 μM, proving that the drug effect was in fact not dose-dependent.

Conclusions: NB is the most frequently occurring extracranial childhood tumour. We may assume that targeting JNK via pharmacological inhibitors may contribute to the development of a novel targeted therapy against NB, that would selectively induce the apoptosis and mitochondrial impairment of NB tumor cells. This work was funded by Medical University of Lodz, Poland (No. 503/5-108-05/503-51-001-19-00) and the National Science Centre, Poland (grant PRELUDIUM BIS 3 no. 2021/43/O/NZ5/02068).

The apoptosis of first-trimester trophoblastic cells undergoes regulation by soluble fms-like tyrosine kinase 1 factor (sFlt-1)

Patrycja Bukowska

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Tutors: Agata Sakowicz MD PhD

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Introduction: Preeclampsia (PE) is a pregnancy-related disease characterized by a sudden increase in blood pressure (>140/90 mmHg) in previously normotensive women, often accompanied by proteinuria. Clinical symptoms of PE typically manifest after week 20 of gestation, while the underlying cause of the disease, i.e. incorrect placentation, initiates early in pregnancy. During this early phase, placental cells release sFlt-1, the factor implicated in apoptosis. Although apoptosis of placental cells is a key feature of PE, it remains unclear whether sFlt-1 directly regulates this process at different stages of PE gestation.

Aim of the study: This study investigates the impact of sFlt-1 on apoptosis process in two trophoblastic cell lines, i.e. HTR8/SVneo and BeWo, representing placental characteristics from the first and second/third trimesters of gestation, respectively.

Materials and methods: After exposing HTR8/SVneo and BeWo cells to different concentrations (1 ng/ml or 10 ng/ml) of sFlt-1 for 72 hours, the levels of cleaved Caspase 3 (cCASP3), a marker of apoptosis, were determined using the Western Blot technique. Additionally, the gene expressions coding for proteins involved in the regulation of extrinsic and intrinsic apoptotic pathways were analysed by the Real-time PCR method. The one-way ANOVA with Bonferroni's post-hoc test was used for statistical analyses.

Results: The p53, BAX, and Bcl-2 gene expressions were dysregulated in both cell lines following sFlt-1 stimulation. However, only HTR8/SVneo cells responded to sFlt-1 stimulation by upregulation of FAS gene expression (extrinsic apoptotic pathway marker) and the elevation in cCASP3 level ($p<0.001$).

Conclusions: The sFlt-1 factor is probably directly involved in the apoptosis of trophoblastic cells, particularly at the beginning of PE gestation. However, the apoptosis of placental cells observed in clinical trials in late gestation may have other reasons than the sFlt-1 activity.

Heart Failure with Preserved Ejection Fraction in Rats: a behavioral and cognitive study

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Introduction: Heart Failure with preserved Ejection Fraction (HFpEF) is a subclass of Heart Failure (HF) primarily affecting older female individuals with multiple comorbidities. HF association with cognitive impairment is well-known and patients concomitantly exhibit learning, attention, and memory deficits. However, the underlying pathophysiological mechanisms of CI in HFpEF are poorly understood. Despite the numerous animal models available to study the cardiovascular features of this syndrome, few studies focus on the cognitive impact of this disease. Therefore, HFpEF animal models' cognition and behavior is yet to be fully characterized.

Aim of the study: The present study aimed to characterize a cardiometabolic animal model of Heart Failure with Preserved Ejection Fraction (HFpEF) in terms of behavior and cognitive function.

Materials and methods: We used a well-accepted animal model of HFpEF, which mimics its metabolic and cardiovascular features, the ZSF1-Obese, and ZSF1-Lean rats as corresponding controls. ZSF1-Obese animals develop overt HFpEF at twenty weeks of age. At twenty-nine weeks of age, six ZSF1-Obese and seven ZSF1-Lean animals were submitted to the Novel Object Recognition (NOR), Object Location Recognition (OLR) and Temporal Order Recognition (TOR) tests to assess short- and long-term memory, spatial memory and temporal-order memory.

Results: ZSF1-Obese animals showed a tendency to have a lower novel-object discrimination index than ZSF1-Lean rats in the NOR test performed at 1 hour and 24 hours. Similarly, in the OLR test, ZSF1-Obese animals tended to have lower object-location discrimination index. However, the differences found in these tests were not statistically significant. In the NOR test at 48 hours, ZSF1-Obese and ZSF1-Lean rats exhibited similar discrimination indexes. In the TOR test, animals showed no differences regarding the discrimination index.

Conclusions: The results obtained seem to indicate that this model of HFpEF might induce short-term memory impairment. However, further studies are necessary to confirm this tendency, as we could benefit from increasing the number of animals studied. Further experiments are being carried out to study other cognitive domains and rats' behavior, namely anxiety and locomotor activity.

Design and in vitro analysis of vectors encoding scFv anti EGFRvIII for optimization of anti EGFRvIII immunotherapies

Jakub Bartkowiak, Agata Budny, Patrycja Antończyk, Kamil Filiks

Presenting author: Jakub Bartkowiak

Tutors: Tadeusz Strózik, PhD; Tomasz Wasiak, PhD; Marcin Pacholczyk, PhD; Ewelina Stoczyńska-Fidelus, DSc, Prof. UM

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Introduction: Glioblastoma (GB) represents the most aggressive primary tumor within the central nervous system, characterized by mutations affecting the extracellular domain of the epidermal growth factor receptor (EGFR). Amplification of this gene is prevalent in 50-60% of patients, with the most common mutation, EGFRvIII, present in 35-60% of cases, involving the deletion of exons 2-7. This genetic alteration leads to the formation of a specific protein exclusively found in tumor cells, presenting a promising therapeutic target for CAR-T therapy.

Aim of the study: This research aims to develop a single-chain variable fragment (scFv) antibody specifically targeting EGFRvIII, with potential diagnostic and therapeutic applications in EGFRvIII-positive GB.

Material and methods: Computational modeling, utilizing BioLuminate and ZDOCK, was employed to optimize the EGFRvIII structure and facilitate antibody design. Mutant antibodies were screened through docking simulations to identify promising candidates. Plasmid synthesis, based on optimized sequences of heavy and light IgG1 chains, was followed by experimental validation, including transfection and lentiviral transduction in HEK293T cells. Antibodies isolated from culture medium underwent molecular analyses such as Western Blotting and immunocytochemistry on glioblastoma cells.

Results: Computational simulations identified candidate scFvs with increased affinity for EGFRvIII compared to EGFRwt (wide type EGFR). Initial experiments with a plasmid-based antibody showed promising results in detecting EGFRvIII in glioblastoma cells. However, further refinements in the heavy and light chain sequence are necessary to achieve the best binding specificity to the mutant receptor.

Conclusions: This study presents a comprehensive approach to developing an scFv antibody against EGFRvIII, integrating computational design with experimental validation. Despite challenges in antibody synthesis, the research offers valuable insights for future investigations in GB immunotherapy.

Financial support for this research was provided by the Polish National Science Centre, grant number: 2021/05/X/NZ7/01079, and the Medical University of Lodz as part of the 'UMed Grants' program for students in the academic year 2022/23."

Comparison of the expression levels of remyelination-related miRNA-146 and miRNA-181a in peripheral blood mononuclear cells of patients with multiple sclerosis (MS) and a healthy control group.

Juliusz Żak

Presenting author: Juliusz Żak

Tutors: prof. dr hab. n. med. Ireneusz Majsterek, prof. dr hab. n. biol. Tomasz Popławski, dr n. biol. Karolina Przybyłowska-Sygut

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Introduction: The progression of disability in multiple sclerosis is mostly due to ongoing demyelination, which leads to axonal and neuronal damage and loss in the central nervous system. However, remyelination can occur, restoring function and preventing the degeneration of damaged neurons. Several types of peripheral immune cells are involved in or otherwise influence those mechanisms, and miRNAs play a role in the activity of these cells during the development of MS and other demyelinating diseases. The activity of Th1 and Th17 lymphocytes is associated with demyelination and disease progression, while Treg lymphocytes play an important role in promoting remyelination. miRNA-146, which is involved in the regulation of CNS cells during remyelination, additionally blocks Th17 differentiation induced by IL-6 and IL-17 in CD4+ T cells during EAE, and deficiency of this miRNA inhibits Treg differentiation. miRNA-181a, the level of which is reduced in the white matter of MS patients, simultaneously promotes Treg differentiation and inhibits Th1 differentiation and pro-inflammatory macrophage polarization.

Aim of the study: The study's aim was to comprise the expression of miRNA-146 and miRNA-181a in peripheral blood mononuclear cells of MS patients and people without neurodegenerative diseases.

Materials and methods: The research material included blood samples from 16 patients diagnosed with MS at various stages of the disease and from 12 healthy people. The expression level of the tested miRNAs was determined using the Real-Time PCR technique.

Results: Comparing the miRNA expression profile, a significantly lower level of miRNA-181a was found in peripheral blood mononuclear cells from MS patients compared to healthy control group, but no statistically significant differences were found in the expression level of miRNA-146.

Conclusions: The obtained results may indicate a correlation between miRNA-181a expression and the development of MS.

Assessment of the selected immune checkpoint inhibitors influence on the mutual in vitro interactions between immune and glioblastoma cells

Karolina Ejsmont-Sowała, Aleksandra Starosz

Presenting author: Karolina Ejsmont-Sowała

Tutors: Assoc. Prof. Kamil Grubczak

Affiliations: Medical University of Bialystok

Introduction: Glial tumor is the most common primary brain tumor in adults. Unfortunately, the five-year survival rate is estimated at around 6-7%. Applied treatment of glioblastoma is mainly based on surgical resection with the addition of radiotherapy. Recent knowledge revealed glioblastoma to be an immunogenic tumor due to its interactions with immune cells. Such properties indicate the possibility for an immunotherapeutic approach for those malignancies where conventional chemotherapy was insufficient. Among numerous immune checkpoint inhibitors (ICIs), anti-CTLA-4, anti-PD1, or anti-PDL-1 antibodies are the most extensively studied and implemented in clinical practice. However, despite their efficiency confirmed in lung cancers or melanoma, application in glioblastoma still requires further studies.

Aim of the study: We evaluated the in vitro response of glioblastoma cell line co-cultured with peripheral blood mononuclear cells (PBMC) supported with immune checkpoint inhibitors.

Materials and methods: Glioma U-87 MG cells were cultured in the presence of PBMC and selected immune checkpoint inhibitors: anti-CTLA-4, anti-PD-1, anti-PD-L1. Cells were co-cultured directly or indirectly (separated by membranes). After 48 hours, cancer cells were collected to assess the changes in proliferation and viability by flow cytometry staining. Cell culture supernatants were used to assess secreted cytokines.

Results: Firstly, presence of the PBMCs significantly reduced the proliferation of glioma cells. We did not find an application of anti-CTLA-4, anti-PD-1, or anti-PDL1 to enhance the observed effect. Furthermore, only direct interactions between immune and cancer cells seemed to effectively reduce expansion of the latter one. Indirect interaction was only able to inhibit further proliferation of cancer cells, especially in the presence of anti-CTLA-4 and anti-PD-1 antibodies. Anti-PD-L1 or anti-PD-1 antibodies slightly reduce the secretion of proinflammatory IFN-gamma and TNF-alpha. On the other hand, anti-CTLA-4 induced higher production of IFN-gamma and IL-6, with simultaneous release of immunosuppressive IL-10.

Conclusions: Immune cells exert their anti-cancer effects through cellular mechanisms predominantly. We did not find direct advantages of immune checkpoint inhibitor application in glioma cells in vitro. Nevertheless, blocking of the tested proteins significantly influenced the inflammatory environment. Further investigation would be essential to establish the actual in vivo potential of ICIs in glioblastoma therapy.

The influence of the microbiological media on the cefiderocol disc diffusion susceptibility testing results.

Maciej Saar

Presenting author: Maciej Saar

Tutors: Filip Bielec MD, PhD; Dorota Pastuszak-Lewandoska MSc, PhD, ScD

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Introduction: Cefiderocol is a new cephalosporin–siderophore conjugate antibiotic highly effective against infections caused by extensively-drug-resistant Gram-negative bacilli. Antimicrobial susceptibility testing of cefiderocol is challenging due to its unique mechanism of action which puts the microdilution as the most and only reliable method. Easier and cheaper test accepted by EUCAST for cefiderocol antimicrobial susceptibility is disc diffusion. However, the quality control results of this method provide evidence that there is still an area of technical uncertainty.

Aim of the study: This study aimed to test whether the type of medium on which the tested strain was initially cultured affects the cefiderocol susceptibility disc diffusion testing.

Materials and methods: The disk diffusion susceptibility test for cefiderocol was performed on 50 Klebsiella pneumoniae MBL and 25 Acinetobacter baumannii carbapenem-resistant clinical isolates following the EUCAST methodology. Isolates were previously cultured on 3 different kinds of microbiological media, routinely used in clinical microbiology laboratories: Blood Agar, MacConkey Agar, Chromogenic Agar; acquired from 3 different manufacturers. Cefiderocol minimal inhibitory concentration (MIC) for all tested strains was determined using microdilution.

Results: All growth inhibition zones had a statistically significant negative correlation with MIC values. No significant differences were observed between the inhibition zones on Blood and MacConkey Agar from different manufacturers, and no significant differences were observed when comparing Blood Agar vs. MacConkey Agar. Comparing Chromogenic Agar from different manufacturers, and in comparison, to other media, significant differences were observed.

Conclusions: Blood and MacConkey Agar results should be carefully examined – colonies grown on these media can be used in cefiderocol susceptibility testing. Chromogenic Agar should not be used for susceptibility testing.

Classification and clinical meaning of the coracobrachialis muscle

Marta Pośnik, Nazar Włodarczyk, Alexander Stolarczyk, Nicol Zielinska

Presenting author: Marta Pośnik

Tutors: dr hab. n. med. prof. UM Łukasz Olewnik

Affiliations: Medical University of Łódź

Introduction: Anterior muscular compartment of the arm is composed of biceps brachii, brachialis and coracobrachialis. Numerous anatomical variations within described compartment were noted - from additional muscles to variable course of its constant structures.

Aim of the study: The aim of this presentation is to describe variations and present classification of the coracobrachialis muscle, since relations of its morphology with surrounding structures might be of great clinical significance.

Materials and methods: Fifty two (26 left and 26 right, 26 male and 26 female) upper limbs fixed in 10% formalin solution were carefully examined.

Results: Three main types of the coracobrachialis morphology were distinguished based on the number of bellies. Type I (50%), characterised by a single muscular head, that originated from the coracoid process; Type II (42,3%), composed of two muscular heads, divided into subtypes distinguished based on their origin: Type IIA where one head originated from the coracoid process posteriorly to the tendon of the biceps brachii and the second head from the short head of the biceps brachii, and Type IIB, in which both heads originated from the coracoid process; Type III (7,7%), characterized by three heads - two originated from the coracoid process and the third from a short head of the biceps brachii. Additionally, two types of relation between coracobrachialis and musculocutaneous nerve were noted.

Conclusions: Coracobrachialis is characterised by high variability regarding its morphology and relations with the musculocutaneous nerve. A thorough understanding of its anatomy is necessary for the clinicians and anatomists working in area of the anterior compartment of the arm, due to the possibility of pathologies connected with inconstant presentation of the coracobrachialis.

Evaluation of the properties of GLP-1 receptor and its interaction at molecular level with quercetin obtained from Annona muricata

1 - Martyna Borkowska, 2 - Julissa Vilca Quispe

Presenting author: Martyna Borkowska

Tutors: 3 - Badhin Gómez Valdez, PhD, Professor of University

Affiliations: 1- Medical University of Lodz; 2, 3 - Catholic University of Santa Maria

Introduction: Diabetes Mellitus (DM), a prevalent and chronic metabolic disorder, continues to pose a significant global health challenge. The GLP-1r plays a crucial role in the treatment of DM, since as a part of the incretin system, it regulates glucose levels by stimulating insulin secretion and inhibiting glucagon release. Quercetin (QRC) is a flavonoid that has been proven to exert protective actions in terms of cancer, fibrosis, oxidative stress and inflammation. The GLP1r modulation by QRC could potentially enhance insulin secretion, improve insulin sensitivity, and contribute to glycemic control.

Aim of the study: The aim of the study was to determine the nature of interaction at molecular level between GLP-1r and QRC obtained from Annona muricata and assess its suitability as a potential candidate for the development of innovative therapeutic strategies for diabetes.

Materials and methods: The investigation of the interaction between the intermembrane GLP1r and Q in a physiological environment was performed using computational simulations with the Chimera software. The three-dimensional structures of the GLP1r and Q were retrieved from the Protein Data Bank (PDB) using the appropriate PDB identification code. To mimic the physiological environment, a lipid bilayer membrane surrounding the GLP1r was constructed through the inflated method within the GROMACS software package. The oplsaa force field was constructed for the membrane.

Molecular docking simulations were conducted to explore the potential binding interactions between GLP1r and Q. The Autodock Vina software was utilised to predict the favorable binding poses and estimate the binding affinities of the GLP1r-Q complex. Subsequently, the system, consisting of the GLP1r-Q complex within the membrane environment, underwent molecular dynamics simulation.

Results: Using Autodock Vina, 1000 simulations of the interaction position between GLP-1r and Q were performed, the highest stable position obtained was the one with the value of -9.258 kcal/mol. Npt of 50 ns was performed and during the molecular dynamic phase QRC interacted with GLP1r.

Conclusions: In conclusion, this study contributes to our understanding of the interaction between the GLP1r and QRC, shedding light on their binding mechanisms and dynamic behaviour. The successful docking and molecular dynamics simulations provide a foundation for future research endeavors and the development of targeted interventions for diabetes mellitus. Further experimental validation of the GLP1r-QRC interaction will be instrumental in advancing our knowledge and potentially revolutionizing approaches to diabetes treatment.

What are the perceptions and usage patterns of tobacco heating systems among students?

Oskar Makuch, Joanna Najbar

Presenting author: Oskar Makuch

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Introduction: The adverse effects of smoking are widely acknowledged, resulting in a reduction of men's lifespan by 13.2 years and women's by up to 14.5 years. Although medical students are well-informed about the health risks associated with smoking, a considerable number choose to transition from conventional cigarettes to alternative tobacco products such as tobacco heating systems.

Aim of the study: The aim of the study was to evaluate students' perceptions and usage patterns of electronic cigarettes and tobacco heaters, along with gauging their awareness and degree of nicotine dependence.

Materials and methods: The questionnaire was administered to a randomly chosen sample of 280 students. Their nicotine addiction levels were evaluated using the Fagerström test, and the data collected underwent analysis using STATISTICA 12.0 statistical software.

Results: The research findings reveal that 29% of responders are presently cigarette smokers and 7% smoked in the past, but quit. Notably, approximately every seventh respondent (69%) has experimented with tobacco heating systems at least once. Studies have demonstrated that the academic field of study significantly influences students' perceptions of emerging tobacco products, though not necessarily their actual usage. Both 49.3% of respondents from the medical group and 55.3% of non-medical respondents asserted that tobacco heating systems lack sufficient testing, but remarkably, none of the medical students asserted that the aerosol produced contains solely nicotine and minimal volatile substances, whereas 19.7% of non-medical students endorsed this belief. For 50.8% of non-medical students, heat-non-burn systems are perceived as better alternatives than traditional cigarettes, whereas for medical students, this sentiment is shared by only 33.8%. Moreover, it was observed that around 70.77% of respondents acknowledged using tobacco products primarily or exclusively during alcohol consumption, indicating a distinct social propensity for tobacco use.

Conclusions: The results highlight the necessity of implementing campaigns and legal regulations regarding the use and promotion of heat-non-burn systems, particularly targeting young individuals who might perceive them as a healthier alternative to traditional cigarettes. However, the relatively brief observation period restricts the definitive determination of whether the utilization of these devices correlates with reduced life expectancy or the development of various diseases, including cancer.

CBD as a new modulator of excessively deposited lipid precursors of inflammation in visceral and subcutaneous adipose tissue

Patryk Chabowski, Lara Swierkot

Presenting author: Patryk Chabowski

Tutors: Karolina Konstantynowicz-Nowicka, PhD

Affiliations: Medical University of Bialystok

Introduction: In today's day and age we are facing an epidemic of unhealthy diet patterns coupled with irregular physical activity. This type of lifestyle leads to excessive storage of adipose tissue which often results in chronic low-grade inflammation development and occurrence of other diseases such as metabolic syndrome. For this reason medicine is taking great interest in Cannabidiol (CBD) which has been found to possess a high anti-inflammatory activity. CBD as a non-psychoactive cannabinoid obtained from medicinal and fiber-type Cannabis sativa L. plants may be used as a powerful tool to fight against obesity and its comorbidities.

Aim of the study: The purpose of this study is to evaluate if CBD can be used to mitigate the development of inflammation in its very early stages, which has been increasingly occurring in today's societies.

Materials and methods: The experiment was conducted on 40 male Wistar rats which were housed in standard laboratory facilities and after seven days of adaptation to the animal holding conditions, rats were randomly allocated into four experimental groups, each group consisting of 10 rats. The animals from the Control and CBD groups were fed a standard rodent diet, while the rats from HFD and HFD+CBD were fed a high-fat diet for 7 weeks.In the last 14 days of the experiment CBD was administrated intraperitoneally to CBD and HFD+CBD groups while the HFD and Control group were administrated intraperitoneally only the CBD solvent.At the end of the experiment the samples of subcutaneous and visceral adipose tissue were taken from animals. Gas-liquid chromatography (GLC) was used to analyze the concentration of arachidonic acid in lipid fractions of SAT and VAT. Moreover the Western Blot (WB) technique was used to analyze the expression of enzymes from inflammation pathways and for analysis of cytokines and chemokines contents the multiplex assay procedure was used.

Results: Additionally, we found that CBD reduced the content of the arachidonic acid as being an inflammatory lipid precursor in both fat depots of HFD fed rats. Also, we found that CBD increased interleukin 4 (IL-4), interleukin 13 (IL-13) and macrophage colony-stimulating factor (M-CSF) contents in VAT, but decreased interleukin 10 (IL-10) content in SAT. In addition we found that in the HFD+CBD treated groups expression of COX-1 and COX-2 in both SAT and VAT were decreased. Moreover in SAT the expression of 5-LOX and 12/15-LOX were decreased, while in VAT only the expression of 12/15-LOX was decreased.

Conclusions: The data obtained from this study clearly showed the anti-inflammatory effects of CBD. It seems to be even more important because CBD diminished lipid precursor of inflammation which is a very early stage of inflammatory process development. Moreover, observed anti-inflammatory properties of CBD were more pronounced in subcutaneous fat depots. Observed changes proved that CBD may be a possible drug candidate effective against obesity and its comorbidities.

Hepatoprotective effect of GDF11 in acute liver injury

Wojciech Król, Weronika Machelak, MSc

Presenting author: Wojciech Król

Tutors: Marta Zielińska PhD, Professor of University

Affiliations: Medical University of Łódź,
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Introduction: Liver plays a vital role in the maintenance of the homeostasis, however there are multiple factors, as viruses, drugs, or alcohol which can lead to its acute injury. Transforming Growth Factor-β family is entangled in the mediation of that injury and recently one of the novel members – Growth and Differential Factor 11 (GDF11) was proposed as a new possible agent essential to maintain liver conditions. GDF11 is known as a molecule participating in carcinogenesis, inflammation and rejuvenation, and data indicate in may also be a crucial factor in liver injury modulation.

Aim of the study: The aim of our study was to validate a mouse model of the liver injury and then to determine if GDF11 acts as a new hepatoprotective drug.

Materials and methods: C57/B6 mice were sensitized with D-galactosamine (D-GalN) injected at the dose of dosage 0.7 mg/g of body weight (b.w.) intraperitoneally (i.p.) and after 30 min TNF-α was injected (0.1 μg/per mouse i.p.). After 6 hours mice were sacrificed, and liver tissues and blood were collected. Liver tissue was stained with hematoxylin and eosin to determine liver injury microscopically, mRNA levels of pro-inflammatory molecules, including Il1b, Il4, Il6, Il18, Nos2, Ptgs2, Tnfα and Il10 were measured. In next step, we verify if recombinant GDF11 (0.1 or 0.6 mg/kg b.w. i.p.) injected 15 min prior D-GalN and TNF-α influences liver injury.

Results: Firstly, we validated the liver injury and observed the necrotic lesions and inflammatory cell infiltration of the tissues after D-GalN and TNF-α treatment as compared to controls. The expression of pro-inflammatory molecules at mRNA level was also increased. Interestingly, we found that Gdf11 expression was increased in mice with liver injury as compared to healthy mice. GDF11 treatment at the dose of 0.1 mg/kg b.w. decreased the expression of the inflammatory markers: Il1b, Il4, Il6, Il18, Nos2, Ptgs2. Histological staining confirmed that GDF11 may reverse the necrotic and inflammatory lesions of the liver tissues.

Conclusions: GDF11 may play a vital role in the hepatic inflammation and can be proposed as a hepatoprotective agent.

PHYSIOTHERAPY

9th of May 2024

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Physical fitness assessment of physiotherapy students after Covid-19 pandemic - a pilot study

Piotr Kuliś, Beata Czechowska, Msc, Marta Karbowiak, Msc, Piotr Stasiak, Msc, Piotr Siciński

Presenting author: Piotr Kuliś

Tutors: Beata Czechowska, MSc; Marta Karbowiak, Msc; Sławomir Motylewski, PhD

Affiliations: Medical University of Łódź

Introduction: The COVID-19 pandemic has had a gross impact on how people function. This aspect also concerns one of the key elements of life, namely physical activity. Scientific publications show a decline in physical activity, and the COVID-19 pandemic is pointed to as one of the reasons for this.

Aim of the study: The aim of this study is to assess selected motor and fitness characteristics in physiotherapy students.

Materials and methods: A total of 140 (94 females and 46 males) physiotherapy students at the Medical University of Łódź participated in the study. The mean age was 20 years. Physical fitness was assessed using the International Test of Physical Fitness (IPFT).

Results: The study involved 140 (F - 94, M - 46), aged between 19 and 24, second-year physiotherapy students at the Medical University of Łódź. Most of the subjects had BMI values within the normal range. They were underweight in 1 person, underweight in 7 persons, overweight in 29 persons and obese to the first degree in 3 persons. Physical activity in accordance with WHO recommendations was declared by as many as 74% of the male and 49% of the female respondents. Among the female participants, the mean abdominal muscle strength test was within the normal range (41.59 points ±11.08), and the assessment of flexibility through forward bending of the trunk exceeded the upper limit of normal (61.89 points ±10.77). The other mean values of the tests performed were below normal. In the male group, only the hand strength test was below the point norm (33.07±1.58), while all the other tests performed were within the norm. The point values for the individual tests between 40 points and 60 points were taken as the norm.

Conclusions: The study shows that physical activity should be promoted among physiotherapy students and that they should be encouraged to adopt an active lifestyle. Physical fitness in this professional group is essential for the delivery of health services, including patient education on physical activity.

Physioprophylaxis - what it is according to other medical professionals

Piotr Siciński, Beata Czechowska (MSc)

Presenting author: Piotr Siciński

Tutors: Beata Czechowska (MSc), Marta Karbowiak (MSc)

Affiliations: Medical University of Łódź

Introduction: Physioprophylaxis is a health service provided by physiotherapists. Its main task is to counteract disability by educating the patient, promoting physical activity to improve or maintain people's fitness and life quality

Aim of the study: The aim of the study is to assess the knowledge of the concept of physioprophylaxis by medical care workers working in hospitals in the Łódź Voivodeship, who are not physiotherapists.

Materials and methods: The study involved 563 (458F, 105M) healthcare professionals, mainly physicians and nurses. The study was conducted based on the author's questionnaire. The method used was diagnostic survey.

Results: The majority, i.e., 64.8% of the respondents, had not heard of the concept of physioprophylaxis. Nearly 60% of healthcare workers could not answer the question of what they thought physioprophylaxis was about. The most frequently given answers among those familiar with this concept were: patient education, promotion of physical activity and prevention of musculoskeletal system disorders.

Conclusions: Most of the health care professionals surveyed have not heard of physioprophylaxis and are unable to define it correctly. Therefore, it is worth introducing educational activities in the area of physioprophylaxis, as it is one of the health services provided by physiotherapists.

Will Mobile Applications Have a Chance to Replace the Traditional Methods of Patient Rehabilitation?

Angelika Roszczyk, Piotr Pawlak, Michał Pruszyński

Presenting author: Angelika Roszczyk

Tutors: Magdalena Pruszyńska, PhD; Sławomir K. Tadeja, PhD

Affiliations: Medical University of Lodz, Institute of Information Technology, Lodz University of Technology, Department of Internal Medicine, Rehabilitation and Physical Medicine, University of Cambridge

Introduction: The number of people using mobile devices on a daily basis is continuously increasing. Incorporating such technology into the rehabilitation program for stroke patients can intensify its attractiveness and boost patients' engagement in the demanding and long-standing process of regaining motor function. Such exercises can be performed at any time and place, which can affect the frequency and duration of training.

Aim of the study: Comparison of the efficiency of upper limb exercises based on games of skill and tablet usage with conventional exercises performed by patients after ischemic stroke (acute and subacute stage).

Material and Methods: The study involved 28 patients diagnosed with ischemic stroke from the Department of Neurology and Stroke Medical University of Lodz. Patients were randomly assigned to two groups equal in size. Both groups underwent additional upper limb exercises for six days, 20 minutes each day. The study group used a tablet app, while the control group performed classical exercises. The study utilized a survey, dynamometers (thumb grip, hand grip, MicroFET), the Nine Hole Peg Test (NHPT), and a test of speed in the insertion and removal of 10 balls. The purpose-built tablet application was developed using the Unity game engine as the main software platform.

Results: The average age of the participants: 71.8 ±7.4 years. In the tablet group, there was an increase in thumb muscle strength from 5.3 to 6 kg ($p < 0.05$) and grip strength from 14.4 to 20.4 kg ($p \leq 0.001$). Rehabilitation progress (grip strength), i.e., the difference between groups was also significant ($p < 0.05$). In the tablet group, muscle strength increased on the affected side: entire upper limb from 5 to 6.4 kg ($p \leq 0.001$), shoulder joint: 5.8 – 7.3 kg ($p \leq 0.01$), forearm: 4.8 – 6.2 kg ($p \leq 0.01$), wrist joint: 3.6 – 5 kg ($p \leq 0.001$). Rehabilitation progress (wrist joint) – the difference between groups: $p < 0.05$. The time in the NHPT decreased from 1 min 46 to 52 s ($p < 0.05$) in the tablet group. For the 10-ball test, there was a decrease in insertion time on the affected side from 20 to 14 s (tablet group), $p \leq 0.01$ and 30 – 20 s in the control group ($p < 0.05$). In the tablet group, the removal time on the affected side decreased from 31 to 18 s ($p \leq 0.01$). More patients in the tablet group than patients exercising classically rated the exercises as interesting (86% vs. 43%). The willingness to continue exercising at home was declared by 93% of patients from the tablet group and 86% from the control group.

Assessment of the Impact of Cardiac Rehabilitation on Diaphragm Mobility in Patients with Cardiovascular Dysfunctions Using Rehabilitative Ultrasonographic Imaging

Krzysztof Szablewski, Mateusz Madejski

Presenting author: Krzysztof Szablewski

Tutors: Katarzyna Glibov, PhD

Affiliations: Department of Internal Diseases, Rehabilitation and Physical Medicine, Medical University of Lodz

Introduction: A pilot study of diaphragm mobility in patients with cardiovascular dysfunctions undergoing rehabilitation processes during their stay in the cardiac rehabilitation department. The diaphragm plays many important roles in the proper functioning of the human body. The study examines how standard procedures of the rehabilitation process affect its functioning.

Aim of the study: The aim of the study is to determine the impact of cardiac rehabilitation on the mobility of the diaphragm during resting and forced breathing, examined using physiotherapeutic ultrasonographic imaging; as well as parameters of forced resting spirometry (FEV1, PEF, FVC, FEV1/FVC), and lower rib mobility of the thorax. The next goal is to investigate the correlation of the above factors with indicators and indices (BMI, WHR, WHtR) and 6MWT determining the condition of the studied patients.

Materials and methods : The studies were conducted from January 9th to March 12th, 2024, in the Cardiac Rehabilitation Sub-department of the Department of Internal Diseases, Rehabilitation and Physical Medicine, Medical University of Lodz. Twenty patients referred for rehabilitation due to cardiovascular diseases were examined. The largest group of patients, 17 individuals, consisted of people who had experienced a heart attack (15 underwent PCI, 2 CABG). The rest of the patients had undergone cardiothoracic surgeries. The research was conducted twice, before and at the end of the rehabilitation process. The conducted examinations included USG of the left diaphragm dome, forced resting spirometry, anthropometric measurements, subjective examination, and the 6MWT.

Results: The mobility of the left diaphragm dome during resting and forced breathing after the rehabilitation process was significantly statistically higher than during first examination. No significant statistical impact of smoking on resting mobility was found during the first examination. Diaphragm mobility during forced breathing significantly differed between non-smoking patients and patients who had smoked in the past. No significant differences were found in spirometry parameters before and after rehabilitation, except for the peak expiratory flow rate (PEF) indicator. During the study, no correlation was detected between the distance of the 6MWT, BMI, WHR, WHtR, and diaphragm mobility or its change before and after the rehabilitation process.

Conclusions: Cardiac rehabilitation positively influence diaphragm mobility. The study is worth continuing in order to confirm the observed trends and to re-examine the occurrence of correlations in a larger group of subjects.

Examination of the impact cardiological and pulmonolgical diseases have on the range of motion of cervical and thoracial vertebrae

Marcin Kluska, Marcin Świątczak, PhD, Katarzyna Glibov, PhD

Presenting author: Marcin Kluska

Tutors: Prof. Robert Irzmański, PhD

Affiliations: Medical University of Łódź

Introduction: On the range of motion of the spine can influent a lot of factors such as structural changes, diseases and injuries. Many of cardiological and pulmonary diseases can influent on movement in vertebrae joints.The reason of changes are sympathetic and parasympathetic nerves.

Aim of the study: Examination range of motion in cervical and thorasic vertebrae in patients with cardiologic nad pulmonary diseases without comorbidity.

Materials and methods: In 2023, reserch has begun. Test included 36(13 F,23 M) people, 18 with cardiological diseases and 12 with pulmonological diseases. Last 6 patients were without cardiological and pulmonological dissease . All of patients are without osteoporosis and comorbidity. Examination depend on active and pasive movement in cervical and thoracic vertebrae. Patients were examinate in Internal Medicine Clinic, Rehabilitation and Physical Medicine and Clinical Department of General Pulmonology and Oncology.

Results: All the patients before examination complain about pain in vertebrae. Most of them, 80% of patients had problems with active rang of motion in one part of vertebrae or in both. Cardiological patiens had problem with pasive movement between 4 and 8 thoracic vertebrae. Pulmonological patients mainly had problems with pasive movement between 3 to 8 thoracic vertebrae. Group patients with no dissease had alomost no problems with pasive movements.

Conclusions: Cardiological and pulmonological diseases have real impact on the range of motion in cervical and thoricial vertebrae.

Dexterity Mobile Games in Upper Limb Rehabilitation for Ischemic Stroke Patients: Dead-end or Breakthrough?

Michalina Niedźwiecka, Mateusz Jagielski, Michał Pruszyński

Presenting author: Michalina Niedźwiecka

Tutors: Magdalena Pruszyńska, PhD, Sławomir K. Tadeja, PhD

Affiliations: Student Scientific Club - Digital Technologies in Rehabilitation, Medical University of Lodz, Medical University of Lodz, Institute of Information Technology, Lodz University of Technology, Department of Internal Medicine, Rehabilitation and Physical Medicine, Medical University of Lodz, University of Cambridge

Introduction: Stroke is the leading cause of long-term disability. Therefore, it is necessary to search for safe and low-cost forms of therapy that will increase patients' eager involvement in the re-education process during the most intense brain reorganization period after damage. To that end, we proposed the study that included exercises involving dexterity games with physical maze games and their digital counterparts.

Aim of the study: To assess the exercise impact on strength, and agility of the limb for ischemic stroke patients using dexterity games, with the use of physical and mobile-based versions of the maze in early stages of rehabilitation.

Materials and methods: 30 patients after stroke, hospitalized in the Department of Neurology and Stroke Medical University of Lodz. Patients were assigned randomly to one of the groups carrying out additional upper limb exercises for six days. The study group used a tablet, while the control group exercised with a physical maze game. The experiment included an inquiry form, a dynamometer for muscle strength assessment (e.g. JAMAR, MicroFET), the Nine Hole Peg Test (NHPT) and the 10-ball test (insertion and removal) for manual dexterity assessment. The tablet application, designed for this specific purpose, was implemented using the Unity game engine.

Results: The average age of the analyzed group was 73.4 ± 7.2 years, the study group (73.1 ± 9.7), the control group (73.8 ± 3.6). In the tablet group (on the affected side), there was an increase in pinch grip strength from 4.6 to 6 kg, $p < 0,05$, and the muscle strength of the entire upper limb: from 3.3 to 4.7 kg, $p < 0.05$, shoulder joint from 5.4 to 6.8 kg, forearm from 3 to 4.5 kg, $p < 0.05$. The wrist joint: the muscle strength increased on affected side: from 2.5 to 4 kg, $p \leq 0.001$ (maze group), and on unaffected side from 3.2 to 4.3 kg, $p < 0.05$ (tablet group). Reduction of time: (a) in the NHPT in the tablet group (affected side) by 22 s, $p < 0.05$, (b) in the 10-ball test in the tablet group (unaffected side) by 4 s (insertion), $p < 0.05$ and by 6 s (removal), $p \leq 0.01$, whereas in the maze group by 4 s (removal), $p \leq 0.001$.

The average effectiveness rating of the exercises was 4.4/5 for the tablet group and 4.2/5 for the maze group. Reported benefits: improvement in hand dexterity (80%), concentration (50%), motivation (40%). In 53% of all patients, there was no fatigue during the exercises. 90% of patients wanted to continue the exercises.

Conclusions: Upper-limb exercises using skill games (both traditional and digital versions) are a valuable addition to the very early rehabilitation program for patients after ischemic stroke. Mobile applications and tablets result in better outcomes compared to traditional models. Furthermore, both types of exercises are well tolerated and highly rated by patients. Further research on a larger number of patients is needed.

Evaluation of the impact of kinesitherapy on improving performance in patients with heart failure

Kinga Niewolska, mgr Patrycja Grzędowska, mgr Jarosław Rakoczy, Michał Flamholc MD

Presenting author: Michał Flamholc MD

Tutors: dr n.med. Katarzyna Glibov

Affiliations: Medical University of Łódź

Introduction: Coronary heart disease is the most common disease of the cardiovascular system. It leads to acute and chronic heartfailure. The location of ischemia is connected to the place where formation of atherosclerotic plaques in the coronary arteries takes place. The functioning of the heart as a pump is impaired and it is no longer available to adequate supply of a blood to a body tissues.

Aim of the study: The aim of the study is to investigate how exercise treatment improves performance in patients with heart failure. It also aims to show how exercise is an irreplaceable medicine for health.

Materials and methods : Research was conducted at the Clinical Hospital of WAM at Plac Gen. Józefa Hallera 1 in Łódź. The study involved 70 patients with confirmed heart failure detected during an electrocardiography (ECG) examination.

The 6MWT test was used to assess performance. It involved the patient having to cover a flat section of a hospital corridor of approximately 30 m. Chairs were placed at both ends so that the patient could rest when he needed it. The distance covered by the patient at a calm, individual pace in 6 minutes was checked. He could stop and rest if he felt the need. When shortness of breath or heart pain occurred, the patient could stop the test. The subject was instructed to dress comfortably, wear sports shoes and, preferably, not to eat large meals before the examination. If the patient has selected medical supplies on a daily basis, the test was performed using them. Before starting the 6MWT test, blood pressure and blood saturation were measured and the level of fatigue was checked using the modified Borg scale. The same steps were repeated after the test.

General physical fitness was also checked using the Fullerton test. It involved the patient completing 6 tasks that checked overall fitness:

- Arm curl
- 30-second Chair Stand
- Back Scratch
- Chair Sit-and-Reach
- 6 MWT
- 8 foot up-go

The tests were complemented by the SF-36 quality of life questionnaire.

Results: Physical activity improved the results of 6MWT in the majority of patients. The avarage improvement achieved by the patients was 64m. The biggest improvement was 240m. Also in 8 foot up-go test avarage improvement of the paitients was arround 0.6 seconds per patient.

Conclusions: Physical activity has a significant impact on improving the efficiency of patients with diagnosed heart failure.

PHD SESSION

9th of May 2024

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Coordinators:

Julia Barczuk

Olga Racińska

…●●●…

Jury:

Prof. Piotr Białasiewicz

Małgorzata Mrowicka, PhD

Monika Kujawa-Hadryś, PhD

Prof. Michał Karbownik

Inhibition of PERK-mediated Unfolded Protein Response signaling pathway as a potential therapeutic strategy in colorectal cancer.

Wojciech Wiese MD; MD Natalia Siwecka, PhD Grzegorz Galita, PhD Wioletta Rozpędek-Kamińska

Presenting author: Wojciech Wiese MD

Tutors: Prof. Ireneusz Majsterek

Affiliations: Medical University of Lodz

Introduction: Colorectal cancer (CRC) is one of the most common malignancies and one of the leading causes of cancer deaths. There is still a lot we do not know about how CRC starts, but many studies show that the Unfolded Protein Response (UPR) signaling pathway is involved in the development of CRC.

Aim of the study: The purpose of this study was to evaluate the biological activity of the small-molecule PERK inhibitor NCI 12487.

Materials and methods: We analyzed the biological efficacy of the NCI 12487 inhibitory molecule. These assessments were conducted on two distinct commercially sourced cell lines: the human colon adenocarcinoma cell line HT-29 and the normal human colon epithelial cell line CCD 841 CoN. Cells were treated with NCI 12487 at a concentration range of 0.75 μM to 100 μM or 0.1% DMSO for 16, 24, and 48 h. Cells treated with nocodazole at a concentration of 1 μM for 16 h constituted a positive control. Analysis of apoptosis was carried out using a colorimetric caspase-3 assay kit at an NCI12487 exposure range of 5 μM to 100 μM or 0.1% DMSO for a standardized incubation period of 24 hours. Staurosporine, applied at a concentration of 1 μM for 16 hours, was used as a positive control. The XTT colorimetric assay was used to test the cytotoxicity of NCI 12487 at concentrations ranging from 0.75 μM to 100 μM, along with 50 mM or 0.1% DMSO, for 16, 24, and 48 hours. 100% DMSO was used as a positive control. For all experiments, untreated cells cultured in a complete medium for 24 hours were used as a negative control.

Results: NCI 12487 reduced HT-29 cell viability in a manner dependent on both dose and duration. This compound notably increased caspase-3 activity in HT-29 cells, peaking at a 25 μM concentration after 24 hours. Furthermore, this treatment at 25 μM for 24 hours stopped the HT-29 cell cycle in the G2/M phase much more effectively than it did in CCD 841 CoN cells.

Conclusions: The study shows that NCI 12487 is an effective treatment for colorectal cancer, showing that it can cause apoptosis, selective cell cycle arrest, and cytotoxicity that depends on dose and time without affecting normal colon cells. This work was supported by grant OPUS no. 2016/23/B/NZ5/02630 from the Polish National Science Centre.

Unveiling the Dynamic Landscape: Visualizing GPCRs Conformational Space for Improved Drug Discovery

Michał Sapa

Presenting author: Michał Sapa

Tutors: Marcin Kołaczkowski, Adam Bucki

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Introduction: G protein-coupled receptors (GPCRs) are major drug targets. An estimated 30% of registered drugs are ligands for GPCRs. Despite this wealth of information, predicting ligand activity using computational methods remains challenging. Additionally, GPCRs can couple with different transducers, as evidenced by biased agonists. Thus, we try to identify key conformational changes that lead to functionally selective activation.

Aim of the study: This study aimed to develop a computational approach to visualize the conformational landscape of GPCRs and classify them based on their activation state.

Materials and methods: We utilized databases of experimentally determined GPCRs structures to visualize potential receptor conformations. Using GPCRdb, we collected PDB files of GPCRs structures and defined descriptors based on known activation-related residues. Subsequently, unsupervised machine learning techniques, like principal component analysis (PCA), were employed to reduce data dimensionality and map the conformational space. Next, supervised learning methods like Random Forest (RF) and Support Vector Machines (SVMs) were used to train a model that can classify active and inactive states. Additionally, we performed molecular dynamics simulations on refined β2-adrenergic receptor structures to investigate conformational changes during activation.

Results: Analysis of the principal component analysis (PCA) results revealed that the captured cluster are dependent on the activity state. Supervised learning methods identified significant differences between active and inactive conformations. These differences are consistent with the established mechanism of GPCRs activation as described in the literature. The aforementioned methods were employed to visualize the conformational changes observed during the molecular dynamics (MD) simulation of the β2-adrenergic receptor.

Conclusions: Our study successfully demonstrated the visualization of GPCR activation states. Moving forward, we will focus on visualizing the specific conformations responsible for coupling to a specific transducer, ultimately aiming to identify functionally selective ligands.

Urinary concentrations of bisphenols among school children from Polish REPRO_PL cohort

Monika Wolniewicz

Presenting author: Monika Wolniewicz

Tutors: Joanna Jerzyńska, Kinga Polańska

Affiliations: Medical University of Lodz

Introduction: Bisphenols, endocrine disrupting chemicals, are widely used in the industry, e.g., in the production of plastics, resins and thermal paper. Humans are exposed to bisphenoles through their daily life. The three bisphenols, namely bisphenols A (BPA), F (BPF) and S (BPS), may interact with a variety of hormonal systems that affect growth, metabolism, children's health and neurodevelopment. Tolerable daily intake (TDI) of BPA according to The European Food Safety Authority (EFSA) is of 0.2 ng/kg bw/day.

Aim of the study: This study aims to determine the urinary concentrations of bisphenols in children from Poland, to estimate their daily intakes, calculate the risk assessment, and examine the main factors of exposure.

Materials and methods: We quantified the bisphenols BPA, BPF, and BPS in 150 urine samples of 7 year-old children from the Polish Mother and Child Cohort Study (REPRO_PL). Samples were analysed using high performance liquid chromatographywith online sample clean-up coupled to tandem mass spectrometry (online-SPE-LC33 MS/MS).The following socio-demographic information was obtained by questionnaires filled out by mothers: place of residence, number of siblings, socio-economic status, parental educational level, parental occupational activity, child sex and parental age. Information on children's passive smoking at age of 7 years was extracted from cotinine levels in urine. Child height and weight was measured.

Results: BPA, BPF, and BPS were above the LOQ (0.25 µg/L) in 100%, 95%, and 20% of the samples, respectively. The maximum concentrations of bisphenols were found for BPF (90 µg/l), followed by BPA (27.3 µg/l) and BPS (7.0 µg/l). Median daily intakes (DIs) were calculated: 45.9 ng/kg bw/day for BPA, 33.1 ng/kg bw/day for BPF and below 4.4 ng/kg bw/day for BPS. Boys had higher median DIs than girls. No statistically significant associations were found between bisphenol concentrations and socio-demographic and life-style characteristics. The tobacco exposure at age 7, maternal education and, to a lesser extent, socio-economic status, were associated with bisphenols concentrations in children, with a positive relationship except in the case of BPA, in which socio-economic status was negatively associated. Underweighted children had lower BPA concentrations than recommended weight and overweighted children. In comparison to children worldwide, urinary BPA levels in children from Poland were higher from those found in children from the USA and Brasil, but lower than in children's urine from Norway.

Conclusions: BPA exposures in Polish children were above safe levels in 100% of the samples when comparing to the TDI established by EFSA. Reduction and prevention of the supply of this compound should be implemented. We were not able to find any statistically significant associations between bisphenol concentrations and socio-demographic and life-style characteristics, although a trend was found with tobacco smoke, maternal educational level and socio-economic status.

JNK inhibitor exerts neuroprotection in 6-OHDA-induced model of Parkinson's disease

Natalia Siwecka, MD; Zuzanna Granek ; Wojciech Wiese, MD

Presenting author: Natalia Siwecka, MD

Tutors: Grzegorz Galita, PhD; Wioletta Rozpędek-Kamińska, PhD; Professor Ireneusz Majsterek, PhD

Affiliations: Medical University of Lodz

Introduction: Parkinson's disease (PD) is a neurodegenerative disorder characterized by loss of dopaminergic neurons. The major molecular mechanism underlying PD is oxidative stress, which may be induced by pro-oxidants like 6-hydroxydopamine (6-OHDA). JNK is a major pro-apoptotic kinase involved in pathogenesis of many diseases, and it was also reported to have a key role in apoptosis of dopaminergic neurons in PD.

Aim of the study: The main objective of the present study was to investigate the effect of pharmacological JNK inhibition in in vitro model of PD.

Materials and methods: The study was conducted on neuroblastoma SH-SY5Y cells differentiated with retinoic acid. Neurodegeneration was induced by 48 h exposure to 6-OHDA at EC50. Cells were treated with JNK inhibitor V (JNK V) for 1 h either before or after 6-OHDA-induced damage. The cell viability was measured by XTT assay, mitochondrial respiration – by Seahorse ATP Rate Assay, and the expression level of selected proteins (p-JNK, CHOP, XBP1s) – by Western blot analysis.

Results: Treatment with JNK V significantly improved cell viability, even when the inhibitor was applied after 6-OHDA-induced damage. Seahorse ATP Rate Assay revealed that pre-treatment with JNK inhibitor significantly increased the oxygen consumption rate (OCR) values upon 6-OHDA-induced toxicity. Western blot analysis demonstrated a significant decrease in the expression of pro-apoptotic proteins p-JNK and CHOP, and a significant increase in the expression of cytoprotective XBP1s factor upon treatment with JNK V.

Conclusions: PD still remains incurable and currently used therapeutic options are only symptomatic. The results obtained indicate neuroprotective effects of pharmacological JNK inhibition in 6-OHDA-induced in vitro model of PD. Thus, JNK inhibitors might be applied for the selective treatment of PD as a potential disease-modifying strategy.

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Comparative Analysis of Immunonutritional Biomarkers for Predicting In-hospital Mortality in Geriatric Patients

Serena Schecaniah Stephenson, MD

Presenting author: Serena Schecaniah Stephenson, MD

Tutors: Bartłomiej Sołtysik, MD, PhD; Prof Tomasz Kostka, MD, PhD

Affiliations: Medical University of Lodz

Introduction: The potential to modulate the activity of the immune system by interventions with specific nutrients is termed immunonutrition. This concept may be applied including predicting mortality in-hospitalized patients. Mortality in the elderly population shows a higher tendency than in all other age groups.

Aim of the study: This scale of this clinical study is aimed to identify proficient markers that predict the risk of death at the beginning of hospitalization in geriatric patients.

Materials and methods: This study was retrospectively analyzed from patients 60 years old and above that were recruited from January 2017 to September 2023 at Central Veterans Hospital in Lodz, Poland. After screening, 1190 patients with normal C-reactive protein (CRP) set at the value of below 6 were enrolled into the analysis. NLR, LCR, LMR, MWR, PLR, SII, PNI and CAR were established based on patients' calculations. NLR (number of neutrophils divided by the number of lymphocytes), LCR(Lymphocyte count divided by CRP) , LMR (lymphocyte count divided by monocyte count) , MWR (monocyte count divided by white blood cell) , PLR (platelet count divided by lymphocyte count), SII (multiplying platelet count by the neutrophil count and dividing by the lymphocyte count), PNI [(10×serum albumin [g/dL]) +(0.005×lymphocytes/μL)] , and CAR(CRP divided by albumin). Laboratory parameters, including a full blood count (white blood cell count, neutrophils, monocytes, lymphocytes, and platelets), were analyzed using the Sysmex XN 2000 analyzer. Additionally, CRP levels and albumin concentration were determined using the Beckman Coulter Dx700 AU analyzer. Statistical analysis was performed by using Statistica 13.1.

Results: The median age of the study population was 83(77-87). As several variables were not normally distributed, data were expressed both as the median (lower and upper quartiles). Quantitative variables were compared using the Mann–Whitney U-test due to the non-normal distribution and lack of homogeneity of variance. From this analysis, it shows that NLR, LMR, LCR, PNI and CAR associated with higher mortality. Further, ROC curve demonstrated that PNI has the highest sensitivity and specificity (cut-off point 384.00) in terms of predicting death.

Conclusions: Seemingly, among the markers studied, NLR, LMR, LCR, PNI and CAR are associated with fatalities. This work highlights that PNI has the best predicting outcome in terms of sensitivity with reference to high risk of mortality in-hospitalized patients. Recognizing such a marker, this tool could be useful and aid in geriatric practice as it is easily accessed.

AED Location - Seconds that save lives

Wojciech Timler, Joanna Kempa, Filip Jaskiewicz PhD

Presenting author: Wojciech Timler

Tutors: Prof. Dariusz Timler MD PhD

Affiliations: Medical University of Łódź

Introduction: Sudden cardiac arrest (SCA) is a significant cause of adult mortality, categorized into in-hospital (IH-CA) and out-of-hospital (OHCA). Survival in OHCA depends on early diagnosis, alerting Emergency Medical Service (EMS), high-quality bystander resuscitation, and prompt Automatic External Defibrillator (AED) use. Accelerating technological progress supports faster AED retrieval and use, but there are barriers in real-life OHCA situations.

Aim of the study: The study assesses 6th-year medical students' ability to locate AEDs using smartphones, revealing challenges and proposing solutions.

Material and methods : The study was conducted in 2022-2023 at the Medical University of Lodz, Poland. Multiple AEDs were present in the building. Respondents completed a survey on AED knowledge and characteristics, followed by a task to find the nearest AED using their own smartphones, which simulated a real-life scenario, enhancing the study's realism. As common sources did not list the University AEDs, respondents were instructed to locate the nearest AED outside the research site.

Results: A total of 300 6th-year medical students took part in the study. Among them, only 3.3% had an AED locating app.Only 32% of students claimed to know where the AED nearest to their home is, and 24% knew the AED location in the main University building where they have been receiving classes for six years. All 300 had received AED training, and almost half had been witness to a resuscitation. A majority (95.3%) were confident in using an AED during CPR.Out of the 291 medical students who completed the AED location task, the median time to locate the nearest AED was 58 seconds, with a mean of 65.4 seconds. Most participants (86.6%) found the AED within 100 seconds, and over half (53%) did so in under 1 minute. Males were more likely to have a mobile app for locating AEDs compared to females (p=0.0279).

Conclusions: The study emphasizes difficulties in AED retrieval. There is no unified source showing all the available AEDs, no registration is mandatory and some AEDs are not available when the building they are in closes. Alarming statistics show low awareness among medical students about AED locations, emphasizing the need for awareness promotion. With a median of under one minute, searching for AED by a bystander should be considered as a point in a chain of survival. National registration of AEDs should be mandatory. A unified source of all AEDs mapped should be created or added to existing ones. If there are multiple bystanders, one should be delegated to search for a nearby AED. Asking a bystander to search for a nearby AED should be included in a Chain of Survival.

Human induced pluripotent stem cells as universal resources for off-the-shelf cell-based immunotherapies

Katarzyna Wasiak, Damian Ciunowicz

Presenting author: Katarzyna Wasiak

Tutors: Piotr Rieske, PhD, DSc, ProfTit

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Introduction: Since the introduction of human induced pluripotent stem cells (iPSC) in 2007, the field of cell-based therapy, including immunotherapy, has undergone significant evolution with the emergence of iPS cells as a versatile source of various cell types for clinical applications. However, the personalized nature of such therapy, which requires the isolation and modification of each patient's own cells, presents challenges in terms of cost, time, and scalability. To overcome these challenges, it is important to provide an off-the-shelf solution that is readily available to a wide range of patients. A major hurdle in the clinical application of these iPSCs derivatives is human leukocyte antigen (HLA) compatibility. HLA plays a pivotal role in immune rejection; thus, it is necessary to generate universal iPSCs free of HLA compatibility issues. This can be achieved by the application of gene-editing technologies, such as CRISPR-Cas9, to rapidly edit specific genes and overcome immune rejection. The B2M gene encoding the β2-microglobulin (β2-microglobulin) protein is a common subunit that forms a heterodimer of HLA-class I. Its knockout can effectively suppress the expression of HLA-I. Considering the use of off-the-shelf iPSCs as a source to obtain T lymphocytes in cell-based immunotherapy (chimeric antigen receptor (CAR) T-cell therapy), the need to deplete the T Cell Receptor (TCR) emerged. TCR is encoded by the TCR alpha-chain constant region (TRAC gene) and has been identified as an ideal target for genetic manipulation, leading to the disruption of TCR formation.

Aim of the study: This study aimed to generate universal iPSCs that can be further differentiated into diverse cells (e.g., macrophages and T cells) that can be used for a variety of applications without the risk of immune rejection.

Materials and methods: The methodology involved the introduction of genetic modifications into induced neural stem cells (iNSCs) to knockout the B2M (and TRAC) gene using CRISPR/Cas9 lentiviral-based tools, followed by episomal reprogramming of genetically modified iNSCs into iPSCs using reprogramming factors, such as Oct4, Sox2, Klf4, and cMyc. The obtained universal iPSCs will be further differentiated into macrophages and T cells.

Results: The results indicated suppression of the B2M gene in iNSCs. The genetically modified iNSCs have been successfully reprogrammed into iPSCs.

Conclusions: By utilizing gene knockout techniques to eliminate the B2M (and TRAC) gene in iNSCs, we further developed universal iPSCs, which derivatives are suggested to be more immunologically compatible and less prone to immune rejection. However, there are some challenges that must be addressed. This includes ensuring the safety and efficacy of gene-edited iPS cells as well as optimizing protocols for the differentiation of iPS cells into T cells and macrophages.

Insights into olaparib resistance in BRCA2MUT ovarian cancer cells and its reversal with the ATR/CHK1 pathway inhibitors: miRNA-mRNA regulatory network and growth factor signaling

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Introduction: Resistance to the PARP inhibitor olaparib poses a significant challenge in the targeted therapy of ovarian cancer (OC), leading to investigations into novel combination approaches to augment the effectiveness of olaparib. Despite the identification of various mechanisms, a comprehensive understanding of how OC cells develop resistance to PARP inhibitors remains elusive.

Aim of the study: This study aimed to identify differentially expressed miRNAs associated with resistance to olaparib in ovarian cancer cells and their resensitization with the ATR/CHK1 pathway inhibitors in vitro. Moreover, we evaluated the prognostic value of selected miRNAs and genes in clinical samples.

Materials and methods: High-throughput RT-qPCR and bioinformatic analyses were employed to examine microRNA (miRNA) expression in both olaparib-sensitive (PEO1, PEO4) and previously established olaparib-resistant OC cell lines (PEO1-OR). We explored the role of miRNAs in acquired resistance and the resensitization process using ATR/CHK1 pathway inhibitors. Differentially expressed miRNAs were utilized to construct miRNA-mRNA regulatory networks. Functional enrichment analyses for target genes were conducted with miRNet 2.0. The TCGA-OV dataset was analyzed to assess the prognostic value of selected miRNAs and target genes in clinical samples.

Results: The investigation unveiled potential processes associated with olaparib resistance, encompassing cell proliferation, migration, cell cycle regulation, and growth factor signaling. Resensitized PEO1-OR cells exhibited enrichment in growth factor signaling pathways (PDGF, EGFR, FGFR1, VEGFR2, and TGFβR), regulation of the cell cycle through the G2/M checkpoint, and caspase-mediated apoptosis. Antibody microarray analysis confirmed dysregulated growth factor expression. Combining ATR/CHK1 pathway inhibitors with olaparib downregulated specific growth factors (FGF4, FGF6, NT-4, PLGF, and TGFβ1) exclusively in PEO1-OR cells. Survival and differential expression analyses in serous OC patients identified prognostic miRNAs associated with olaparib resistance (miR-99b-5p, miR-424-3p, and miR-505-5p) and resensitization to olaparib (miR-324-5p and miR-424-3p). Essential miRNA-mRNA interactions were reconstructed based on prognostic miRNAs and their target genes.

Conclusions: This work delineates distinct miRNA profiles in olaparib-sensitive and olaparib-resistant cells, offering molecular insights into overcoming resistance with ATR/CHK1 inhibitors in OC. Furthermore, certain miRNAs may serve as potential predictive signature molecules for resistance and therapeutic response.

Influence of silica filler amount on basic strength properties of experimental photo-cured resin dental composite

Maja Zalega

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Introduction: Composites are the most widely used materials in dentistry. They are used in direct dentistry as fillings and to manufacture many prosthetic restorations, such as inlays, onlays, bridges, and veneers.

Aim of the study: The research aim is to determine the influence of the filler amount introduced into the matrix on material properties – the mechanical ones. Understanding this relationship is essential to optimize the manufacturing process of composites.

Materials and methods: The resins used to prepare the matrix were bis-GMA/UDMA/TEGDMA/HEMA (Sigma-Aldrich, St. Louis, USA) in ratio 40/40/10/10 wt.%. respectively. Three weight concentrations of silica (Arsil - Zakłady Chemiczne Rudniki S.A., Rudniki, Polska) - 45, 50, or 52 wt.% - were used as a filler. The photoinitiator camphoroquinone, the polymerization process stabilizer BHT, and the co-initiator DMAEMA were used (all from Sigma-Aldrich, St. Louis, USA). The prepared composites were placed in silicone molds adapted in shape to the particular study and photo-cured with THE CURE TC-01 polymerization lamp (power 1200 mW/cm2, wavelength of light - 450 to 490 nm) (SPRING, Norristown, Pennsylvania, USA) for 20 seconds per 1.5 mm thickness of each composite. The hardness (HV), diametral tensile strength (DTS), and three-point bending strength (FS) of the composites were tested. The elastic modulus during bending (Ef) was also determined.

Results: The highest HV is achieved by a composite with 52 wt.% of filler (37.0±2.7) and the lowest by a material with 45 wt.% filler by weight (32.8±2.3). The composite with 50 wt.% of filler obtains the highest DTS values (35.2±4.7 MPa), while the composite with 52 wt.% of filler obtains the lowest (30.0±6.9 MPa). The composite filled with 50 wt.% of silica has the highest Ef (4268±93.6 MPa) and the lowest with 52 wt. % of silica (3517±781.0 MPa). The FS with the highest value was achieved by a material with 45 wt.% filler (75.8±8.4 MPa) and the lowest with 52 wt.% filler (49.1±12.4 MPa).

Conclusions: The above results indicate that the amount of filler affects the strength properties of composites. As the filler concentration increases, the composite's hardness improves. DTS decreases as the amount of filler in the composite increases. A similar relationship exists for FS: An increase in filler results in a decrease in the material's three-point bending strength.

Obtaining of cardiomyocytes with trisomy 21 by reprogramming of epithelial cells from renal tubules – cell models

Damian Ciunowicz, Katarzyna Wasiak

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Introduction: The transcription factors Oct4, Sox2, c-Myc, Klf4 (belonging to the Yamanaka factor family), and Nanog and Lin 28, called core pluripotency transcription factors, play a major role in inducing and maintaining the pluripotency state. The introducing of these factors into somatic cells allows them to be reprogrammed and obtain pluripotent stem cells (IPSCs). IPSCs have the ability to differentiate into any other cell type within all three germ layers. The use of appropriate inhibitors of the Bone Morphogenetic Protein (BMP) and Glycogen synthase kinase-3 (GSK-3) pathways by activating the WNT pathway enables to obtain fully functional cardiomyocytes, which provides great opportunities to obtain personalized research models of many genetic disorders.

Aim of the study: The aim of the study was to obtain functional cardiomyocytes with trisomy of chromosome 21 obtained by differentiation of induced pluripotent stem cells resulting from the reprogramming of epithelial cells isolated from urine.

Materials and methods: Renal tubular epithelial cells were isolated from the urine of a patient with trisomy 21 and a cell culture was established. Cells were reprogrammed using the episomal system encoding Yamanaka factors to induce the state of pluripotency, which further allows the cells to be differentiate into any cell type. The obtained IPSc colonies were transferred to new vessels and stabilized through a series of passages. The cells obtained in this way were subjected to the process of differentiation into cardiomyocytes using the BMP and GSK-2 inhibitors by activation of WNT pathway at the early stage of differentiation.

Results: We obtained induced pluripotent stem cells with confirmed trisomy of chromosome 21 which were then successfully differentiated into contracting cardiomyocytes.

Conclusions: Subjecting epithelial cells to the process of reprogramming and then differentiation allows for the transition of ectoderm cells to mesoderm cells, which in turn shows that an effective change in cell phenotype is possible. The obtained results suggest that any type of cells can be obtained from epithelioid cells from the patient's renal tubules isolated from urine, which constitute an ideal personalized research model. In the current study, cells with chromosomal aberrations were reprogrammed, but any cells with any genetic or metabolic disorder can be obtained in a similar way.

Combined inhibition of DNA polymerase theta and Poly (ADP-ribose) polymerase or Rad52 demonstrate anticancer activity on patient-derived melanoma cells

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Introduction: DNA polymerase theta (Polθ) as a molecular target in cancer therapy has gained particular attention in the last four years. Polθ is a DNA polymerase involved in several DNA repair mechanisms, but mainly in theta-mediated end joining (TMEJ) – one of the DNA double-strand breaks (DSBs) repair pathways. The alterations in homologous recombination and non-homologous end joining DNA repair pathways are often found in cancer cells, making them dependent on TMEJ. Therefore, it is possible to use the synthetic lethality (SL) approach to selectively kill cancer cells by inhibiting one of the DNA repair proteins. Previous studies of our group on melanoma cells have already shown SL interaction between inhibition of other proteins involved in DNA repair mechanisms such as PARP1 and DNA ligase 4 or class I histone deacetylases, but not yet the Polθ.

Aim of the study: The main objective of the research was to determine the influence of Polθ inhibition and its combination with PARP or Rad52 inhibitors on melanoma cells. Additionally, traditionally used alkylating agent – dacarbazine (DTIC) was added to the experiments to observe how it influences the treatment.

Materials and methods: In order to evaluate the impact of the described treatment, we analyzed cell viability, cell apoptosis and histone H2AX phosphorylation with flow cytometry, DNA damage via comet assay and cell proliferation by clonogenic assay. The model for the research consisted of cells derived from the melanoma tumour samples of patients.

Results: The results show that Polθ inhibition alone has a much lower anticancer effect than its combination with either PARP or Rad52 inhibitor. What is more, the addition of an alkylating agent DTIC enhances their activity, causing a significant reduction in cell viability and proliferation, as demonstrated by clonogenic assay and increased cell apoptosis. Also, dual inhibition causes DNA damage, visible in an increased percentage of DNA in the comet tail, as well as increased histone H2AX phosphorylation, which was further increased by the use of DTIC.

Conclusions: In conclusion, Polθ inhibition alone did not sufficiently affect melanoma cells, however simultaneous inhibition of Polθ with PARP or Rad52 resulted in the synthetically lethal effect on melanoma cells. Moreover, observed anticancer effect was further enhanced by the addition of alkylating drug.

Association between serum magnesium level and most common cardiometabolic diseases and drugs in older hospitalized patients

Ganna Kravchenko

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Introduction: According to the literature, magnesium deficiency has been associated with many chronic conditions, including cardiovascular diseases and type 2 diabetes mellitus (T2DM). Besides that, some drugs might induce hypomagnesemia. However, studies need more data in terms of the senior population. This research can pave the road for more effective and personalized magnesium supplementation in elderly with specific comorbidities or undertaken drugs.

Aim of the study: This study investigated the association between serum magnesium concentration and the most common cardiometabolic diseases and drugs in older hospitalized patients.

Materials and methods: The selected study population included older patients aged 60 years and above, hospitalized between December 2017 and December 2019 in the Geriatric Department of the Central Veterans Hospital, located in Lodz, Poland. Inclusion criteria were admission to the department, age 60 and above, available data on anamnesis, taken medications and serum magnesium concentration. 2007 patients (1418 women and 589 men) met the inclusion criteria and were enrolled. Magnesium level was compared regarding the presence of the most common cardiometabolic diseases and undertaken drugs. The normality of distribution was analysed using a Shapiro-Wilk test. All considered variables were not normally distributed, so the data was expressed as median (25%-75% quartiles). First, all calculations were performed using the Mann Whitney U-test to find chronic diseases or taken drugs connected with significantly higher or lower magnesium levels. Second, general linear models were employed for statistically significant data in bivariate models. Significance was set at $p \leq 0.05$. Statistical analysis was performed using Statistica 13.1.

Results: The median age of the patients was 83 (77-88) years. Hypomagnesemia was revealed in 37.3% of participants. The median magnesium concentration was 0.8 (0.72-0.87) mmol/l. In the bivariate Mann-Whitney U-tests, significant differences were observed for T2DM, angiotensin-converting enzyme inhibitors (ACEI), anti-diabetic oral drugs and insulin – all of them were associated with lower level of magnesium. Following the bivariate analysis, we utilized a general linear model. In multivariable test serum magnesium was significantly ($p<0.001$) negatively associated with T2DM, ACEI, anti-diabetic drugs and most of all – with the use of insulin.

Conclusions: The study revealed a significant association between T2DM presence, treatment with ACEI, anti-diabetic oral drugs and insulin on serum magnesium concentration in hospitalized patients aged 60 and above. We highly suggest an assessment of magnesium levels in these patients. Further research is needed to determine the optimal dosage, duration, and long-term effects of magnesium supplementation in these specific groups of patients.

Dual action of postbiotics in supporting anti-cancer treatment

Joanna Wasiak, Pola Głowacka

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Introduction: Despite continuous efforts of scientists, several types of neoplasm remain incurable. Moreover, both new and established synthetic chemotherapeutics exert unwanted side effects, thus further research aimed at designing new treatment options targeted to cancer cells while protecting the non-neoplastic ones are needed.

The emergence of postbiotics has gained considerable attention in recent years for their health benefits. The emergence of postbiotics has gained considerable attention in recent years for its health benefits. The term postbiotics refers to metabolites or macromolecules derived from probiotic bacteria. Studies have shown that postbiotics not only have cytoprotective properties toward normal cells, but also exhibit antiproliferative and even cytotoxic effects against cancer cells, what makes them promising compounds to support standard or newly investigated anti-cancer therapy.

Aim of the study: To evaluate cytoprotective versus anti-neoplastic potential of postbiotics derived from lactic acid bacteria (LAB), normal cells and cancer in vitro models were treated with combination of synthetic chemotherapeutics and postbiotics.

Materials and methods: Neoplastic cells (breast cancer, glioblastoma) and normal fibroblast cell line were subjected to treatment with synthetic compounds presenting anti-cancer properties and their combination with LAB-derived postbiotics. Post-treatment analyses included cell viability assay based on resazurin conversion measurement and flow cytometric detection of apoptosis/necrosis fractions by means of annexin V-FITC/PI staining.

Results: Postbiotic treatment caused reduction of neoplastic cells' viability, while the mixture of synthetic chemotherapeutics with LAB metabolites induced a significant decrease in cells' survival in comparison to cells treated with a single agent. FACs results also demonstrated that bacterial metabolites have the ability to stimulate apoptosis in cancer cells. Additionally, LAB postbiotics showed selective antineoplastic effect with no negative impact on normal cells and cytoprotective activity towards them in the presence of chemotherapeutics.

Conclusions: Results of our in vitro study suggest that postbiotics seem to be a promising tool to increase the effectiveness of standard chemotherapeutics and new candidate drug. Moreover, due to their selective cytotoxicity to neoplasms and protective effects on normal cells, they constitute a promising mean to support anticancer therapy.

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SURGERY AND TRANSPLANTOLOGY

9th of May 2024

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Patient-reported outcomes of endoscopic sinus surgery in a high-volume academic center in Poland

Michał Kmiecik, Michał Nowak

Presenting author: Michał Kmiecik

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Introduction: Endoscopic sinus surgery (ESS) is a standard method of treatment for patients with chronic rhinosinusitis (CRS) refractory to medical therapy. Numerous objective and subjective measures have been developed to evaluate outcomes of ESS. Sino-Nasal Outcome Test-22 (SNOT-22) is a validated questionnaire for assessment of disease-specific quality of life in CRS patients. So far it has been utilized as a patient-reported outcomes measure in patients undergoing ESS. These studies showed significant improvement in symptom control after surgery. However, outcomes of ESS require further analysis in the Polish population and prognostic factors affecting surgical outcomes remain unclear.

Aim of the study: The aim of this study was to assess patient-reported outcomes of ESS in a high-volume academic center in Poland using SNOT-22 questionnaire and to identify prognostic factors which have impact on the outcomes of ESS.

Materials and methods: 54 patients with clinical diagnosis of CRS confirmed by a computed tomography scan were enrolled prospectively into the study between April 2021 and December 2022. 4 patients were disqualified during data collection and statistical analysis was performed with the results of 50 patients (aged 22-80, 66% males). 38 patients (76%) had CRS with nasal polyps and 12 (24%) had CRS without nasal polyps. Bilateral ESS was performed in 41 patients (82%) and unilateral ESS in 9 (18%). Every patient completed a SNOT-22 form before and after ESS, with median follow-up of 7 months.

Results: 47 patients (94%) reported improvement in symptom control after ESS. Minimal Clinically Important Difference (improvement of at least 8,90 points) was achieved by 45 patients (90%). Mean change in SNOT-22 score was 31,86. The difference between pre-operative and post-operative SNOT-22 scores was statistically significant (median 52,50 vs 13,00; p-value<0,001). The change in SNOT-22 score correlated with pre-operative score (R=0,691; p-value<0,001), but did not correlate with age or length of follow-up. Greater change in SNOT-22 score was observed in patients with nasal polyps, compared to those without polyps (mean 35,05 vs 21,75; p-value<0,05). No difference in SNOT-22 change was observed between genders or between patients who underwent bilateral vs unilateral surgery.

Conclusions: ESS leads to statistically and clinically significant symptomatic improvement in the majority of patients. Surgery may be more beneficial for patients with higher pre-operative SNOT-22 scores and CRS with nasal polyps.

Prevention of postoperative malnutrition with oral nutritional supplements in patients undergoing gastrointestinal surgery

Wiktoria Zasada, Hanna Cholerzyńska MD

Presenting author: Wiktoria Zasada

Tutors: Jarosław Cwaliński MD, PhD, Agnieszka Cwalińska MD, PhD, Barbara Kuczyńska MD, PhD, Prof. Tomasz Banasiewicz MD, PhD, Jacek Paszkowski MD

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Introduction: Oral nutritional supplements (ONS) offer support for the nutritional needs of surgical patients. However, their efficacy is contingent upon the nutrient composition, absorption efficiency, and post-ingestion tolerance.

Aim of the study: To assess the metabolic effects and subjective tolerance of two different types of ONS in surgical patients undergoing elective open surgery with intestine anastomosis, aiming to understand their efficacy in mitigating the risk of malnutrition and facilitating postoperative recovery.

Materials and methods: The study included a cohort of 84 patients who underwent surgery involving at least one intestine anastomosis. To mitigate the risk of malnutrition, two groups of 28 patients each received either high-protein low-osmotic ONS (Group I) or high-calorie high-osmotic ONS (Group II). A standard diet was employed in the control group (Group III). The metabolic effects were evaluated by measuring body weight and relative change in body weight (Δkg) from 24 hours (-1 day) pre-surgery to 28 days post-procedure. Subjective tolerance following ONS consumption on the 2nd postoperative day was also assessed.

Results: In all groups, average body weight decreased during the initial two weeks post-surgery, subsequently stabilizing or returning to baseline levels by the 3rd and 4th week of observation. Patients receiving ONS demonstrated greater weight gain between days 14 and 28, with Group I exhibiting the highest rate of gain. Low-osmotic ONS displayed superior tolerance and elicited fewer patient complaints post-consumption. The postoperative hospitalization duration did not differ significantly among the nutritional strategies.

Conclusions: Early administration of ONS supplies essential nutrients and facilitates refeeding, thereby reducing the risk of malnutrition. Low-osmotic preparations are better tolerated and contribute more effectively to the restoration of preoperative body weight, despite their lower caloric content.

A Comparison of Miller Straight Blade and Macintosh Blade Laryngoscope for Intubation in Morbidly Obese Patients

Julia Resch

Presenting author: Julia Resch

Tutors: Tomasz Gaszyński, prof. dr. hab. n. med., Pawel Ratajczyk, dr. n. med.

Affiliations: Medical University of Łódź

Introduction: Over the last years, the number of anesthetized morbidly obese patients has increased worldwide and is still rising. Intubation performed on this group of patients poses higher risks to the patient and is associated with an increased number of peri- and post-intubational complications. Some papers suggest that the usage of a Miller blade instead of the Macintosh blade can minimize the risks, complications and mortality in intubations classified as difficult even in the adult population. However, there is no data on the group of morbidly obese patients (BMI >40).

Aim of the study: The primary objective of the study was to evaluate whether the Miller blade will provide better visualization of the vocal cords than the Macintosh blade in morbidly obese patients. The secondary objective was to identify the factors associated with better visualization of the vocal cords, which is associated with a better outcome of the intubation.

Materials and methods: 110 patients with a BMI >40 undergoing planned bariatric surgery were assigned to our prospective study. During intubation, for each patient direct laryngoscopy was performed twice using the Miller blade and the Macintosh blade in a random manner. During each direct laryngoscopy, the visualization of the vocal cords was evaluated according to the Cormack-Lehane and the POGO scale. Afterwards endotracheal intubation was performed. The statistical analysis was performed using Statistica 13.1PL. Nominal data were tested depending on the size of the smallest subgroup with Fisher exact test ($n<5$), Yate's chi-squared test ($5<n<15$) and chi-squared test ($15<n$). Continuous data were assessed with the Shapiro-Wilk test and the Brown-Forsythe test.

Results: In 45 patients (40.91%) the use of a Miller blade resulted in a lower score on the Cormack-Lehane scale and a higher score on the POGO scale (better visualization of the glottis) compared to the Macintosh blade. With application of external laryngeal pressure during intubation further 18 patients (16.36%) scored lower on the Cormack-Lehane scale and 19 patients (17.27%) scored higher on the POGO scale.

Conclusions: Usage of the Miller blade compared to the standard Macintosh blade improves the visualization of the vocal cords in morbidly obese patients.

Equivalence Randomized Control Trial Demonstrating Noninferiority of Copper Oxide Impregnated Dressings (COD) in Healing Diabetic Wounds as Compared to Negative Pressure Wound Treatment (NPWT)

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Introduction: Negative Pressure Wound Therapy (NPWT) is the standard of care for treating large and deep wounds, deep cavities and enhance wound closure. Copper Oxide Dressings (COD) have been recently introduced into clinical practice due to their antimicrobial properties. Research and clinical experience showed their positive effect also in inducing wound healing, including stimulation of autolytic debridement, granulation tissue formation and epithelization.

Aim of the study: The aim of this RCT is to prove non-inferiority of COD in compared to the standard of care of large and deep wounds, NPWT, in the areas of wound healing, convenience, and application time.

Materials and methods: We initiated a randomized controlled trial with 60 diabetic patients comparing the reduction of wound size during 3 months of treatment between COD management to NPWT, by using an artificial intelligence program (Tissue Analytics, TA).

Results: 46 patients have finished the study, 23 patients in each arm. Average wound area was 19.9 ± 4.36 cm2 in the COD arm and 14.1 ± 2.32 cm2 in the NPWT arm (p=0.25). Reduction of wound size assessed by TA was 53.7% and 52.2% (Pooled=0.866) after 1 month, 77.7% and 72.8% (Pooled= 0.533) after 2 months, and 89.5% and 89.7% (Pooled=0.961) after 3 months, in the COD and NPWT arms, respectively.

The percentage of wounds that closed during the study were 47.83% (11/23) and 34.78% (8/23) in the COD and NPWT Arms, respectively (p=0.369). COD dressings were more convenient than the NPWT to both the patients ($p<0.001$) and the caregiver (p=0.0034). Applying the COD was faster than applying the NPWT ($p<0.001$). Cost is estimated to be ~15% in the COD Arm compared to NPWT Arm.

Conclusions: The results of this RCT study indicate statistically significant non-inferiority of COD therapy compared to NPWT in terms of wound healing rate and superior results in terms of convenience, and reduced application time in addition to lower cost. The findings suggest that COD may be considered as first line of treatment for wounds in diabetic patients when NPWT deemed necessary.

The burning issue of Gastroesophageal Reflux Disease in lung transplant recipients

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Introduction: Gastroesophageal Reflux Disease (GERD) remains a high risk factor for Chronic Lung Allograft Dysfunction (CLAD). GERD is not solely associated with gastrointestinal problems - it also contributes to microaspiration of gastric contents and lung inflammation, thereby elevating the risk of developing Bronchiolitis Obliterans Syndrome (BOS). GERD-induced damage to the gastric cardia and esophagus is well-documented. Equally crucial is evaluating GERD's influence on lung function. Laparoscopic GERD treatment could potentially serve as an effective strategy for preventing BOS, a primary factor contributing to CLAD.

Aim of the study: The aim of this study was to determine the safety of anti-reflux surgery for lung transplant recipients while evaluating its impact on enhancing respiratory function and relieving bronchial symptoms.

Materials and methods: A retrospective analysis of medical records from 2015-2019 was performed. The study group consisted of 7 patients who underwent laparoscopic fundoplication following Double Lung Transplant (DLT) in Silesian Centre of Heart Diseases. Medical documentation, surgical procedures, and outcomes were analyzed.

Results: 7 patients, with a mean age of 30 years (range 23–55), were included in the study. The average time between transplantation and fundoplication was 37 months (range 8–68). The effect on lung function, body mass index, and rate of BOS were assessed pre-operatively. The indications for surgery were histologic evidence of gastroesophageal reflux aspiration on bronchoscopy biopsy specimens, presence of reflux symptoms and consistent decline of Forced Expiratory Volume in 1 second (FEV1). Six patients underwent Toupet fundoplication, while one patient had Nissen procedure done. Each patient had hiatal hernia repaired as well.There were no surgical complications observed in the study group, however, two patients experienced post-surgery pulmonary difficulties. Patients' discharge time from hospital ranged from 2 to 29 days, with an average of 11 days.The overall improvement of FEV1 and reduction of GERD symptoms was observed, resulting in enhancement in quality of life.

Conclusions: Laparoscopic fundoplication is deemed safe for lung transplant recipients and may also be identified as an effective remedy, offering relief from reflux symptoms and potentially enhancing lung function. The severity of GERD in lung transplant recipients.

Meckel's Diverticulum Injuries after Blunt Trauma

Bartosz Czyżewski, Oliwia Kawa

Presenting author: Bartosz Czyżewski

Tutors: dr hab. n.med. Zbigniew Pasieka, mgr inż. Karol Kłosiński

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Introduction: Meckel's diverticulum (MD) is a congenital anomaly of the gastrointestinal tract. It is a true diverticulum of the small intestine located in the ileum. The complications associated with MD are well-known. However, blunt injuries regarding MD have not been widely described in the literature. This was the reason for undertaking research on MD lesions.

Aim of the study: The aim of the study is to describe the damage to MD (and its related structures, such as the blood vessels, mesentery, and loop of the small intestine) following blunt trauma and examine post-traumatic intussusception of the small intestine associated with MD. The analysis examines the nature of the injury itself and its related injuries, and whether they were accompanied by injuries to other abdominal organs. It also relates the occurrence of injury to the personal characteristics of the patients, such as sex and age.

Materials and methods: The materials consisted of 28 cases of damage to MD after blunt trauma published during the years 1921–2022. The collected data were subjected to statistical analysis.

Results: The following MD injuries have been identified, starting with the most common isolated perforation of MD, bleeding from the area of MD, perforation of MD with concomitant tearing of the mesentery intestines and bleeding, intussusception of MD, and intramural hematoma of MD with adjacent mesenteric hematoma. Most injuries were caused by a traffic accident, followed by sports, accidents at work, and then violence. Almost all the cases (27) involved men. Several possible mechanisms may contribute to post-traumatic damage to MD. First of all, they are associated with abdominal compression and a secondary increase in intra-abdominal pressure as well as with the action of shearing forces during deceleration.

Conclusions: Traumatic MD injuries are differentiated and very rare. They can coexist with other serious injuries to the abdominal organs.

Who identifies testicular tumors?

Bartosz Roś, Wojciech Kula, Mateusz Kęska, Illie Lastovetskyi

Presenting author: Bartosz Roś

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Introduction: Testicular tumors primarily affect young males and have high cure rates if detected and treated early. The importance of testicular self-examination is widely emphasised in the public space, but how does it perform in urological practice?

Aim of the study: The objective of this study was to determine who typically identifies testicular tumors, whether it is the patient, the physician, or other sources such as a patient's partner. Moreover, the characteristics of diagnosed tumors were described and analyzed.

Materials and methods: Data of consecutive patients undergoing orchidectomy for testicular tumor in a single academic center between 2017 and 2022 were included in this retrospective study. The data were obtained from medical records, and descriptive statistics were used to characterize the study group.

Results: A total of 240 patients underwent orchidectomy in a single academic center. The median age of patients was 34 years. For the purpose of this analysis, we excluded patients whose medical records were incomplete (n=40). The majority of testicular tumors were self-identified by the patients themselves (n=133; 66.5%), followed by diagnoses made by physicians (n=64; 32.0%), such as incidental findings during scrotal ultrasound or investigations for infertility. Only 3 (1.5%) tumors were found by a patient's partner. Pathology examination revealed seminoma in 90 (45.0%) patients, nonseminomatous germ cell tumor in 64 (32.0%), Leydig cell tumor (n=7, 3.5%), Sertoli cell tumor (n=5, 2.5%), lymphoma (n=4, 2.0%) and benign lesions or no tumor in 30 (15.0%) cases. Among self-diagnosed patients whose pathological examination confirmed cancer (n=99), the most common testicular cancer T stage was pT2 – in 65 (65.7%) cases. Stages pT1 and pT3 were less commonly detected with 25 (25.3%) and 9 (9.0%) cases, respectively. Tumors identified by physicians typically exhibited less advancement according to TNM classification, with the predominant stage being pT1 (n=18, 51.4%). Conversely, occurrences of other stages (pT2, pT3, pT4) were less frequent, comprising 14 (40.0%), 2 (5.7%), and 1 (2.9%) cases respectively.

Conclusions: These findings underscore the paramount importance of testicular self-examination for the early detection of tumors. Encouraging men to perform regular self-examinations is crucial for timely diagnosis. Our observations reveal that tumors discovered through self-examination often present at a more advanced T stage compared to those detected by physicians. This underscores the significance of self-examination but also emphasizes the complementary role of ultrasound examination, particularly among high-risk patient populations.

Increasing neodjuvant chemotherapy utilization in muscle invasive bladder cancer treatment: a tertiary center retrospective study

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Affiliations: Students' Scientific Group of Urology, Jagiellonian University Medical College; University Hospital in Cracow, Department of Urology and Urologic Oncology

Introduction: Current guidelines recommend cisplatin-based multidrug neoadjuvant chemotherapy (NAC) followed by radical cystectomy (RC) for eligible muscle invasive bladder cancer (MIBC) patient. Even though the survival benefit of NAC in the treatment of MIBC is supported by level 1 evidence, the data concerning real life utilization of NAC is far from optimal (about 20%) and limited.

Aim of the study: The aim of the study was to investigate temporal changes in NAC utilization in MIBC patients who underwent RC in a single academic center in Poland.

Material and methods: Patients with urothelial MIBC who underwent planned curative RC with extended bilateral pelvic lymph node dissection between 2013 and 2023 were included in the study.

Results: Out of 350 patients enrolled into the study, 249 (71.1%) underwent NAC before RC. The percentage of patients who received NAC in subsequent years were: 4% (1/25) in 2013, 36% (9/25) in 2014, 55.3% (21/38) in 2015, 60% (21/35) in 2016, 83.9% (26/31) in 2017, 86.7% (26/30) in 2018, 84% (21/25) in 2019, 92.6% (25/27) in 2020, 89.2% (33/37) in 2021, 88% (22/25) in 2022 and 84.4% (44/52) in 2023 (p-value for trend <0.001).

Conclusions: This study showed an increasing utilization of NAC among MIBC patients who underwent RC until 2017 and then plateau. Close collaboration between urologist and medical oncologist seems to be the key to optimizing perioperative care of patients with MIBC.

HUMAN SCIENCES IN MEDICINE

9th of May 2024

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Mapping the needs of working individuals with rheumatic diseases in Poland

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Presenting author: Jagoda Rogowska

Tutors: Olga Brzezińska

Affiliations: Medical University of Łódź

Introduction: Rheumatic and musculoskeletal diseases (RMDs) comprise a diverse group with a wide range of symptoms and manifestations. A prevailing characteristic across many RMDs is their chronic nature, characterized by alternating periods of exacerbation and remission. The vast majority of RMDs have the potential to result in disability over time and significantly limit the possibility of both paid work and independent functioning. It is estimated that patients suffering from RMDs have a 10-15% higher work participation gap compared to healthy employees. In connection with EULAR points of consideration to support RMDs patients in a satisfactory professional work published in 2021, in the presented study the professional situation of patients suffering from rheumatic diseases in Poland was assessed.

Materials and methods: The study group consisted of members of patients suffering from RMDs societies and patients of the Rheumatology Department of the Medical University of Lodz aged 18 to 65.

All data was gathered by an anonymous online questionnaire which was addressed to people aged 18 to 65 as this range corresponds with working age in Poland. It consisted of parts such as “general personal info”, “disease description”, “manual activities” and “work status”. The survey included single-choice, multiple-choice, and open-ended questions. This made up a 55-item questionnaire.

Results: One hundred and sixty patients with Rheumatic Musculoskeletal Disorders (RMDs) were studied (145 women, 90.6%; 15 men, 9.4%). Of these, 122 (76.2%) were actively employed. Nearly half (46.9%) experienced remission due to treatment, with common medications being Methotrexate, Hydroxychloroquine, Glucocorticoids, Leflunomide, analgesics, anti-inflammatory drugs, and biological treatments. Enforced work changes due to RMD symptoms affected 66 respondents (41.2%), while treatment led to improved work performance for 69 (43.1%). Challenges in returning to work included fear of illness worsening (42.1%), employer pressure (31.4%), fear of dismissal (22%), and lack of health-tailored positions (15.7%). Encouragement to work was lacking for most respondents (63.5%). Despite experiencing malaise, 73.1% continued working, with 104 reporting reduced efficiency. Discrimination at the workplace due to illness was experienced by 36.2% (N=58). A significant proportion acknowledged the positive impact of work on mental (81.9%) and physical (58.75%) health. Forty percent expressed willingness to engage in qualification-changing courses.

Conclusions: Through systematic approaches, physicians, employers, and social services can collaboratively assist individuals with Rheumatic and Musculoskeletal Diseases (RMDS) in achieving a relatively normal work life while respecting their health constraints. Enhancing awareness of rheumatic diseases among employers holds significant potential for improving both the reintegration into the workforce and the sustained maintenance of employment.

Which variables affect face attractiveness evaluation? Survey and Eye-tracking study.

Author and co-authors : Joanna Kempa

Presenting author: Joanna Kempa

Tutors: dr hab. n. med., prof. UM Anna Kasielska-Trojan, prof. dr hab. n. med. Bogusław Antoszewski

Affiliations: Medical University of Łódź, Poland; Plastic, Reconstructive and Aesthetic Surgery Clinic

Introduction: According to the annual statistics released by The American Society of Plastic Surgeons, surgical procedures for the face grew an average of 18% over the course of the pandemic-totaling 346,384 face surgeries in 2022. It emphasizes the need for effective evaluation methods of aesthetic outcomes of surgeries. Current practices include the individual practitioners' judgment in conjunction with standardized scales, often relying on the comparison of before-and-after images. It should be investigated whether comparative evaluations influence the perception of beauty and aims to enhance the accuracy of aesthetic assessments in clinical and research settings.

Aim of the study: To compare the evaluation of attractiveness of faces in group-based versus individual ratings. Comparison of observer's subjective-evaluative assessment to objective assessment using an eye tracking camera.

Materials and methods : Two studies involving the same images of different face modifications has been conducted. 40 facial photographs (20 male, 20 female) have been assessed for attractiveness, masculinity, and femininity using a 5-point Likert scale. Each face was digitally edited to display varying ratios in four lip-related proportions: 1) vertical lip position: Philtrum length : Lower lip vermilion-gnathion distance (1:1; 1:1.6; 1:2; 4 1:2.5; 1:3), 2) lip width: Cheilion-cheilion distance : Gonion-gonion distance (1:1.8; 1:2; 1:2.2; 1:2.5; 1:3), 3) upper lip size: Upper lip height : Philtrum length (1:1; 1:1.6; 1:2; 1:3; 1:4), and 4) lower lip size: Lower lip height : Lower lip vermilion-gnathion distance (1:1; 1:1.6; 1:2; 1:3; 1:4). Participants (n=727 volunteers) rated these images both in an image series (group-based) and individually. In the second study including 101 participants, also eye-tracking analysis was done.

Results: Group ratings exhibited a significant central tendency bias, with a preference for more average outcomes compared to individual ratings, with an average difference of 0.50 versus 1.00. (p=0.033) The eye-tracking component revealed an interesting, previously already described pattern: lips with proportions evaluated as the least attractive/ masculine/ feminine were the first to capture the attention of the observers.

Conclusions: A central tendency bias was noted in evaluations of attractiveness, masculinity and femininity in group-based image presentation, indicating a bias towards more "average" features. Conversely, individual assessments displayed a preference for more pronounced, "non-average" appearances, thereby possibly pointing towards a malleable "intrinsic aesthetic blueprint" shaped by comparative context. The results of eye tracking analysis can be helpful to plan the aesthetic procedure according to patient's desired effect.

Parents' awareness and attitude regarding violence and neglect towards children and youth: a survey study

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Introduction: Violence and neglect towards children and youth is a serious problem in Poland. Parents' awareness of violence and effective forms of reporting it is an important factor that can reduce the frequency of its occurrence.

Aim of the study: Assessing the current knowledge of parents about physical violence and neglect towards children and its symptoms occurring on the body, including in the oral cavity. As well as awareness of the ways to prevent and combat violence available.

Materials and methods: A survey was conducted at the Department of Pediatric Dentistry, Medical University of Warsaw. The bioethics committee was informed about the study (statement number AKBE/53/2023). 340 answers were received, 8 incorrectly filled out were excluded. The study included parents aged 20 to 54 (mean 37,98 ± 6,66) who had at least 1 underaged child. Parent with only adult children were not included. The questionnaire contained questions regarding parents' knowledge about the symptoms of violence and neglect as well as their experiences. Parents' opinions were learned about who is the most common perpetrator of violence, what are the factors determining its occurrence and what impact it has on children. The respondents' attitude towards educating about violence towards children, as well as their knowledge about the forms of combating it, was examined. The results were subjected to descriptive statistics.

Results: The study group consisting of 332 parents (88 fathers and 244 mothers) identified alcohol abuse and drug use as the main determinants of violence against children (97% and 98%, respectively). According to the respondents, boys are the most common victims of violence (37%), 44,6% parents have no opinion. The main perpetrators of violence against children are fathers (78.3%). 30% respondents witnessed violence against their own or someone else's child, 32% of whom took further steps. 85% considered toothache due to untreated caries to be a symptom of abuse or neglect. Although only 32.8% of parents considered their level of knowledge about formal ways of responding to violence to be average, as many as 84.1% had heard about the "Blue Line" before. The respondents cited the Internet as the main source of information (85%). 96% believe that everyone should be educated about the occurrence of children abuse and ways to combat it.

Conclusions: Although most parents know how to respond to violence, only a few of them actually do it, which is why education of adults about children abuse is extremely important.

Influence of medical education on dentistry students' attitude towards paediatric patients

Weronika Tomaszewska, Julia Sobczyńska, Tomasz Kinkel

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Tutors: dr hab. Patrycja Proc

Affiliations: Medical University of Łódź

Introduction: As part of their studies at the university, dental students participate in classes on communication with patients and professional ethics. During the education cycle, the number of hours spent with paediatric patients also gradually changes, students gain new knowledge and clinical experience, which may translate into their attitude towards paediatric patients.

Aim of the study: The aim of the study was to assess the changes in dentistry students' attitudes towards paediatric patients during their studies.

Materials and methods: The anonymous questionnaires of 320 students of dental faculty of I-V courses was carried out. The questionnaire was filled online and consisted of 12 questions on degree of students' agreement with statements regarding work with paediatric patients, which were divided into three groups: social financial support of children treatment needs and general social statements; clinical knowledge; empathy, and 6 questions regarding student's age, sex, place of residence, presence of younger children in the family and what specialization they would choose at this time. Difference between multiple groups were assessed using Kruskall-Wallis test, and based on the results, post hoc analysis using Dunn test was performed.

Results: Questionnaires were fully completed by 320 students aged 18 to 32 including 243 women and 77 men. There was a statistically significant difference ($p<0,05$) between the answers only in one group of questions – social financial support of children treatment needs and general social statements, which include questions 4 and 5 regarding students' opinions on too much financing for the treatment of children compared to adults and too much work and financial resources for the treatment of children, respectively. The statistically significant difference between the answers ($p<0,001$ in both questions) results from differences between the average response of first year and all other years. In question 11, regarding students' attitude towards a child's outburst of crying, there was a statistically significant difference between the answers ($p=0,025$), resulting from differences between the average response of third and fourth year and also between fourth and fifth year.

Conclusions: The attitude of dentistry students' towards paediatric patients change during their studies.

Evaulation of lost opportunities by canceled and missed medical visits of patients and their characteristics in public specialist clinics in the Radomsko county

Aleksandra Boruta

Presenting author: Aleksandra Boruta

Tutors: Dominika Cichońska-Rzeźnicka, MD, PhD

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Introduction: No-shows are significant social problem, not only for patients, but also for medical facilities. Despite their duty, patients do not cancel their visits, which leads to disorganization of the work of medical entities. The reasons for patients skipping appointments are mainly the long waiting time for an appointment - in Poland average time is 130 days, the fear and anxiety associated with performing the examination, as well as problems with transportation and the conflict of the appointment with other obligations in the patient's schedule. Medical entities want to know the characteristics of patients who are most likely to miss appointments and adjust the system to reduce the number of no-shows.

Aim of the study: The aim of this study was to assess the lost opportunities caused by canceled and not realized medical visits in public specialist clinics in Radomsko district and characterized which groups of patients and in which period of the year most often do not show up for their visits.

Materials and methods: 17 specialist clinics were analyzed, taking into account the patient's sex and gemder, whether the patient was a first-time visitor or it was his next visit to a given clinic. The annual distribution of missed visits was also analyzed taking into account individual months.

Results: Average missed visits for all specialist clinics in the analyzed period fluctuates around 17%. The group of patients who most often missed their visits were people aged 60-79. The fewest no-shows were recorded in the age groups 0-19 and 80 and over. First-time patients missed the most visits in 2021 - during COVID-19, and in the remaining analyzed period patients who had an appointment for another visit did not show up in greater numbers within a given benefit. Women showed higher values of missed visit rates than men. Winter and holiday months, festive periods distinguish themselves of high amounts of no-shows.

Conclusions: Patients should be educated about the responsibility of canceling their appointments at medical facilities. The values of missed visits indicate that there is a need for a new schedule system. Such system will provide waiting patients that they will fill in the gaps of other patients' no-shows in the medical facility in a quick and simple way.

IMMUNOLOGY

9th of May 2024

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The influence of selected stimulators on leukemic cells from children with B-cell precursor acute lymphoblastic leukemia

Anna Kozub, Rafał Szarek, Mikołaj Szczęsny

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Introduction: One of the methods of cell activation assessment is measuring the concentrations of secreted proteins upon stimulation with various substances. The experiments on the usage of various cytokines & mitogens in medical diagnostics and therapies have developed since the end of XX century, resulting in new advances and wider cognition of the pathophysiology of the illnesses, including cancer cells.

Aim of the study: In the current study, the effect of phytohemagglutinin (PHA), phorbol 12-myristate 13-acetate together with ionophore A23187 (PMA+I) and lipopolysaccharide from Escherichia coli (LPS) on production of some cytokines by leukemic blasts of B-cell precursor lymphoid origin was evaluated.

Materials and methods: The study was conducted on live, non-frozen cultures of leukemic blasts isolated from bone marrow samples from the children with recently diagnosed B-cell precursor acute lymphoblastic leukemia (BCP-ALL). Isolated cells were stimulated for 24h in culture with PHA, PMA+I and LPS. The cytokine levels were measured in the culture media with the use of Bio-Plex instrument.

Results: In comparison with the control samples, increased levels of TNF-a were observed in BCP-ALL samples only after stimulation by PMA+I, but not by PHA and LPS. No significant changes were observed for other pro-inflammatory cytokines, such as INF-g, IL-1β, IL-6. Moreover, anti-inflammatory cytokines (IL-4, IL-10) levels were also unchanged after stimulation with any of the stimulators tested. IL-8 and MIP-1B were significantly induced by all stimulators used, while MIP-1a was only increased in PMA+I stimulated samples. Furthermore, IP-10 (CXCL10) exhibited selective stimulation only by PHA and PMA+I, but not by LPS.

Conclusions: These results exhibit differential patterns of cytokine production depending on the type of stimulator used and cell lineage. This may reflect the involvement of different cellular pathways leading to cell activation. Further investigations on broader study group are necessary to determine the possible mechanisms of action of the studied stimulators.

The potential protective effect of eosinophils in the infection of human lung vascular endothelium by the human coronavirus 229E

Jonatan Rataj, Mateusz Gawrysiak

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Tutors: Maciej Chałubiński

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Introduction: Human coronaviruses can cause recurrent respiratory infections of upper and lower airways commonly, but they are also responsible for heavy exacerbations of chronic respiratory diseases, including HCoV-229E which constitute 5-10% of all upper respiratory tract infections in adults.

Recent studies have shown a possible role of eosinophils in eliminating viral pathogens.

As a matter of fact eosinophils are equipped with an assortment of toolkit that makes them capable of recognizing, responding and coordinating an antiviral response, especially to RNA viruses. Among the cytokines produced by eosinophils are the type I and type II interferons that contribute to the induction of an antiviral state. We assume that eosinophils may actively participate in antiviral immune responses. Especially, their role in the modulating of the infection of the lung vascular endothelium by coronaviruses is not known The lung endothelium may express entry receptors for HCoV229E, which suggested possibility of being infected by this virus.

Aim of the study: The aim of the study was to assess if eosinophils may display antiviral properties and support the vascular endothelium in immune responses against coronavirus 229E infection.

Materials and methods: Eosinophils have been isolated via density gradient centrifugation followed by negative immunomagnetic selection using anti-CD16 antibody-coated magnetic beads. For the inflammatory activation of eosinophils we used an in vitro model with TLRs agonists: poly I:C and R848, which are able to activate TLR3 and TLR7/8 receptors. We performed incubation with TLR-agonists for 24 hours and analysed mRNA expression of several markers of antiviral response using real time pcr: interferons, interferon stimulated genes (OAS-1, PKR, MX-1), IL-6, eosinophil derived neurotoxin (EDN). Protein concentration was assessed by ELISA assay.

Results: Results showed that after 24 hours of eosinophils incubation with TLR agonists there was mRNA up-regulation, firstly of interferons, and also proteins of intracellular mechanisms of antiviral immunity – 2'-5'-oligoadenylate synthetase 1 (OAS-1), protein kinase R (PKR) and interferon-induced GTP-binding protein Mx-1 (MX-1). Eosinophils after stimulation produced RANTES and IFN-beta. These results suggest that activated eosinophils may support vascular endothelium during viral infection but further studies are needed.

Conclusions: Eosinophils can display antiviral properties and therefore play a significant role in antiviral response on lung epithelium.

Evaluation of changes in amino acids and biogenic amines in the course of immunotherapy of Hymenoptera venom allergic patients

Sandra Murawska, Aleksandra Opęchowska, Aleksandra Starosz

Presenting author: Sandra Murawska

Tutors: Assoc. Prof. Kamil Grubczak, PhD

Affiliations: Students Scientific Group at Department of Regenerative Medicine and Immune Regulation, Faculty of Medicine, Medical University of Białystok

Introduction: Hymenoptera venom allergy (HVA), with prevalence reaching up to 3,5% in the European population, is a hyperreactive condition occurring in response to a bee/wasp sting. It can manifest as a local or even a severe, general reaction with life-threatening anaphylaxis. Venom immunotherapy (VIT) is an allergen-specific therapy that involves gradually increased concentrations of bee/wasp venom proteins applied subcutaneously. The aim of VIT is to induce immune tolerance to specific allergens and, consequently, to reduce the risk of anaphylactic reactions. Despite the worldwide popularity of VIT, its effects on metabolomic profile remain unknown.

Aim of the study: Our study aimed to evaluate changes in selected metabolites in bee/wasp venom allergic patients during immunotherapy and their association with clinically relevant parameters.

Material and methods: Venous blood from 22 bee and 27 wasp venom-allergic patients, subjected to VIT protocol, were collected before and during the following stages of therapy. Simultaneously, routine diagnostic parameters, including tryptase and IgE, were assessed. Metabolome profiles were determined using LC-MS and FIA techniques at Metabolomics Division of MUB. For the metabolites analysis commercially available IDQ p180 Biocrates kit was implemented. Statistical analysis was performed using GraphPad Prism and Metabo Analyst software.

Results: First, we showed that the metabolome profile of the bee and wasp venom allergic patients was significantly different compared to a healthy control group, inter alia in the context of biogenic amines and amino acids. During the first three months of the treatment, we observed increasing concentration of those metabolite groups in allergic patients, with the exception of reduced arginine levels. At the admission stage, only weak correlations between tested metabolites and IgE or tryptase were demonstrated. However, substantial associations appeared after 1-2 years of VIT implementation in the group of bee venom-allergic patients.

Conclusions: Patients allergic to bee or wasp venom are characterized by individual metabolomic profiles. Application of allergen-specific immunotherapy can significantly affect those profiles. Importantly, selected metabolites showed a correlation with allergy-related parameters. Thus, we revealed the potential possibility of using certain metabolites as novel prognostic and monitoring markers in venom-specific immunotherapy of bee and wasp venom-allergic patients.

Assessment of biogenic amines profile in asthmatic patients in the course of biological therapy with benralizumab

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Introduction: Asthma is a chronic respiratory disease characterized by bronchi inflammation accompanied by reversible airway obstruction. Symptomatic treatment with bronchodilators and steroids allows for effective control in most cases of the disease. Nevertheless, 5-10% of patients suffer from uncontrolled or severe form of asthma. Biological therapy has revolutionized the management of that specific group by introducing benralizumab into clinical practice. Benralizumab is a monoclonal antibody directed against the alpha chain of the interleukin – 5 receptor (IL-5Rα, CD125) and is approved for the management of severe eosinophilic asthma (SEA) via modulating the type 2 immune response. Recently, dominant research has presented the influence of benralizumab therapy on the condition of asthmatic patients. In contrast, the consequences of the benralizumab therapy use on metabolomic profiles in asthmatic patients have not been described so far.

Aim of the study: Our study aimed to assess the changes in selected components in metabolome profile, namely biogenic amines, in asthmatic patients at admission and during the treatment with benralizumab.

Materials and methods: Plasma was collected from 10 adult patients diagnosed with severe uncontrolled asthma and qualified for biological treatment with benralizumab. Metabolome profiles were determined using LC-MS and FIA techniques at Metabolomics Division of MUB. For the metabolites analysis, a commercially available IDQ p180 Biocrates kit was implemented. Statistical analysis was performed using GraphPad Prism and Metabo Analyst software.

Results: At the initial stage, we indicated statistically significant changes in the level of biogenic amines after 12-24 months of therapy with benralizumab. Interestingly, some of those metabolites, including kynurenine and putrescine, showed decreased levels after treatment. At the same time, serotonin and Met-SO were found to increase in response to benralizumab. Noteworthy, pathway analysis revealed a substantial impact on glycolysis and gluconeogenesis pathways and degradation of essential amino acids. Enrichment analysis, conversely, demonstrated that catecholamine synthesis and related metabolites are predominantly involved in response to the studied biological therapy in allergic patients.

Conclusions: Implementing new treatment methods for asthma is crucial in the context of the severity of complications of unstable asthma. Despite the beneficial effects of benralizumab in managing severe asthma, the knowledge of the mechanisms of those events remains not fully discovered. Here, for the first time, benralizumab therapy was shown to be associated with significant changes in biogenic amines. Further research is required to determine whether newly discovered metabolites and related pathways exert any effect on the efficiency of the biological therapy.

The enocannabinoid system, potential overlap between cannabinoid and nociceptin signaling and their role in intestinal inflammation in a mouse model and human samples

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Introduction: The cannabinoid receptors (CB1, CB2) and nociceptin receptor (NOP) have been implicated to play a role in development of the colitis. Endocannabinoid ligands pathways have not been thoroughly investigated yet. In this study, their role in IBD pathogenesis as well as the potential treatment target have been evaluated.

Aim of the study: The evaluation of endocannabinoid and nociceptin role in IBD: ulcerative colitis (UC) and Crohn's disease (CD) pathogenesis.

Materials and methods: Colitis was induced in mice by dextran sodium sulfate (DSS). NOP agonist (SCH 221510. 3 mg/kg), CB1 antagonist (AM 6545, 3mg/kg) or CB2 antagonist (AM 630, 5mg/kg) were given alone or in combination. The levels of IL-6, pERK and STAT3 was quantified using Western blot. The expression of genes encoding CB receptors was determined in the mouse and human colonic samples collected from patients suffering from Crohn's disease (CD) and ulcerative colitis (UC) and from healthy controls (HC) using real time RT-PCR. The quantification of endocannabinoids from tissues was obtained by liquid chromatography–atmospheric pressure chemical ionization–mass spectrometry.

Results: We observed a significant increase in macroscopic score in mice treated with SCH221510 + AM6545, but not with SCH221510 + AM630, compared to mice treated only with SCH221510 (11.75 (11.00 – 14.38) vs. 6.25 (3.875 – 9.50)), $p<0.05$. We found a significant reduction in the levels of ERK 1/2 in mice treated with SCH221510 + AM6545 compared to mice treated with SCH2215510 (0.97 (0.14) vs. 1.89 (0.31), $p<0.05$). A similar trend was noticed when we assessed STAT3 (10.52 (3.23) vs. 18.27 (8.64)) in mice treated with SCH221510 + AM6545 or SCH221510 only. We observed a significant increase in the levels of β-arrestin in mice treated with SCH221510 + AM6545 compared to mice treated with SCH221510 only (13.22 (4.53) vs 2.10 (0.38), $p<0.05$), as well as in the levels of phospho-AKT (pAKT) (11.66 (2.79) vs. 3.11 (0.61)) respectively, $p<0.05$). Statistical significance was reached between the expression of CB1 receptor in UC and HC groups (498 (57.45-1890) and 4946 (2098-12818) ($P <0.05$)). A strong, statistically significant positive correlation was found between the relative expression of CB1 and NOP receptors in CD ($r=0.83$, $P<0.05$) and between the relative expression of CB2 and NOP receptors in CD ($r=0.87$, $P<0.05$). Several endocannabinoids were significantly ($P < 0.05$) increased in tissue collected from UC and CD patients in comparison to HC.

Conclusions: We obtained promising results suggesting the existence of cross-talk between the CB and NOP receptors. Described alterations in less known components of the ECS system in UC and CD patients point to new fields for research in the direction of the etiology of IBD.

DENTISTRY

9th of May 2024

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Coordinators:

Abassah Bernadine

Rachel Stanley

…●●●…

Jury:

Barbara Łapińska DMD, PhD

Agnieszka Bruzda-Zwiech DMD, PhD

Joanna Kunert DMD, PhD

Kamila Rogowska DMD

Aleksandra Fortuniak DMD, PhD

Retrospective Analysis of Oral Lesions: A Crucial Review for Healthcare Providers

Olena Marushko, Aya Kraiz, Olesya Marushko, Katarzyna Błochowiak

Presenting author: Olena Marushko

Tutors: Marzena Wyganowska

Affiliations: Poznan University of Medical Sciences

Introduction: Oral mucosal pathology presents a wide spectrum of lesions with varied etiologies and clinical manifestations, necessitating a thorough understanding for effective diagnosis and management. These lesions encompass reactive lesions, precancerous/potentially malignant lesions, minor salivary gland pathologies, benign tumors, and malignant tumors.

Aim of the study: This retrospective study aims to comprehensively analyze the clinical characteristics and histopathological findings of oral lesions. By elucidating the epidemiological trends and clinical patterns of these lesions, we aim to provide valuable insights for clinicians involved in the diagnosis and management of oral mucosal pathology.

Materials and methods: This retrospective study included 208 patient records obtained from the archives of the Department of Oral Surgery, Poznan University of Medical Sciences. Data were collected on gender, age, lesion location, clinical diagnosis, habits, medications, histopathological diagnosis, lesion duration, treatment modalities, and symptoms. Lesions were categorized into five groups: reactive lesions, precancerous lesions/potentially malignant lesions, salivary gland pathologies, benign tumors, and malignant tumors. Clinical data were collected through comprehensive medical and dental examinations, and tissue specimens were obtained for histopathological evaluation.

Results: The majority of oral lesions occurred in patients during their 5th decade of life, with salivary gland pathologies being more common in younger patients. Benign and malignant tumors were predominantly observed in the 7th decade of life. No significant gender predilection was observed. The lower lip was the most commonly affected site, particularly prone to mucoceles development. Lesions predominantly involved the buccal mucosa and vestibular mucosa, with the buccal mucosa being predisposed to precancerous lesions.

Conclusions: By elucidating the epidemiological trends and clinical patterns of oral lesions, this study offers crucial insights for clinicians involved in diagnosing and managing oral mucosal pathology. It emphasizes the importance of comprehensive evaluation and multidisciplinary management approaches in addressing these lesions effectively.

Analysis of Xerostomia and Oral Health-Related Quality of Life in Sjogren's Syndrome Patients

Olesya Marushko, Aya Kraiz, Olena Marushko

Presenting author: Olesya Marushko

Tutors: Katarzyna Błochowiak DDS, PHD

Affiliations: Department of Clinical Chemistry and Biochemistry, Medical University of Lodz, Poland

Introduction: Xerostomia, the sensation of dry mouth, is a prevalent symptom in Sjogren's syndrome, an autoimmune disorder affecting exocrine glands. This condition not only causes patient discomfort but also increases the risk of periodontal diseases and opportunistic infections, underscoring the importance of accurately assessing xerostomia severity and oral health in affected individuals. Understanding these correlations could improve diagnostic precision and guide personalized treatment strategies for managing xerostomia.

Aim of the study: is to assess xerostomia severity and oral health in Sjogren's syndrome patients.

Materials and methods: A cohort of 48 Sjogren's syndrome patients were recruited. The study adhered to diagnostic criteria outlined in the American College of Rheumatology (ACR) and the European League Against Rheumatism (EULAR) 2016 guidelines to ensure consistency and accuracy in patient selection and assessment. Xerostomia severity was assessed using Fox's test, a subjective survey indicating the severity of dry mouth sensation, and VAS, a subjective self-reported scale for symptom intensity. Oral Health Impact Profile (OHIP-49 questionnaire) has been used to assess oral health status.

Results: Fox's test analysis revealed a mean of 54.2% ± (23.50%) and a median of 60%. The distribution of Fox's test results ranged from 0% to 100%. Similarly, VAS assessments exhibited a mean score of 44.96 mm ± (27.42 mm), and a median of 46.5 mm, with a range from 0 mm to 100 mm. The Oral Health Impact Profile indicated mean scores across various conceptual dimensions of impact: Functional Limitation 13.11 ± (8.37), Physical Pain 13.14 ± (8.37), Psychological Discomfort 18.46 ± (11.28), Physical Disability 10.78 ± (8.51), Psychological Disability 19.56 ± (9.75), Social Disability 13.42 ± (9.47), and Handicap 16.83 ± (11.62).

Conclusions: VAS and Fox's test provide sensitive assessments of xerostomia severity, confirming its significance in Sjogren's syndrome. Severe xerostomia exacerbates oral health issues, particularly impacting Psychological Disability and Psychological Discomfort domains in affected patients.

Epidemiological Characteristics of Supernumerary Teeth: A Retrospective Analysis

Aya Kraiz, Olesya Marushko, Jakub Pressello, Andrew Nowak

Presenting author: Aya Kraiz

Tutors: Katarzyna Błochowiak DDS, PhD

Affiliations: Poznan University of Medical Sciences

Introduction: Supernumerary Teeth (STs) represent an abnormality characterized by the presence of additional teeth or odontogenic structures beyond the normal count within the dental arch. These anomalies may occur in both primary and permanent dentitions, presenting either unilaterally or bilaterally, and can manifest as erupted or impacted. STs can lead to various complications necessitating multidisciplinary dental and medical intervention. Understanding the epidemiological features of STs is vital for their accurate diagnosis and effective management.

Aim of the study: This retrospective study aims to elucidate the epidemiological characteristics of STs, including their number, location, type of dentition, and association with predisposing factors. By analyzing these aspects, the study seeks to provide valuable insights for clinicians in diagnosing, detecting, and treating STs effectively.

Materials and methods: The retrospective study group comprised 88 patients treated at the Department of Oral Surgery and Periodontology, Poznan University of Medical Sciences, between January 2018 and December 2023. Medical records were analyzed for demographic data, including sex and age, as well as characteristics of STs such as dentition type, location, number, reason for reporting, and accompanying diseases. Data were analyzed using descriptive statistical methods, with a significance level set at $p < 0.05$.

Results: STs were predominantly detected in mixed dentition (60%) compared to primary (5%) and permanent dentition (35%). Maxillary involvement was more common (82%) than mandibular (15%), with 3% of patients exhibiting STs in both jaws. Mesiodens constituted the most frequent type of supernumerary tooth (42.59%), primarily located in the anterior maxilla (region S1, 23.15%). Gender correlation analysis revealed a slight predominance of males (59.53%). Orthodontists were the primary detectors of STs (38.64%). Most cases (89.77%) presented isolated STs without accompanying defects.

Conclusions: Mesiodens represents the most common type of ST, predominantly occurring in the anterior maxilla. Panoramic X-rays should be routinely performed in early childhood to detect STs and prevent associated complications. Dentists and orthodontists play pivotal roles in early detection and management of STs to ensure optimal patient outcomes.

Effect of methacrylate-POSS addition on selected mechanical properties of photo-cured dental resins and nanocomposites

Norbert Soboń

Presenting author: Norbert Soboń

Tutors: D.Sc., PhD Eng. Kinga Bociong, Prof. UMED

Affiliations: Medical University of Łódź

Introduction: Dental resin composites (DRCs) are the most widely used and most important tooth filling materials in modern preservative dentistry. Their widespread clinical usage creates a need to develop new formulas with improved mechanical properties and longevity. Polyhedral oligomeric silsesquioxanes (POSS) are group of novel organic–inorganic hybrid nanomaterials that may offer possibilities of mechanical qualities enhancement when incorporated in the composites.

Aim of the study: The aim of this study was to evaluate the effect of methacrylate-POSS with nanosilica dispersion (MA/Ns-POSS) addition on mechanical properties of photo-cured experimental dental resins or composites.

Materials and methods: Based composition of prepared materials was mixture of Bis-GMA, UDMA, TEGDMA, HEMA and camphorquinone with tertiary amine as photo-initiating system (all ingredients from Sigma Aldrich). Experimental group additionally contained methacrylate-POSS (1.5 nm molecule) with nanosilica dispersion (particle size 20 nm, amount 30 wt.%) from Hybrid Plastics. MA/Ns-POSS was blended in 0.5, 1, 2.5, 5, 7.5, 10, 15, 20 wt.% matrix ratios. This was followed by adding 45 wt.% of silanized silica filler to create composites. Properties of resin matrices and composites were assessed separately. Vickers hardness (HV), three point bending strength (FS) and modulus in bending (Ef), diametral tensile strength (DTS) for composites un- and modified with MA/Ns-POSS were measured. For pure matrix same tests were conducted except DTS.

Results: Addition of MA/Ns-POSS doesn't influence studied properties of cured matrices. However such modification resulted in changes of mechanical properties of the experimental composites even in the lowest concentrations compared to control (unmodified MA/Ns-POSS group). The composite with 10 wt.% of additive has the best results both for FS and Ef. For composites an increasing trend in HV can be observed with up to 20 wt.% MA/Ns-POSS concentrations. DTS values increased but only up to 2.5 wt.% of MA/Ns-POSS incorporated to composite, with decrease in higher concentrations.

Conclusions: Addition of MA/Ns-POSS to the experimental dental composite influences its flexural and diametral tensile strength, as well as hardness. Overall the mechanical properties of studied composites are slightly improved with 10 wt.% or 20 wt.% of additive showing the most promising results for future research.

PHARMACY

9th of May 2024

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Coordinators:

Patrycja Marcinkowska

Nithin Thomas

…●●●…

Jury:

Marek Staszewski, PhD

Michał Klimczak, PhD

Prof. Ewa Balcerczak

Prof. Ewelina Piątczak

Dagmara Szmajda-Krygier, PhD

Evaluation of the effect of novel dual μ and κ opioid receptor agonist BU06009 on the colorectal cancer cells' viability and its connection to the regulators of G-protein signaling (RGS) proteins.

Zuzanna Kasprzak

Presenting author: Zuzanna Kasprzak

Tutors: Mikołaj Świerczyński, MD, Maciej Sałaga, PhD, DSc

Affiliations: Department of Biochemistry, Medical University of Łódź, Poland, Medical University of Łódź

Introduction: Colorectal cancer (CRC) is the second deadliest cancer worldwide. Approximately 1.9 million new cases were diagnosed in 2020, accounting for 10% of global cancer incidence. Therefore, there is an urgent need to find new directions in CRC therapy. Opioid drugs bind to G-protein-coupled μ-, δ-, or κ-opioid receptors (MOPr, DOPr, KOPr) which are profusely expressed in the enteric nervous system as well as muscular and immune cells of the gastrointestinal (GI) tract. The function of GPCRs is controlled and modulated by RGS proteins and atypical regulators, such as AXIN1. Recently, opioids gained researchers' interest as a potential inhibitor of cancer growth and spreading. However, there is still little research regarding opioid use in cancer therapy. In our study we evaluated the effects of the new KOPr and MOPr double agonist - buprenorphine derivative BU06009 - on the CRC cells.

Aim of the study: The aim was to evaluate the effect of BU06009 on Caco-2 and SW480 cell lines viability and measure the expression of genes regulating G protein activity in those cells.

Materials and methods: Human colorectal adenocarcinoma cells (Caco-2) and human colon adenocarcinoma cells (SW480) were divided into control and four BU06009 groups (1uM, 3uM, 10uM, 20uM), 24h treatment each. The viability of cells was determined with the MTT assay. RNA was isolated from SW480 and Caco-2 (control and 20uM group of both lines). In these groups we measured the expressions of apc, rgs5, rgs6, rgs10, rgs11, DOPr (oprd1), MOPr (oprm1), KOPr (oprk1) and axin1 genes by means of qPCR. All expression results were analyzed in reference to the hprt expression.

Results: SW480 were not sensitive to BU06009, while viability of Caco-2 was severely decreased in the BU06009 group compared to control. The most significant difference between the lines was found in 20uM groups (98% cell survival for SW480 and 55% for Caco-2). The expression of rgs5, rgs6 and rgs11 was increased in the SW480 groups. Interestingly, only 33% of the SW480 samples displayed expression of oprm1, compared to 83% in Caco-2 samples. Neither group expressed oprd1 or oprk1. Apc, axin1 and rgs10 did not show significant difference in expression between samples.

Conclusions: The results indicate that high sensitivity to BU06009 in the Caco-2 group might be connected to the lower expression of rgs genes which play a role in terminating GPCRs signaling, including opioid receptors. Additionally, increased expression of oprm1 in Caco-2 samples might explain their particularly high sensitivity to BU06009.

Effect of mild, moderate and severe ER stress on the release of IL-6 and IL-8 by astrocytes

Jakub Tambor, Sebastian Gawlak-Socka

Presenting author: Jakub Tambor

Tutors: Prof. Anna Wiktorowska-Owczarek PhD, Paulina Sokołowska PhD, Marta Jóźwiak-Bębenista PhD

Affiliations: Medical University of Łódź, Department of Pharmacology and Toxicology

Introduction: Neuroinflammation and endoplasmic reticulum (ER) stress are associated with many neurodegenerative diseases and mood disorders. ER stress occurs when misfolded proteins accumulate in the endoplasmic reticulum, which activates the unfolded protein response (UPR) pathway. UPR aims to save the cell, but severe or prolonged ER stress leads to cell death. In addition, ER stress leads to the upregulation of proinflammatory cytokines such as IL-6 and IL-8.

Aim of the study: The aim of the study was to analyse the impact of various forms of ER stress (mild, moderate and severe) on the release of proinflammatory cytokines IL-6 and IL-8 from astrocytes and compare the effects to known immunostimulant – tumour necrosis factor alpha (TNF-α).

Materials and methods: Tunicamycin (TM) at 0.01; 0.05; 0.1; 0.5; 5 and 10 μg/ml was used as a well-known inducer of ER stress due to its ability to hinder the formation of protein N-glycosidic linkages. IL-6 and IL-8 levels were measured with commercially available immunological tests after 24, 48 and 72 hours of incubation of astrocytes with TM or TNF-α. The intensity of ER stress was determined based on cell viability measurement using the MTT conversion method.

Results: Astrocytes stimulated with TM secreted IL-6 in a concentration-dependent manner in the range of 0.01 - 0.5 μg/ml after 48 h. The highest concentrations of TM showed cytotoxicity, which also led to a decrease in the level of the cytokine. The accumulation of IL-6 persisted after 72 hours of incubation with TM, but the effect was not statistically significant. Similarly, an increase in IL-6 was observed after incubation of cells with TNF-α. Interestingly, contrary effects were noted in IL-8 secretion. While astrocytes stimulated with TM exhibited a concentration-dependent reduction in IL-8 secretion, TNF-α stimulation resulted in an elevation of this cytokine's concentration.

Conclusions: ER stress induces inflammation in astrocytes through the time- and concentration-dependent buildup of pro-inflammatory IL-6. Nonetheless, unlike the inflammatory agent, TM reduced IL-8 secretion by astrocytes. This difference could hold importance in identifying ER stress markers as potential drug targets for treatment of neurodegenerative diseases or mood disorders, yet it requires confirmation in more complex animal studies.

Small-molecule PERK inhibitors as an innovative approach for primary open-angle glaucoma treatment

Kamil Saramowicz, Julia Barczuk

Presenting author: Kamil Saramowicz

Tutors: Wioletta Rozpędek-Kamińska, PhD; Grzegorz Galita, PhD; Natalia Siwecka, MD; Professor Ireneusz Majsterek, PhD

Affiliations: Department of Clinical Chemistry and Biochemistry, Medical University of Lodz, Poland

Introduction: Trabecular meshwork (TM) is the primary outflow pathway for aqueous humor and thus the main regulator of intraocular pressure (IOP). Dysfunction and loss of TM lead to IOP elevation, thereby playing a central role in the pathogenesis of primary open-angle glaucoma (POAG), a progressive optic neuropathy. Endoplasmic reticulum (ER) stress and PERK kinase activation induce apoptosis in TM cells contributing to the development of POAG. Therefore, inhibition of the proapoptotic PERK pathway may protect HTM cells and counteract the progression of POAG.

Aim of study: This study aimed to assess the properties of the small-molecule PERK inhibitor LDN-0060609 in an in vitro model of POAG.

Materials and methods: Experiments were conducted on the primary human trabecular meshwork (HTM) cell line. To induce ER stress, HTM cells were treated with 500nM of thapsigargin. The efficacy of the LDN-0060609 compound was evaluated by measuring the level of eIF2α phosphorylation, the main PERK substrate, by western blot technique. Additionally, the potency of LDN-0060609 was compared with another PERK inhibitor – GSK2606414 (1μM). The cytotoxic of the investigated inhibitor LDN-0060609 was assessed using the XTT assay, whereas the genotoxic of the LDN-0060609 compound was evaluated via the alkaline version of comet assay. Analysis of apoptosis was performed by the colorimetric caspase-3 assay.

Results: LDN-0060609 exhibited the highest activity at a concentration of 25μM, as it induced 65% inhibition of eIF2α phosphorylation in ER-stressed HTM cells (similar to GSK2606414). No cytotoxic or genotoxic effect of LDN-0060609 was observed towards HTM cells regardless of concentration and incubation time. While in ER-stressed HTM cells the tested inhibitor at a concentration of 25 μM significantly increased cell viability and reduced DNA damage. There was no significant increase in caspase-3 activity after 24h incubation of HTM cells with LDN-0060609 at any of the concentrations used. Whereas, at a concentration of 25μM, the tested PERK inhibitor significantly reduced caspase-3 activity in ER-stressed HTM cells.

Conclusions: LDN-0060609 demonstrated a protective effect in an in vitro HTM-based POAG model by reducing ER stress and DNA damage, enhancing viability, and rescuing ER-stressed HTM cells from apoptosis, with no cytotoxicity or genotoxicity towards HTM cells. Therefore, the small-molecule PERK inhibitor LDN-0060609 may represent a promising pharmacological modality for POAG treatment.

This work was supported by National Science Centre, Poland (grant no. 2016/21/B/NZ5/01411).

Shoot cultures of the Endemic Species Silene grisea Boiss cultivated in nutrient sprinkle bioreactor

Wiktoria Huras, dr hab. Ewa Kochan

Presenting author: Wiktoria Huras

Tutors: dr hab. Ewa Kochan

Affiliations: Medical University of Łódź, Faculty of Pharmacy, Department of Pharmaceutical Biotechnology

Introduction: Silene L. is the largest genus of green plants in the Caryophyllaceae family, including over 700 species growing worldwide, Australia and Antarctica excluded. Silene grisea Boiss is an endemic plant found in the regions of Syria and Israel. It prefers rocky habitats and is resistant to drought. In 2018, it was listed on the IUCN Red List of Threatened Species as vulnerable to extinction due to its very limited distribution. Its chemical composition has not yet been studied. It is known that other plant species belonging to the Silene genus are rich sources of chemical compounds and contain phytoecdysteroids, triterpenoid saponins, sterols, and flavonoids.

Many Silene species have been used in traditional medicine. This is due to their anti-inflammatory and antibacterial properties, ability to stimulate tissue regrowth and increase blood flow on wounded areas. They are used to accelerate the healing process, treat diarrhoea and vomiting, support the treatment of respiratory diseases and alleviate insomnia. Seeds of selected species are also exploited for their culinary use.

Aim of the study: The aim of the conducted research was to obtain a shoot culture of S. grisea Boiss, analyze growth parameters, and cultivate it in a nutrient sprinkle bioreactor.

Materials and methods: The seeds of S. grisea Boiss were obtained from the Botanical Garden in Jerusalem at The Hebrew University Givat Ram Campus, from which shoot cultures were obtained and maintained under in vitro conditions.

Results: Disinfected seeds developed seedlings under sterile conditions. Their shoot tip became an explant for obtaining shoot cultures. These cultures grew on MS medium enriched with 1 mg L-1 of benzylaminopurine riboside (rBAP) and 0.1 mg L-1 of indole-3-acetic acid (IAA). After 4 weeks of cultivation, the fresh biomass reached 25.6 g L-1 (dry biomass 2.204 g L-1), with a multiplication rate of 19.6 shoots per explant. Scaling up the process and shoot cultivation in a nutrient sprinkle bioreactor resulted in a 7.5% and 39.75% higher increase in fresh and dry biomasses compared to these parameters determined for shoot cultures conducted in glass tubes. An average of 98 shoots was obtained from bioreactor cultivation.

Conclusions: As a result of the experiments, stable shoot cultures of the endemic species S. grisea Boiss were obtained, growing under in vitro conditions in glass tubes and on a larger scale in a nutrient sprinkle bioreactor. They exhibited high biomass increase and multiplication rate. These cultures will be used for the isolation, identification, and quantitative determination of biologically active compounds in the obtained extracts.

INTERNAL MEDICINE

10th of May 2024

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Coordinators:

Julia Stokowiec

Shruti Kuhan

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Jury:

Prof. Michał Nowicki

Prof. Ewa Małecka-Wojciesko

Prof. Joanna Makowska

Prof. Anna Lewandowska-Polak

Robert Morawiec MD, PhD

Exploring the Association Between Serum Magnesium Levels and Type 2 Diabetes Mellitus

Udodirim Uduh

Presenting author: Udodirim Uduh

Tutors: Ganna Kravchenko, MD; Agnieszka Guligowska, PhD

Affiliations: Medical University of Łódź

Introduction: Magnesium (Mg2+) deficiency is defined as a serum magnesium concentration <0.77 mmol/L. Low Mg2+ levels are a frequent problem seen in the geriatric population. This is usually because of older adults having a lower dietary intake of Mg2+. However, recent studies have postulated that Type 2 Diabetes Mellitus (T2DM) can initially cause or even worsen an already existing hypomagnesemia state found in senior patients.

Aim of the study: The purpose of this study is to explore the relationship between the serum magnesium levels and Type 2 Diabetes Mellitus in geriatric hospitalized patients.

Materials and methods: The research was done based on retrospective analysis of patient's documentation. In this study, older patients who were admitted to the Geriatric Department of the Central Veterans Hospital in Lodz, Poland, from January 2017 to September 2023 were examined. The inclusion criteria were patients 60 years old or above, hospitalized in the department, and available data on serum Mg2+ and information on whether a patient has T2DM or not. Age, gender, body mass index (BMI) and body mass were additional parameters that were also considered in this report. After screening, a total of 2007 patients (1418 women and 589 men) met the inclusion criteria. The Shapiro-Wilk test determined distribution type. All the continuous variables were not normally distributed, so the data was expressed as median (25%-75% quartiles). All the calculations were performed via the Mann-Whitney U test ($p \leq 0.05$). Categorical variables were analysed using the chi-squared test ($\chi 2$). Then, a general linear model was employed to check the association between variables. Statistical analysis of the data collected was calculated using Statistica 13.1.

Results: Out of 1418 women, 422 (31.1%) had T2DM, and out of 589 men, 203 (34.5%) had T2DM. The median serum Mg2+ in those who had T2DM in women was 0.76 (0.67-0.84) and in men it was 0.77 (0.70-0.85) mmol/L. The median serum Mg2+ in those who did not have T2DM in women was 0.81 (0.74-0.88) and in men it was 0.83 (0.76-0.89) mmol/L. Women were found to have a significantly lower serum Mg2+ level compared to men. Patients with T2DM notably had a smaller serum Mg2+ than patients that did not have T2DM. Each comparison resulted in a p value of <0.0001(U). Multivariate analysis showed that the relationship between Mg2+ and T2DM is not age and BMI-depended. Hence, these results illustrated a significant association between median serum Mg2+ concentration and T2DM.

Conclusions: It was observed that the patients with T2DM had lower serum Mg2+, than those who do not have T2DM. Therefore, serum magnesium levels have the potential to be a valuable parameter that can be measured when a patient has T2DM within geriatric populations.

Underreported stool retention can cause urinary tract infections in infants above 6 months of age

Katarzyna Banasiak (1)

Presenting author: Katarzyna Banasiak

Tutors: Małgorzata Stańczyk MD PhD (2)

Affiliations: 1 - Medical University of Łódź, 2 - Department of Pediatrics, Immunology and Nephrology, Institute of the Polish Mother's Memorial Hospital in Lodz Poland

Introduction: Urinary tract infection (UTI) in infant can cause renal scarring and damage to developing kidneys. It can be the first sign of underlying congenital malformation of urinary tract (CAKUT), therefore in selected cases infants undergo imaging diagnostics. Voiding cystourethrography (VCUG) is the gold standard for diagnosis of vesicoureteral reflux (VUR).

Aim of the study: During analysis of data from infants referred for VCUG in paediatric nephrology tertiary care centre in central Poland stool retention was observed on the images frequently. The aim of the study was to assess the frequency of underreported stool retention in children referred for VUCG and its possible influence on the prevalence of UTI.

Materials and methods: 98 infants with prior episodes of UTI were enrolled (M:F 58:50, ns). Medical histories were analysed for risk factors of UTI. History of previous UTI was recorded. Results of VCUG were analysed according to the presence of VUR and fecal masses visible on abdominal x-ray. If fecal masses were visible patient was qualified to stool (+) group.

Results: (VUR) was diagnosed in 29.6% of cases. 53% had only one episode of UTI before the VCUG, 47.9% had recurrent UTIs. 50% were stool (+). History taking revealed constipation only in 6% in whole group, 1 patient's parent reported child's constipation in stool(+) group. There was no difference in the frequency of VUR between patients in stool(+) and stool(-) groups (30.6% vs. 29.2%, p=0.9999).
Median age at VCUG of children in stool (+) and stool (-) group was significantly different (8 months vs 4 months, respectively, $p < 0.0001$).

Conclusions: Stool retention is a risk factor for UTI in infants, despite the presence of VUR. Stool retention can be underreported. Prior to the invasive diagnostic procedures in infants older than 6 months without other signs and risk factors of urinary tract malformation it is worth to consider bowel dysfunction as a first reason of UTI. Physicians should put special effort into finding out the possible stool retention.

Late Gadolinium Enhancement in Cardiac Magnetic Resonance Imaging: Importance in Prediction of Major Cardiovascular Events

Barbara Syska-Lamb, Patrycja S. Matusik, Tadeusz J. Popiela

Presenting author: Barbara Syska-Lamb

Tutors: Anna S. Veér

Affiliations: Jagiellonian Medical University, Radiological Student Scientific Circle,
Jagiellonian University Medical College, Faculty of Medicine Chair of Radiology Krakow, Poland

Introduction: Non-invasive assessment of cardiac function, structure, and tissue features have been enabled by recent advancements in Cardiac Magnetic Resonance (CMR) imaging.

Aim of the study: This study assesses the use of late gadolinium enhancement's (LGE) predictive value in identifying Major Adverse Cardiac Events (MACE) in at risk patients suffering from cardiovascular disease.

Materials and methods : The data pool consisted of 83 patients referred for CMR imaging between 2011-2017. Clinical data was collected and 6-year follow up, monitoring for MACE manifestations. The MACE was defined as ischemic heart disease required revascularization, myocardial infarction, heart failure required hospitalization, stroke, or death (cardiovascular mortality or all-cause death). Detection of LGE, and assessment of left ventricular parameters was performed utilizing a 1.5 Tesla scanner. Statistical analysis was performed using IBM SPSS and Statistica, to evaluate the relationship between LGE markers MACE incidence.

Results: MACE occurrence was strongly correlated with presence of LGE ($p<0.001$), with ischemic LGE being more common ($p=0.006$). The presence of LGE as an independent predictor of MACE was determined via logistic regression analysis (OR: 11.7, $p=0.034$). Furthermore, multivariable COX regression revealed that LGE presence was a significant predictor of MACE (HR: 180.5, $p<0.001$). Results of our statistical analysis exhibited MACE incidence of 16% upon a 6-year follow up, including cardiovascular mortality, heart failure exacerbation, myocardial infarct, and revascularization. Patients without MACE exhibited higher stroke volume (SV), than compared to their MACE exhibiting counterparts ($p=0.004$).

Conclusions: These results underline the prognostic significance of LGE in CMR imaging to predict cardiovascular events in at risk patients. We propose the use of LGE as a non- invasive marker aiding in risk stratification and patient management, to improve cardiac clinical outcomes in patients with various cardiovascular diseases.

Development and Evaluation of a Targeted Core-Shell SPION-Based Nanoparticle Therapy for Treating Atherosclerosis

Phillip Kiełbowicz, Nafea Inayat

Presenting author: Phillip Kiełbowicz

Tutors: Maria Sawościan MD, Prof. Małgorzata Lelonek MD PhD,
Dr. Magdalena Osial PhD, Prof. Michał Giersig PhD

Affiliations: Medical University of Łódź; Polish Academy of Sciences Institute of Fundamental Technological Research

Introduction: Existing treatments for atherosclerosis are currently limited by systemic side effects, insufficient targeting capabilities, and in nature are preventative. At the moment, there is no direct pharmacotherapy available to fight atherosclerosis at the point of injury. Developing a targeted therapy could significantly enhance therapeutic efficacy while minimizing adverse effects of current treatment standards.

Aim of the study: This stage one preclinical study aims to synthesize a targeted core-shell superparamagnetic iron oxide (SPION) based nanoparticle therapy to enhance therapeutic efficacy and to also minimize adverse effects.

Materials and methods: This study is based on the chemical synthesis of a core-shell SPION-based nanoparticle, which focuses on optimizing its size, shape, and surface modulation with potential targeting moieties (e.g., statins, rapamycin). The nanoparticles will be assessed based on their physical properties, drug loading efficacy, and targeting specificity to further characterize these particles. Preliminary evaluations include numerous chemical and physical tests for pharmacokinetic analyses, aiming to select the most effective.

Results: This is a stage one preclinical study and the results are forthcoming. However, this study is designed to synthesize and assess the nanoparticle's size, shape, loading potential, and pharmacokinetics, and therapeutic potential to reduce atherosclerotic plaque burden. Results will be presented at the conference, highlighting our key findings on nanoparticle synthesis, optimization, and the preliminary assessments.

Conclusions: This study seeks to incorporate the field of nanotechnology into modern medicine and to further advance this field by synthesizing a novel core-shell SPION-based therapy for atherosclerosis. Our team is working to offer a promising new approach to atherosclerosis treatment, one which potentially overcomes the limitations of current available therapies and improves patient outcomes through an interdisciplinary approach, careful design, and evaluation.

Correlation between serum vitamin B12 and albumin levels in geriatric population

Author and Shanila Akhtar Ali

Presenting author: Shanila Akhtar Ali

Tutors: Serena Stephenson, MD; Bartłomiej Sołtysik, MD, PhD

Affiliations: Medical University of Łódź

Introduction: It is well established from previous literature that abnormal concentration of vitamin B12 can have adverse health consequences. Decreased concentration can lead to various physiological dysfunctions such as macrocytic anaemia, chronic fatigue, cognitive decline in the elderly. Whereas elevated levels are associated with liver diseases and myeloproliferative disorders. Serum albumin disturbance is another quite common abnormality found in elderly population which serves as a marker for many drastic consequences including acute infections, malnutrition, liver, and kidney impairment. However, there is insufficient evidence in any correlation between these common biomarkers - serum vitamin B12 and albumin, especially in older hospitalized individuals. Finding an association between these markers can serve as a breakthrough in the better management of geriatric patients.

Aim of the study: To assess the relationship between serum vitamin B12 and albumin levels in a large sample of hospitalized geriatric population.

Materials and methods: The retrospective cohort included all patients aged 60 years and above admitted in the Geriatrics Department at Central Veterans Hospital in Lodz, Poland between 2017 and 2023. The study design comprised a total of 2194 patients who met the inclusion criteria with 544 (24.79%) and 1650 (75.2%) number of males and females, respectively. Shapiro Wilk test was performed and showed that the distribution of variables significantly departed from normality and therefore Mann-Whitney test was used to compare continuous variables and data was expressed as median (quartiles).

Results: The median age of men and women in the study population was 82 (quartiles) and 84 (quartiles) years respectively. Vitamin B12 levels were found to be in normal range for all patients with median of 255 (190-373) pmol/l for males and 276 (194-400) pmol/l for females. Concomitantly, serum albumin measures showed median of 37.3 (31.7-41.7) g/dl for males and 38.1 (22.0-41.9) g/dl for females. A scatter plot was used to display the data and a correlation coefficient was computed to assess the relationship between serum vitamin B12 and albumin levels. The correlation coefficient value is -0.1580, the results indicate a significant inverse correlation between the variables.

Conclusions: The study revealed a statistically significant inverse relationship between serum vitamin B12 and albumin levels. We strongly recommend measuring albumin levels of patients with elevated vitamin B12 and vice versa for patients with hypoalbuminemia. Further research is needed to make a definitive conclusion, but our preliminary results can lead to new insights into the matter and thus help in better management of geriatric patients.

T1Drink study – alcohol-related glycemic variability in people with type 1 diabetes supported by continuous glucose monitoring technology

Julia Wykrota

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Introduction: People with type 1 diabetes (T1D) are affected by their disease in almost every aspect of their lives. Insulin treatment and strict monitoring are crucial for ensuring proper diabetes management. One of the factors, that can hinder it is alcohol consumption. As advice to refrain from alcohol is rarely heeded, data on its effects and improvement in patients' education are needed.

Aim of the study: To assess glycemic variability related to alcohol consumption, coexisting habits and education in people with type 1 diabetes.

Materials and methods: Anonymous online questionnaires from 216 participants regarding alcohol consumption in young adults with T1D (16-35 years old) were obtained. 58 episodes of alcohol consumption (from 36 participants) together with a reference non-drinking day (the day before alcohol consumption) for each episode were retrieved from Continuous Glucose Monitoring (CGM) in the csv. format and analysed using Glyculator 3.0 and Statistica 13.3.

The study was international (12 languages) and answers were received from 23 countries. Study design available at https://t1drink.umed.pl/en.

Results: 137 (63.4%) respondents were female, 78 (36.1%) male and 1 (0.5%) did not want to specify their gender. Their age ranged from 16 to 26 years. 207 (95.8%) had time of duration of diabetes >1 year. The main method of glycemic control was CGM, used by 88.9% (192) participants. Method of insulin therapy varied – 99 (45.8%) were on insulin pump therapy, 78 (36.1%) on multiple daily injections, 39 (18.1%) were using hybrid closed-loop insulin delivery systems. 20 (9.3%) experienced hypoglycemia and 31 (14.4%) ketoacidosis related to alcohol consumption.

48,15% (N=104) described effect of alcohol consumption on their blood glucose as unpredictable and 35.2% (N=76) did not feel safe in terms of diabetes management while consuming alcohol. Days on which alcohol was consumed did not differ significantly from the preceding ones in terms of mean sensor glucose (165.21±49.35 vs 161.27 ± 49.35, p=0.5798), glucose variability (coefficient of variation 34.5±20.5% vs 34.1±16.0%, p=0.8897) or time spent in target range 70-180mg/dl (65.0±23.7% vs 66.2±22.5%, p=0.5869) or hypoglycemia (<70mg/dl: 2.8±4.7% 3.3±5.4%, p=0,5394).

Conclusions: Alcohol consumption can have various issues on glucose variability and safety of people with type 1 diabetes and almost half of participants consider it unpredictable. CGM data did not reveal a clear tendency to hyper- or hyperglycemia, necessitating more individualized and short-term analyses.

Prognostic Nutritional Index: A Predictor of Hospitalization Duration Based on Nutritional Status

Navenia Subramaniam

Presenting author: Navenia Subramaniam

Tutors: Bartłomiej Sołtysik, MD,PhD; Serena Stephenson, MD

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Introduction: The Prognostic Nutritional Index (PNI) is a composite marker utilized in clinical settings to evaluate the nutritional and immunological profile of individuals. It is calculated based on serum albumin concentration and total lymphocyte count, reflecting nutritional and immune functions, respectively. Lower PNI values correlate with poorer nutritional and immune status. Recent research suggests its association with nutritional assessment, patients' risk profiles, treatment decisions, intervention response monitoring, and clinical outcome prediction. However, its utility to predict the length of hospital stays among older adult inpatients remains uncertain.

Aim of the study: The purpose of this study was to investigate the prognostic role of the PNI on length of hospital stay in older adult inpatients.

Materials and methods: The study cohort comprised patients aged 60 and older admitted to the geriatric department of the Central Veterans Hospital in Lodz, Poland, from January 2017 to September 2023. After screening, 1029 patients with data on serum albumin and total lymphocyte count were analysed. Age, Body Mass Index (BMI) (weight in kilograms divided by height squared in meters), body mass (kilograms), PNI [(10×serum albumin [g/dL]) +(0.005×lymphocytes/μL)], and length of hospital stay (days) were computed. The cohort included 707 females (68%) and 322 males (31%), with variables assessed by gender collectively. The Shapiro-Wilk test determined distribution type, with continuous variables presented as mean ± SD and median (quartiles) and analysed via Mann-Whitney U test ($p \leq 0.05$). Statistical analysis of the data collected was calculated using Statistica 13.1.

Results: The study found a statistically significant age difference between females (median age 83, interquartile range 77-89) and males (median age 79, interquartile range 74-85 years). No sex differences for age, BMI and PNI were found. PNI presented strong negative correlation with length of hospitalization (rho=-0.22) and age (rho=-0.34).

Conclusions: Our study reveals a negative correlation between PNI, age and hospitalization length in our patient cohort, emphasizing the complex relationship between nutritional status, aging, and clinical outcomes. As age increases, alongside potential physiological decline and longer hospital stays, the prognostic value of indices like PNI diminishes. This underscores the need for early nutritional interventions, especially in older patients, to improve prognosis during hospitalization. Further research on tailored nutritional strategies for older adults is crucial for optimizing care and improving clinical outcomes in this vulnerable demographic.

Nutritional Risk Score as a Predictor of Mortality in Elderly Patients: An Observational Study

Cormac O'Sullivan

Presenting author: Cormac O'Sullivan

Tutors: Ganna Kravchenko, MD; Bartłomiej Sołtysik, MD,PhD

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Introduction: Malnutrition is a constant hurdle healthcare providers must face when dealing with elderly populations. The ever-increasing life expectancy throughout the world brings into sharp focus the need for good screening tools and an awareness of when treatment should be escalated to prevent elderly populations from becoming malnourished. There is data on worse recovery and prolonged hospitalisations for malnourished patients. Nutritional risk score (NRS) is a quick and simple tool that can be used to assess patients' nutritional status. Mortality during hospitalization increases with age and might relate to malnutrition. Finding an association between NRS and in-hospital death allows healthcare professionals to prioritise the most vulnerable patients and improve elderly care.

Aim of the study: To investigate the association between NRS and mortality during hospitalization in elderly patients.

Materials and methods: The 1878 patients in this study were from the Geriatrics Department Central Veterans' hospital in Lodz located in Central Poland, from 2012 to 2019. Information on age, body mass index (BMI), NRS score and deaths during hospitalization was taken from patient's medical histories. The Shapiro-Wilk test was employed to assess data distribution. All variables were not normally distributed, so the data was expressed as median (25%-75% quartiles). Continuous variables were analysed using the Mann-Whitney U test, considering significance at $p \leq 0.05$. Categorical variables underwent evaluation through the chi-squared test ($\chi 2$). Statistical analysis was conducted using Statistica 13.1.

Results: The median age of study group is 84 (78-88) years with an average BMI of 25.7 (22.7-29.3) kg/m2. Of the 1878 patients, 1783 were discharged and 95 patients (5.06%) died during hospitalization. NRS scores in discharged participants were significantly lower (better) with a median of 1 (0-2) comparing to 3 (2-4) points in patients, who died in hospital ($p<0.0001$). Significantly more ($p=0.02$) women died during hospital stay. Patients who died were significantly ($p<0.0001$) older comparing to discharged participants. BMI for discharged patients was higher with median of 25.8 (22.7-29.4) kg/m2 comparing to 23.9 (21.3-26.3) in patients who died in hospital ($p=0.004$). Next, the cut-off point for NRS as predictor of mortality during hospitalization was calculated, showing NRS as most sensitive and specific with cut-off at 2 points.

Conclusions: Our study underscores the significance of NRS as a predictive tool for in-hospital mortality risk assessment among elderly patients. The observed correlation between higher NRS values and mortality highlights the importance of early nutritional interventions and close monitoring in this demographic. Our findings suggest that even patients with seemingly lower NRS scores, such as 2 points, warrant attention due to their elevated mortality risk.

Changes in lipoprotein(a) concentrations in patients with acute coronary syndrome: 3 month follow up.

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Tutors: Anna Witkowska MD, PhD (3)

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Introduction: Lipoprotein a (Lp(a)) is a complex plasma protein that consists of LDL cholesterol with apolipoprotein B100, which is shared with apolipoprotein a. Lp(a) is considered pro-atherosclerotic, pro-inflammatory, pro-thrombotic and anti-fibrinolytic. Elevated Lp(a) level is an independent risk factor for atherosclerotic cardiovascular disease (AVSCD) and is independently connected with long-term major adverse cardiovascular events in patients with and without AVSCD. Despite Lp(a) level is believed to be stable throughout lifetime, according to the reports from the world and our own researches, factors like inflammation may influence the Lp(a) concentration.

Aim of the study: The aim of the study was to evaluate changes in Lp(a) level in patients during ACS and 3 months later.

Materials and methods: Study population involved 40 adult patients with ACS (STEMI, NSTEMI, UA) – 37 were treated with stent implantation and 3 conservatively. Parameters subjected to statistical analysis were Lp(a), IL-33, hsCRP, TCH, LDL, HDL, TG.

Cardiovascular risk associated with Lp(a) levels was defined according to the Polish Lipid Society 2021 guidelines: optimal Lp(a) levels are <75 nmol/l , levels of 75-125 nmol/l are associated with moderate, >125 nmol/l with high, >450 nmol/l with very high cardiovascular risk.

Results: 22 (55%) patients were men, 18 (45%) were women, mean age was 66.2±8.6 years old. 23 (57,5%) had STEMI, 11 (27,5%) NSTEMI and 6 (15%) UA - we compared STEMI vs NSTEMI+UA groups. LDL and hsCRP levels did not statistically differ in both of the groups ($p>0.05$). There were no differences in Lp(a) levels between the STEMI and NSTEMI+UA groups. Among all patients 9 (22.5%) had Lp(a) levels above >75 nmol/l, 5 (56%) of them had between 75-124 nmol/l, 3 (33%) between 125-459 nmol/l and 1 (11%) >450 nmol/l. 3 months after ACS Lp(a) concentration was significantly higher in all patients - 17.8 nmol/l compared to ACS moment 15.9 nmol/l ($p<0.0003$), in NSTEMI+UA group 12.1 vs 8.2 nmol/l ($p<0.003$), in STEMI 21.5 vs 24.7 nmol/l ($p<0.03$). Among all patients, a change in cardiovascular risk associated with Lp(a) level 3 months after ACS was observed from low to moderate in 1 (2.5%) and from moderate to high risk in 5 patients (12.5%). Moreover, IL-33 concentration was significantly higher in the STEMI than in the NSTEMI+UA group - 132.5 vs 99.2 pg/ml.

Conclusions: Single measurement of Lp(a) in patients during ACS is insufficient, because it is not representative of the patient's baseline Lp(a) concentration and may result in incorrect patient classification into the risk group and inadequate treatment. If the level of Lp(a) was measured during the ACS, it should be repeated after stabilisation of the patient's condition.

Statin Therapy and Hypocholesterolaemia in Geriatric Population

Ahrani Jeyakanthan

Presenting author: Ahrani Jeyakanthan

Tutors: Bartłomiej Sołtysik, MD,PhD; Serena Stephenson, MD

Affiliations: Medical University of Łódź

Introduction: Statins are first line drugs in treating hypercholesterolemia and are effective in the prevention and management of vascular events. However, studies suggest that malnourished geriatric patients on statin therapy experience a heightened risk of both short- and long-term mortality compared to patients with normal nutritional status. Total cholesterol (TC) level below 3 mmol/L is considered abnormally low levels of lipids in the blood. TC, a marker of malnutrition, should be assessed when elderly patients are placed on lipid-lowering therapy to appropriately maintain their nutrition status and address the treatment-risk paradox of statins.

Aim of the study: The aim of the research is to evaluate the proportion of elderly individuals receiving statin therapy who have total cholesterol levels below 3.0mmol/L, potentially indicating malnourishment.

Materials and methods: This retrospective observational study examined patients aged 60 and above, admitted to the Geriatric Department of the Central Veterans Hospital in Lodz, Poland between January 2017 and September 2023. Variables of interest include age, gender, body mass index (BMI); (calculated using weight (kg) divided by height (m) squared), total cholesterol (TC) in mmol/L, high-density lipoprotein (HDL) in mmol/L, low-density lipoprotein (LDL) in mmol/L, and triglycerides (TG) in mmol/L. The Shapiro-Wilk test was used to determine the normality of the data distribution and continuous variables were reported as mean ± SD and median (quartiles). Further assessment was conducted using the Mann-Whitney U test ($p \leq 0.05$). Statistica 13.1 was used to perform all statistical analysis.

Results: Out of the total 1,184 patients assessed, 1,031 (87.1%) had total cholesterol (TC) levels ≥ 3mmol/L, with 774 females and 257 males, while 153 patients (12.9%) had TC levels ≤ 3mmol/L, comprising 101 females and 52 males. The median age of patients with TC levels ≥ 3mmol/L was 82 (76-87) years, whereas for those with TC levels ≤ 3mmol/L, it was 86 (80-90) years. Statin therapy was administered in 463 (44.90%) individuals with TC ≥ 3mmol/L and 111 (72.4%) individuals with TC ≤ 3mmol/L.

Conclusions: The study revealed a significant portion of elderly patients on statin therapy exhibit total cholesterol levels below 3.0 mmol/L, indicative of potential malnourishment. Specifically, a higher prevalence of abnormally low TC levels was found among patients receiving statin therapy compared to those with TC levels within normal ranges. This underscores the importance of monitoring nutritional status in geriatric patients undergoing lipid-lowering therapy to mitigate the associated risks of malnutrition and elevated mortality rates. Moreover, the findings highlight the necessity of tailoring statin therapy in the elderly to balance the benefits of lipid-lowering against the potential nutritional risks, particularly in those with already low cholesterol levels.

Clinical and metabolic characteristics in women with gestational diabetes depending on the time of diagnosis.

Aleksandra Oto, Adrian Ołubiec, Klaudia Czarnik MD

Presenting author: Aleksandra Oto

Tutors: Monika Żurawska-Kliś MD, PhD; Marcin Kosiński MD, PhD

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Head of the Department: Katarzyna Cypryk Prof., MD, PhD

Introduction: Gestational Diabetes Mellitus (GDM) is associated with higher risk of adverse pregnancy outcomes. Nowadays, an increasing prevalence of GDM that is diagnosed in the first half of pregnancy is observed. However, the causes of this trend have not yet been elucidated.

Aim of the study: The aim of the study was to compare the clinical and metabolic characteristics in women with gestational diabetes depending on the time of diagnosis.

Materials and methods: A retrospective cohort study was performed on 551 pregnant women with GDM. In 212 women GDM was diagnosed before the end of 20th week of pregnancy (group A), and in 339 GDM was diagnosed after 20th gestational week (group B). The clinical and metabolic characteristics of the subjects were analyzed.

Results: The women in group A were signficantly younger (32 (29, 36) vs 35 (30, 40) years (IQR); p<0.00001) with much less frequent positive family history of diabetes mellitus (2% vs 21%; p<0,00001) and significantly lower rate of previous or current smoking (78% vs 94%; p< 0.0001). The prevalence of GDM in previous pregnancies was comparable. Birth weight was significantly higher in group A (3500 (3200, 3780) vs 3430 (3100, 3700) kg (IQR); p<0.05). No difference was observed as concerns the high, while both prepregnancy weight and BMI were significantly higher in group A (69 (62, 85) vs 65 (58, 74) kg (IQR); p=0.0052, and 25.3 (22.6, 30.3) vs 24.1 (21.3, 27.4) kg/m2 (IQR); p<0.05, respectively). The percentage of normal weight and obese subjects was lower in group A, whith higher percentage of overweight women (50% vs 57% and 3% vs 14% and 47% vs 29%; p<0.05, respectively). Fasting plasma glucose in the 75g Oral Glucose Tolerance Test (OGTT) in group A was significantly higher (93 (86, 99) vs 86 (80, 95) mg/dL (IQR); p<0.00001), while its both 1-hour OGTT and 2-hour OGTT glucose levels were significantly lower (170 (143, 191) vs 182 (162, 196) mg/dL (IQR); p=0.0001, and 142 (118, 162) vs 158 (145, 171) mg/dL (IQR); p<0.00001, respectively). Abnormal FPG was significantly more prevalent in group A (54% vs 33%; p<0.00001), while abnormal 1h-OGTT and 2h-OGTT in group B (35% vs 44%; p<0.05, and 23% vs 44%; p<0.00001, respectively). No difference was found in the number of abnormalities in OGTT between the groups. Proportion of primipara was comparable, with also similar rate of abortion or preterm delivery in obstetric history. History of macrosomia was more frequent in group A (13% vs 6%, p=0.0058), with lower rate of history of cesarean section (8% vs 15%, p<0.00001). The prevalence of insulin treatment was comparable.

Conclusions: Women diagnosed with early GDM were younger, less often smokers and had lower prevalence of diabetes in the family history. Both their birth weight, as well as prepregnancy weight and BMI were significantly higher. Their fasting glycemia was both higher and more frequently abnormal. Macrosomia was more often noted in their obstetric history. The mode of treatment did not differ between the groups.

Clinical characteristics of EGPA patients in comparison to GPA subgroup with increased blood eosinophilia from POLVAS registry

Anna Drynda

Presenting author: Anna Drynda

Tutors: Krzysztof Wójcik, Stanisława Bazan-Socha

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Introduction: In EGPA, two main clinical phenotypes based on ANCA status have been described. Although there are no diagnostic criteria for EGPA in the strict sense, the diagnosis in all patients was confirmed using the ACR 1990 classification criteria and the nomenclature proposed by the 2012 Revised International Chapel Hill Consensus. Since hypereosinophilia is a characteristic but not a pathognomonic feature of EGPA, distinguishing GPA with elevated eosinophilia from EGPA can be problematic.

Aim of the study: To characterize the eosinophilic granulomatosis with polyangiitis (EGPA) population from the POLVAS registry depending on ANCA status and diagnosis onset, including their comparison with the granulomatosis with polyangiitis (GPA) subset with elevated blood eosinophilia (min. 400/□l)(GPA HE) to develop a differentiating strategy.

Materials and methods: A retrospective analysis of the POLVAS registry.

Results: The EGPA group comprised 111 patients. The ANCA-positive subset (n=45 [40.54%]) did not differ from the ANCA-negative one in clinics. Nevertheless, cardiovascular manifestations were more common in ANCA-negative patients than in those with anti-myeloperoxidase (MPO) antibodies (46.97% vs. 26.92%, p=0.045). Patients diagnosed before 2012 (n=70 [63.06%]) were younger (median 41 vs. 49 years, p<0.01), had higher blood eosinophilia at diagnosis (median 4946 vs. 3200/μl, p<0.01), and more often ear/nose/throat (ENT) and cardiovascular involvement.
GPA HE comprised 42 (13.00%) out of 323 GPA cases with reported blood eosinophil count. Both GPA subsets had a lower prevalence of respiratory, cardiovascular, and neurologic manifestations but more often renal and ocular involvement than EGPA. EGPA also had cutaneous and gastrointestinal signs more often than GPA with normal blood eosinophilia (GPA NE) but not GPA HE. The model differentiating EGPA from GPA HE, using ANCA status and clinical manifestations, had an AUC of 0.92, sensitivity of 96%, and specificity of 95%.

Conclusions: Cardiovascular symptoms were more prevalent in the ANCA-negative subset than in the anti-MPO-positive one. Since EGPA and GPE HE share similarities in clinics, diagnostic misleading may result in inappropriate therapeutic approach. Further studies are needed to optimize their differentiation and tailored therapy, including biologics.

New possibility of pulse wave velocity assessment and its correlation with clinical and laboratory data

Maria Możdżan

Presenting author: Maria Możdżan

Tutors: prof. dr hab. n. med. Karina Wierzbowska-Drabik, prof. dr hab. n. med. Marlena Broncel

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Introduction: Early detection of subclinical atherosclerosis plays a pivotal role in reducing patients' cardiovascular risk. Pulse wave velocity (PWV), gold standard measurement of arterial stiffness, has emerged as a valuable tool for diagnosing and stratifying the risk of early cardiovascular disease. Despite the recommendation, limited access to specialized separate diagnostic equipment, hinder the widespread adoption of PWV assessment. The introduction of a transthoracic echocardiography (TTE) for PWV measurement can contribute to its wider use in daily practice.

Aim of the study: Our aim was to assess the clinical and laboratory correlations of PWV measured by Doppler TTE (ePWV) and compare achieved values between patients with results obtained from the standardized, oscillometric method (aPWV).

Materials and methods : We included 38 patients (mean age 52.5 ± 21 years, 58% female), who underwent TTE with Doppler examination of flow in arteries (ePWV) and simultaneously had the oscillometric measurements of aPVW with special dedicated device (aPWV). Automatic measurement of aPWV were acquired in the right brachial artery and ePWV was calculated using Doppler spectra registered in the both carotid and femoral arteries. Pulsed wave Doppler spectra were registered via TTE and times from R wave of ECG to onset of flow were measured as well as the distance between respective points of measurements. Then, the ePWV was calculated as carotid-femoral distance divided by estimated pulse wave transit time.

Results: In the whole group, mean aPWV was 9.52 m/s and mean ePWV was 9.63 m/s (rho=.85, $p<0.001$). A Bland-Altman plot revealed a mean difference between aPWV and ePWV of 0.12 ± 2.67 m/s. Moreover, ePWV correlated good with age, systolic blood pressure, total cholesterol level and intima media thickness.

Conclusions: ePWV, based on Doppler echocardiography, is a method of non-invasive measurement of arterial stiffness with significant correlation with oscillometric evaluation and the burden of cardiac risk factors. Wider utilization of the ePWV method for the evaluation of aortic wall stiffness can further expand its clinical use in echocardiography.

Clinical utility of disease activity indices in predicting short-term response to biologics in patients with ulcerative colitis

Filip Romaniuk, Anna Franus

Presenting author: Filip Romaniuk

Tutors: Małgorzata Stańczyk MD, PhD

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Introduction: The Mayo Score [MS], endoscopic Mayo score [eMS] and the Ulcerative Colitis Index of Severity are employed in the assessment of ulcerative colitis [UC] severity.

Aim of the study: This study compared the aforementioned indices in term of predictory value for response to remission induction treatment with anti-TNF and anti-Integrin biologics.

Materials and methods: 38 patients were retrospectively evaluated in the study, 23 male and 15 female, aged 18-74 years old who had undergone a total of 53 biological therapy courses with either infliximab [IFX] or vedolizumab [VDZ] at the Department of Gastroenterology of the Medical University of Łódź. The clinical and endoscopic activity of UC was assessed at the outset of biological therapy and the 14th week remission induction assessment juncture.

Results: The study analyzed 19 IFX and 34 VDZ treatment courses. The response rate of patients receiving IFX reached 73.67%, 58.82% for VDZ. The mean MS, eMS, UCEIS improved among all patient groups: 8.316±1.974 to 4.158±2.218 ($p<0.05$), 2.632±0.597 to 1.790±0.713 ($p<0.05$), 4.790±1.745 to 3.000±1.453 ($p<0.05$) for IFX, 7.088±2.234 to 3.618±2.412 ($p<0.05$), 2.706±0.524 to 1.677±1.065 ($p<0.05$), 4.235±1.350 to 2.735±1.880 ($p<0.05$) for VDZ.

Conclusions: Outcome assessment in induction treatment of UC includes clinical data and endoscopic evaluation. Severity of inflammatory lesion activity according to the eMS and UCEIS indices correlates with the overall disease presentation as evaluated with MS. The UCEIS provides an overall better predictor for biological induction treatment when compared to the eMS in both patient groups, particularly in those receiving VDZ. It provides a promising alternative to the eMS and can be employed for both initial disease severity assessment as well as for treatment response monitoring.

Comparison of the nutritional status of geriatric subjects with and without pneumonia

Acsah Ann Chacko

Presenting author: Acsah Ann Chacko

Tutors: Serena Stephenson, MD, Agnieszka Guligowska, PhD

Affiliations: Medical University of Lodz

Introduction: The nutritional status of older adults is crucial for managing diseases like pneumonia. Pneumonia increases metabolic demands, reduces appetite and hampers nutrient absorption, worsening malnutrition. Protein breakdown during pneumonia affects albumin and lymphocyte levels, causing hypoalbuminemia and lymphocytopenia. The Nutritional Risk Screening 2002 (NRS) identifies malnutrition in hospitalized patients, hence, high NRS and low albumin and lymphocyte levels show nutritional deficiencies.

Aim of the study: The aim of the study is to compare the nutritional status of geriatric subjects with and without pneumonia.

Materials and methods: The research involved older patients aged 60 and above admitted to the geriatric department of Central Veterans Hospital in Lodz, Poland, from 2017 to 2023. Of 2330 patients screened for pneumonia, 318 were diagnosed. Various variables including gender, age, Body Mass Index (weight in kilograms divided by height squared in meters) and NRS (adding nutritional risk and disease severity scores) were assessed alongside serum albumin levels (g/dl) and total lymphocyte count (*10^3/microliter). Data distribution was checked with Shapiro-Wilk test and displayed as mean ± standard deviation or median (quartiles). The Mann-Whitney U test was used for continuous variables, with significance set at $p \leq 0.05$. Statistical analysis was performed using Statistica 13.1.

Results: The study indicates differing pneumonia prevalence between genders, with 12.11% of females and 17.38% of males affected. There was a notable age difference: median for pneumonia patients was 86 (78-90) years, while non-pneumonia patients had 83 (76-88) years, $p<0.001$. Median serum albumin for patients without pneumonia was 39 (33.9-42.2) g/dl, whereas for affected, it was 31.6 (28.15-34.9) g/dl. The median lymphocyte count for non-pneumonia patients was 1.52 (1.14-1.93), compared to 1.28 (0.87-1.75)*10^3/microliter for pneumonia patients. The differences in albumin, lymphocyte count and NRS between pneumonia and non-pneumonia patients were statistically significant ($p<0.001$) in each case. Next the cut-off point for abovementioned markers as predictors of pneumonia were calculated, showing albumins as most sensitive and specific with cut-off 36.5 g/dl.

Conclusions: This comprehensive study clearly demonstrates the association between pneumonia and the nutritional status of geriatric patients. The findings underscore the critical importance of early nutritional assessment and intervention in elderly patients diagnosed with pneumonia. Specifically, the differences in nutritional markers between patients with and without pneumonia highlight the need for healthcare providers to implement targeted nutritional strategies to mitigate the risks associated with malnutrition in this vulnerable population. Moreover, the identification of albumin as a sensitive and specific predictor of pneumonia further emphasizes its utility in early detection and management strategies.

ONCOLOGY

10th of May 2024

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Coordinators:

Agata Bartczak

Mahizha Sunil

…●●●…

Jury:

Prof. Marek Dedecjus

Rafał Czyżykowski MD, PhD

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Atrial fibrillation phenotype in cancer patients: A single-center retrospective study

Kalina Wiśniewska, Maja Hawryszko, Grzegorz Sławiński, Weronika Pusz-Bulas, Mikołaj Młyński, Patryk Macuk , Ludmiła Daniłowicz-Szymanowicz, Ewa Lewicka

Presenting author: Kalina Wiśniewska

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Introduction: Cancer patients face an elevated risk of atrial fibrillation (AF) compared to the general population, which can be attributed to several factors, including the exacerbated inflammatory response triggered by cancer treatments and surgical interventions.

Aim of the study: This single center, retrospective study aimed to compare a clinical phenotype of two groups of AF patients: with cancer (study group) and without cancer (control group).

Materials and methods: The study group consisted of patients diagnosed with AF who were consulted in the Outpatient Cardio-Oncology Clinic between January 1 and December 31, 2022. They were matched in terms of age and gender with subsequent patients with AF treated in the Outpatient Cardiology Clinic at the same time. Statistical analysis included demographic data, comorbidities, cardiovascular risk factors (CVRFs), medications used, laboratory test results, echocardiographic parameters and Holter ECG monitoring results.

Results: The study cohort comprised 110 patients with a mean age of 70±10 years, 56% male. The control group consisted of 107 patients with a mean age of 70±8 years, 58% male. Cancer patients exhibited a higher Charlson Index compared to non-cancer patients (median 4 vs. 2 points, $p<0.001$). There were no differences between the groups in terms of the prevalence of coronary artery disease (28 vs. 37 patients, $p=0.13$), nor in the proportion of patients with ≥ 2 CVRFs (81.8% vs 76.6%, $p=0.35$) or ≥3 CVRFs (47.3% vs 45.8%, $p=0.83$). Cancer patients displayed a superior left ventricular ejection fraction, with a median of 57% (50-60%) compared to 52% (42-60%) in non-cancer patients ($p=0.026$). Additionally, cancer patients exhibited smaller left atrial (LA) dimensions (43±6 mm vs. 47±7 mm, $p=0.015$) and reduced LA volume (90±30 mL vs. 113±66 mL, $p=0.04$). The prevalence of permanent atrial fibrillation did not significantly differ between the groups (30 vs. 25 patients, $p=0.53$). However, cancer patients were less frequently referred for electrical cardioversion (21 vs. 37 patients, $p=0.01$) and pulmonary vein isolation (3 vs. 23 patients, $p<0.001$). Furthermore, the utilization of antiarrhythmic medications (excluding beta-blockers) was notably lower in the study group compared to the control group (16 vs. 47 patients, $p<0.001$). Anticoagulation was administered in 95 vs 86 patients ($p=0.046$), and low-molecular-weight heparins were used more often in cancer patients (17 vs 1 patients, $p=0.001$). Notably, there were no significant differences observed between the groups regarding the incidence of LA appendage thrombi (1 vs. 5 patients, $p=0.09$) or major bleeding events (9 vs. 4 patients, $p=0.168$).

Conclusions: The observed variance may indicate the presence of distinct underlying pathophysiological mechanisms of this arrhythmia in cancer patients. This suggests the validity and importance of further investigation to elucidate the specific mechanisms and potential implications for clinical management.

Assessment of adverse events profile and outcomes of treatment with azacitidine and venetoclax in acute myeloid leukaemia.

Emilia Karmowska, Marlena Gajczak, Iga Koryciarz, Grzegorz Mirocha

Presenting author: Emilia Karmowska

Tutors: Kinga Krawiec MD, Piotr Strzałka MD

Affiliations: Medical University of Łódź, Department of Hematology, Medical University of Lodz

Introduction: Venetoclax (Ven) is a BH3-mimetic molecule selectively inhibiting the BCL-2 protein, leading to an induction of programmed cell death. Combination of Ven and hypomethylating agent azacitidine (AZA) has been a therapeutic break-through for acute myeloid leukaemia (AML) patients ineligible for intensive chemotherapy, especially compared to AZA monotherapy.

Aim of the study: Assessment of adverse events profile and outcomes of treatment with AZA+Ven in AML patients.

Materials and methods: A retrospective analysis of 36 patients (20 males and 16 females), with median age of 71 years old (range 59-85 y/o), who remained under therapeutic care for AML between 05/2022 and 11/2023 at the Department of Hematology and Transplantology at Copernicus Memorial Hospital in Lodz, Poland.

Results: 33.3% of participating patients developed AML de novo, 44.4% - AML with myelodysplasia-related changes (AML-MRC) and 22.2% - AML secondary to myeloproliferative neoplasm/aplastic anaemia and other diseases. According to the 2022 ELN guidelines, cytogenetic and molecular risk was favourable in 5.5%, intermediate in 50% and unfavourable in 36% of patients (in 8,5% the risk wasn't assessed). On the ECOG Performance Status Scale 30,6% of patients obtained 0 points, 27,8% - 1 point, 13,9% - 2 points and 27,8% - 3 points. The most common score on the Hematopoietic Cell Transplantation-specific Comorbidity Index (HCT-CI; range 0-29) was 5 points (22.2%). Haematological toxicity occurred in 91,7% of patients, with neutropenia (86.1%), thrombocytopenia (58.3%) and anaemia (75%). Infectious complications (72.2%) included febrile neutropenia (27.8%), pneumonia (38.9%) and invasive fungal infection (25%). Bacteremia developed in almost 20% of patients and sepsis in 11.1%. Non-infectious complications occurred in 41.7% of the patients, including biochemical tumour lysis syndrome (TLS) in 11.1% and clinical TLS in only 1 patient. No bleeding to the gastrointestinal nor central nervous system was observed during the treatment. The median number of AZA+Ven cycles administered was 2,5 (range 1-10). 22 patients (61.1%) discontinued treatment, predominantly due to treatment toxicity (59.1%), with grade 4 neutropenia accounting for 57.1% of the causes. Overall complete remission or complete remission with incomplete count recovery (CR/CRi) was 52.8% (19 patients) with the median number of treatment cycles of 1 (range 1-4). 15 participants (41.7%) died in the duration of the study. 11 deaths (73.3%) occurred ≤ 100 days after the first AZA+Ven treatment administration and 4 (26.7%) after > 100 days.

Conclusions: Targeted treatments, such as AZA+Ven cycles, became the optimal choice for challenging patients' populations with risk factors and inability to receive intensive chemotherapy. Promising results are not deprived of complications risk, with myelosuppression being the most prominent. Currently, apoptosis-targeted therapy is a priority in the treatment of AML; however, further studies are needed to obtain satisfying outcomes in AML patients.

Infectious complications significantly limit the effectiveness of Daratumumab-based treatment in relapsed/refractory multiple myeloma.

Grzegorz Mirocha, Marcin Kędzior, Żaneta Witas, Łukasz Woźniak, Magdalena Pawlak, Kacper Kościelny

Presenting author: Grzegorz Mirocha

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Introduction: Daratumumab (dara) is the first monoclonal antibody used to treat multiple myeloma (MM). Real-life data on infectious complications (ICs) in patients treated with dara remain limited.

Aim of the study: The study aimed to determine the frequency and profile of ICs in MM patients treated with dara and their impact on treatment outcomes.

Materials and methods: This retrospective, real-life study included MM patients treated with dara-based regimens according to the Ministry of Health's drug reimbursement program for MM patients (B.54) and Emergency access to medicines (RDTL) between July 2019 and December 2023 at the Department of Hematooncology, Copernicus Memorial Hospital in Łódź. Infectious events were evaluated using the Terminology Criteria for Adverse Events (CTCAE) version 5.0.

Results: The study group comprised 76 patients with a median age of 67 years (interquartile range, IQR: 60.5-72.0). The majority of patients (65.8%) received treatment with dara, bortezomib, and dexamethasone (DVD), followed by dara, lenalidomide, and dexamethasone (DRD, 28.9%), and dara monotherapy (5.3%). In total, 30 patients (39.5%) experienced ICs during dara-based treatment, with 5 patients (6.6%) encountering more than 1 infectious event. Respiratory tract infections were the most common (46.7%). Thirteen patients (17.1%) required hospitalization (grade ≥3 event) due to ICs, and 4 patients died as a result. Importantly, grade ≥3 infection occurrence was an independent factor (hazard ratio, HR 5.1, 95%CI: 1.1-23.6, p=0.038) related to inferior progression-free survival in multivariate Cox regression analysis adjusted for age, International Staging System (ISS), sex, administered regimen, Eastern Cooperative Oncology Group (ECOG) scale, and achieved response to treatment. Patients who developed grade ≥3 ICs had lower baseline hemoglobin (Hgb) level (8.9 vs 11.5 g/dl, p=0.0002), lower platelets (110.2 vs 189.1 × G/L, p=0.001), higher Red Cell Distribution Width (RDW-SD) (57.0 vs 50.0 fl, p=0.0424) and higher aspartate transferase (AST) level (41.8 vs 22.7 U/L, p=0.0042). Finally, a multivariate logistic regression model was developed to identify high-risk patients. This model incorporated two variables: ECOG ≥2 (odds ratio, OR 7.0, 95%CI: 1.4-36.1, p=0.02) and Hgb level (OR 0.6, 95%CI: 0.4-0.9, p=0.006). Following 10-fold cross-validation, the model achieved an area under the curve (AUC) of 0.80, with sensitivity and specificity rates of 75% and 80%, respectively.

Conclusions: ICs are common among patients treated with Dara-based regimens and are associated with inferior treatment outcomes. Basic clinical and laboratory assessments can be valuable in identifying patients vulnerable to infections, facilitating personalized prophylactic strategies.

Alterations in miRNAs expression in BRCA-mutated patients

Matylda Sobczak

Presenting author: Matylda Sobczak

Tutors: Wojciech Fendler MD, PhD, Zuzanna Nowicka MD

Affiliations: Medical University Of Lodz

Introduction: BRCA1 and BRCA2 genes are critical components of the homologous recombination (HR) pathway. Previously, we conducted a comprehensive analysis of serum miRNA expression profiles in a large cohort of healthy individuals, both with and without BRCA1/2 mutations, and identified a distinctive signature of 10 differentially expressed circulating miRNAs associated with BRCA1/2 mutations.

Aim of the study: To comprehensively examine the mechanistic background for the serum expression deregulation of the miRNAs from BRCA mutation signature.

Materials and methods : We conducted in silico analysis based on publicly available patient data by applying bioinformatic pathway enrichment analysis. We compared the miRNA expression profiles in tumor tissues between patients from The Cancer Genome Atlas (TCGA) with mutations in genes related to the homologous recombination pathway (HR-deficient, HRD) and, without such mutations (HR-proficient, HRP). Similarly, we compared miRNA expression between tissues of healthy patients with or without BRCA1 mutations from the Gene Expression Omnibus (ID GSE60444) dataset. The differentially expressed (DE) miRNAs were identified using t-tests with false discovery rate (FDR) with a significance cut-off set at FDR < 0.05 for TCGA data and limma was used for GEO data. We used the DIANA mirPath v.3 for over-representation analysis (ORA) and pathways with $p < 0.05$ were considered significant.

Results: The ORA of the miRNAs from the signature resulted in the identification of 61 significantly enriched Kyoto Encyclopedia of Genes and Genomes (KEGG) pathways. Among the top significant pathways, we found the estrogen signalling pathway (10/10 miRNAs, $p<0.001$).

In total, 89 miRNAs were DE in breast cancer between HRP and HRD samples. 5/89 miRNAs (miR-20b, miR-19b, miR-17, miR-182, miR-375) were part of the BRCA1/2-deficiency signature. In ovarian cancer, 4/25 DE miRNAs were from the signature (miR-182, miR-30d, miR-17, let-7b). 10 miRNAs were DE in both breast and ovarian cancer samples. In stomach cancer, we found 63 DE miRNAs, 5 of which were present in the signature (miR-19b, miR-139, miR-30d, miR-17, miR-182), while colon samples had only 10 DE miRNAs, none from the signature. After comparing miRNA expression obtained from healthy donors, we found that 58 miRNAs were DE ($p<0.05$), including 2 from the signature (miR-421 and miR-17).

ORA of the 10 miRNAs that were DE in both breast and ovarian cancer samples revealed 51 significantly enriched KEGG pathways. Among these, 40 remained significant in the ORA of the miRNAs from the signature. Notably, the estrogen signalling pathway was among the top significant pathways in both analyses with $p<0.001$.

Conclusions: The results of this analysis confirm that BRCA1/2 mutations significantly and predictably alter miRNA expression and point to estrogen-generative and responsive tissues as their tissue source.

IL-15 serum level as a potential predictor of severe infections in multiple myeloma patients

Olga Racińska

Presenting author: Olga Racińska

Tutors: Assoc. Prof. Paweł Robak MD, PhD

Affiliations: Student Scientific Circle at the Department of Hematology, Medical University of Lodz; Department of Hematology, Medical University of Lodz; Department of Hematooncology, Copernicus Memorial Hospital, Lodz, Poland

Introduction: Multiple myeloma (MM) is a plasma cell neoplasm accompanied by hypercalcemia, renal impairment, anemia, and bone lesions. Despite the recent advancements in MM treatment, infectious complications remain the leading cause of morbidity and mortality in this disease, accounting for 35% of early deaths.

Aim of the study: The research aimed to investigate the serum levels of selected cytokines and chemokines, and their association with infectious complications during MM treatment, in order to identify potential predictors of severe infections in MM patients.

Materials and methods: The study group consisted of 64 patients (M 40, F 24) with a mean age of 63.6 ± 10.6 years, including 40 newly diagnosed MM (NDMM) and 24 relapsed/refractory MM (RRMM) treated at the Department of Hematology, Medical University of Lodz. Serum samples were collected before the commencement of the first-line therapy in NDMM or before a subsequent line of treatment in the case of RRMM. Serum cytokine levels were assessed using the Bio-Rad Bio-Plex Pro Human Cytokine 27-Plex Assay. The incidence of infections was evaluated within six months of the sample collection, infectious complications were classified according to the National Cancer Institute Common Terminology Criteria for Adverse Events (CTCAE) version 5.0.

Results: Overall, 26 patients (40.63%) experienced infection in the six months after the commencement of treatment, and the infection rate was significantly higher in RRMM (66.67%) compared to NDMM (25.00%, p=0.0025). Most patients received therapy with bortezomib-based regimen. The vast majority of infections occurred during the treatment (88.46%), infectious complications in the post-autologous stem cell transplantation period were excluded from the analysis. Fourteen patients with infections (53.85%) required hospitalization. Among the infectious events, the most common (50.00%) were lower respiratory tract infections. Six patients died due to infectious complications. Patients who experienced severe infection requiring hospitalization (grade ≥3) had higher serum concentrations of both IL-6 (median 4.53, interquartile range, IQR 2.81-6.33 vs 1.85, IQR 1.03-3.79 [pg/ml], p= 0.0371) and IL-15 (median 66.32, IQR 58.80-187.88 vs median 42.35, IQR 31.60-54.23 [pg/ml], p= 0.0240) compared to those treated outpatient. Finally, a simple multivariate logistic regression model was developed to predict infection requiring hospitalization, incorporating two variables: RRMM and IL-15 concentration. After 10-fold cross-validation, the model reached an area under the curve of 0.73 and sensitivity and specificity of 87.5% and 71.0%, respectively.

Conclusions: Elevated serum concentrations of IL-6 and IL-15 were associated with severe infections necessitating hospitalization in MM patients. A high IL-15 level may be especially useful in identifying patients at risk for subsequent implementation of preemptive measures.

Metastasis to the thyroid gland: a single-institution 10-year experience

Paulina Kalman (1)

Presenting author: Paulina Kalman

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Introduction: Thyroid cancer is relatively uncommon, accounting for approximately 4% of malignancies in women and 0.5% in men. Primary tumors are the predominant presentation. Metastasis to the thyroid gland is rare, with a reported frequency of up to 2.1% among all thyroid malignancies.

Aim of the study: The aim of the study was to investigate the occurrence, clinical progression, diagnosis, and treatment outcomes of secondary thyroid tumors.

Materials and methods: Our analysis is based on data from 2527 patients admitted between October 1, 2013, and May 30, 2023, with suspected or confirmed malignant thyroid cancer. Diagnosis methods included preoperative neck tumor examination or postoperative histopathological evaluation.

Results: Among all malignant tumors, 1.11% (28 patients) were identified as secondary cancers, originating from various sites such as renal cell carcinoma (5), squamous cell carcinoma of the head and neck (5) or esophagus (3), lung carcinoma (3), breast carcinoma (2), and others including mucoepidermal carcinoma, HCC, cervix carcinoma, squamous NUT carcinoma, MPNST (2), fibrosarcoma from the scapula, uterine sarcoma, osteosarcoma of the larynx, and occult mucosal adenocarcinoma. These occurrences were evenly distributed across genders, with an average age of 62.0 years. Metachronic changes were noted in 10 patients, while synchronous tumors were diagnosed in 18, slightly favoring the right lobe. Lymph node involvement was observed in 12 patients, with multi-organ metastases in 10. Non-radical surgery was performed on 12 patients, with adjuvant chemotherapy in 7, and the remainder underwent conservative treatment. Sixteen patients succumbed during the follow-up, with an average survival of 0.52 years after thyroid changes diagnosis. One patient survived for 9.13 years from the metastatic lesion diagnosis. The average survival for others was 1.68 years.

Conclusions: Recognizing metastatic tumors in the differential diagnosis of thyroid nodules is critical, particularly for patients with a history of cancer. Surgical intervention may be appropriate for isolated metastasis, while palliative measures are recommended for widespread dissemination. Surgical intervention is essential for maintaining airway and gastrointestinal patency as well as carotid continuity.

DERMATOLOGY

10th of May 2024

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Coordinators:

Fryderyka Orawczak

Noora Hussain

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Jury:

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Infectious exacerbation of psoriasis - retrospective analysis among patients with psoriasis and pharyngitis

Paulina Dobecka, Karolina Jamrozik

Presenting author: Paulina Dobecka

Tutors: dr n.biol. Joanna Czerwińska

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Introduction: Psoriasis is a multifactorial disease caused by a combination of genetic predisposition and the influence of environmental factors, which include, among others, infections caused by Microorganisms.

Aim of the study: Microorganisms such as bacteria (Staphylococcus aureus, Porphyromonas gingivalis), fungi (Candida albicans) and viruses (HIV, HPV5, retroviruses) are important factors triggering or the onset or exacerbation of psoriasis.

Materials and methods: The presented retrospective study included the analysis of oral swabs from patients (n=468) of the Dermatology, Sexually Transmitted Diseases and Clinical Immunology Clinic of the Municipal Polyclinical Hospital In Olsztyn, diagnosed with psoriasis and psoriatic arthritis (PsA).

Results: The study group (n=468) included 191 women (41%) and 277 men (59%). The pharyngitis symptoms were observed in 42% of patients (n= 198): 72 women (37%), 126 men (63%). The symptoms were present in 125 patients (63%) with PASI>10, in 40 (20%) with PASI<10 and in PsA - 33 (17%). Among the cultivated bacteria, the most common species was Streptococcus viridans (n=42) and Streptococcus pyogenes (n=32), the presence of which correlated with the severity of symptoms.

Conlusions: The presented analysis indicates the need to perform oral swabs in order to eliminate factors causing exacerbation of symptoms.

Assessment of risk factors for development of dysplastic naevi and melanoma in the population of Lodz.

Paulina Karp

Presenting author: Paulina Karp

Tutors: Prof. Agnieszka Żebrowska, PhD, MD

Affiliations: Medical University of Lodz

Introduction: Cutaneous melanoma (CM) is a growing public health problem, because incidence of melanoma is increasing worldwide. In Poland, the incidence rate of CM is 9.6/100,000. Although melanoma is much less common than other skin cancers, it has a higher mortality rate and is responsible for almost 73% of skin cancer-related deaths. The risk factors of CM include: ultraviolet exposure, tanning beds and UV lights, skin type, tanning, age, melanocytic nevi, genetic factors, previous history of melanoma and immunosuppression.

Aim of the study: The aim of the study was to perform analysis of risk factors for the development of dysplastic naevi and melanoma in a group of polish patients visiting a dermatologist for dermatoscopic skin examination.

Materials and methods: A group of 595 patients aged 18-64 who visited a dermatology department between 2022 and 2023 for a skin dermatoscopic examination. Patient's mean age was almost 45,5 years. The study involved the patient completing a questionnaire containing 36 questions. The first 5 were about gender, date of birth, education, residence, motivation to undergo an examination. The another 31 concerned the risk factors for development of melanoma. Finally, the patients underwent a whole-body dermatoscopic examination.

Results: 595 patients participated in the study – 401 women (67,1%) and 194 men (32,9%). The most common reasons for patients to undergo dermatoscopic examination was: „many moles, hyperpigmentations on the skin" (64,5% of patients) , „preventive skin examination" (24,5%), „the mole has changed or a new skin lesion has appeared" (4,9%). 439 (73,8%) patients had never had a skin dermatoscopic examination performed before and 89 (15%) had it done only once. 369 patients (62%) do not know the approximate number of moles on their body. Moreover, 372 patients (62,5%) never performs skin self-examination, while 123 (20,7%) do it once every six months. 39 (6,6%) patients reported regular using the tanning bed, 214 patients (36%) patients have hobbies related to spending time in the sun, 42 patients (7%) declared at least 1 year of work involving long periods of sun exposure. 231 patients (38,8%) confirms using the sunscreen always during intense exposure to the sun and 46 people (7,7%) never use it. CM in the family have been reported in 22 patients (3,7%). As a result of dermatoscopic examination, dermatologists diagnosed at least one atypical nevus in 90 patients (15,1%) and at least one suspected melanoma in 8 patients (1,3%).

Conclusions: In our study numerous risk factors for the development of dysplastic nevi and melanoma have been found. The study showed that many patients regularly use SPF, but a large group of people still use tanning beds. There is a further need to educate patients about eliminating melanoma risk factors, sun protection and preventive skin examinations.

Allergic sensitizations in different phenotypes of childhood atopic dermatitis – cross sectional survey study of Polish guardians.

Joanna Zygadło, Karolina Dumycz MD, Mariusz Panczyk PhD, Wojciech Feleszko MD, PhD

Presenting author: Joanna Zygadło

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Introduction: Atopic dermatitis (AD) is one of the most common inflammatory skin diseases affecting children worldwide. AD displays high degree of heterogeneity in clinical phenotypes as well as immune and genetic endotypes. Detailed endophenotyping of AD is essential to better understand disease mechanisms and clinical associations with atopic comorbidities.

Aim of the study: Our study aimed to analyze sensitization profiles among children with different AD phenotypes that were based on age of onset of AD and age of children with AD.

Materials and methods: We enrolled 435 children whose guardians completed and online questionnaire. The study examined environmental exposures in infancy, food, and aeroallergen sensitizations, comorbidities, and family medical history. AD severity was evaluated using the Patient-Oriented Eczema Measure (POEM) tool. Statistical analysis was performed using Statistica software (TIBCO Software Inc., USA).

Results: In our study, the cohort comprised 256 males (59.4%) and 175 females (40.6%), with an average age of 3.9 years (median age 3 years). The majority of children, 67%, developed atopic dermatitis (AD) within the first 6 months of life. Sensitization to at least one allergen was noted in 90% of the children, with the most common allergens being bovine milk (42%), egg (28%), and birch (27%). We observed a higher prevalence of food sensitization in children under 6 years (30.92%) compared to those older (9.21%; $p<0.05$). Conversely, children above 6 years demonstrated a greater tendency towards aeroallergen sensitization or combined food and aeroallergen sensitization (34.21% vs. 9.19% and 46.05% vs. 24.79%, respectively; $p<0.05$). A significant correlation was found between the age of AD onset and the type of sensitization: children diagnosed after 2 years of age were more likely to be sensitized solely to aeroallergens than those with onset before 6 months (51.85% vs. 7.19%; $p<0.05$). Children sensitized to both food and aeroallergens had a higher likelihood of asthma compared to those sensitized only to aeroallergens or food (50.98% vs. 21% vs. 9.8%; $p<0.05$). Additionally, viral infections occurred more frequently in sensitized children than in their non-sensitized counterparts (32.7% vs. 20%; $p<0.05$).

Conclusions: Sensitization patterns in atopic dermatitis differ according to the age of AD onset and the child's current age, highlighting the critical role of AD phenotyping in evaluating the risk of allergic sensitization and related comorbidities like asthma and viral infections. Our study emphasizes the significance of distinguishing AD phenotypes to better understand the connections between allergen sensitization, AD onset age and subsequent comorbidities. This understanding is crucial for developing strategies aimed at preventing allergic sensitization or facilitating the early identification of high-risk comorbidities, ultimately improving patient outcomes.

Epidemiological aspects of patients hospitalized due to primary and recurrent erysipelas. A retrospective single-center analysis.

Author and co-authors : Agata Ciosek, Karolina Brzezińska, Małgorzata Sarzała

Presenting author: Agata Ciosek

Tutors: Prof. Aleksandra Lesiak MD, PhD; Marta Matych MD

Affiliations: Medical University of Łódź

Introduction: Erysipelas, an acute inflammatory skin condition affecting the subcutaneous tissue, is primarily caused by bacterial infections. Despite its frequent occurrence, comprehensive epidemiological data on erysipelas remain scarce, especially regarding recurrent cases.

Aim of the study: This retrospective analysis, conducted at the Department of Dermatology, Medical University of Lodz, aimed to investigate the demographic and clinical characteristics of 39 patients diagnosed with erysipelas between 2014 and 2023.

Materials and methods : We examined the medical records of 39 patients with confirmed erysipelas, focusing on various parameters including age, gender distribution, hospitalization duration, primary symptoms, lesion localization, comorbidities, allergies, laboratory findings (inflammatory markers), and etiological factors.

Results: Of the 39 patients studied, 14 were women (35.9%) and 25 were men (64.1%), with an average age of 58.7 years. Notably, erysipelas tended to manifest at a later age in women compared to men. The lower extremities were the most commonly affected sites, with a higher prevalence of right lower extremity involvement among men. The majority of cases were observed during winter months, particularly in January. On average, patients were hospitalized for 10.23 days and experienced approximately three episodes of erysipelas every 1.5 years. Comorbidities were prevalent, with obesity being the most common. Elevated inflammatory markers, notably C-reactive protein levels and neutrophil-to-lymphocyte ratios, significantly impacted hospitalization duration. Furthermore, the recurrence of erysipelas was closely associated with the number of comorbidities. Among patients who underwent wound swab testing, Staphylococcus spp., particularly Staphylococcus epidermidis and Staphylococcus aureus, were the most frequently isolated pathogens.

Conclusions: The findings underscore the importance of understanding the demographic and clinical features of erysipelas, particularly its association with comorbidities such as obesity. This knowledge can inform better management strategies and preventive measures to mitigate the burden of this recurrent skin condition.

Ocular manifestations in rosacea patients - comparing to general population

Greta Joskaudaitė

Presenting author: Greta Joskaudaitė

Tutors: Rūta Gancevičienė

Affiliations: 1 - Vilnius University, Faculty of Medicine,
2 - Clinic of Infectious Diseases and Dermatovenereology, Vilnius University, Faculty of Medicine

Introduction: Rosacea is a chronic inflammatory dermatosis mainly affecting the skin of the face. Although rosacea is considered primarily a disease of the skin, eye involvement in rosacea patients has been reported to be relatively common. The symptoms of ocular rosacea are often non-specific, and patients do not associate them with a skin disorder, leaving the condition untreated.

Aim of the study: To evaluate ocular symptoms and their prevalence among rosacea patients, and to compare the results to individuals without rosacea.

Materials and methods: A total of 339 voluntary respondents participated in quantitative questionnaire-based research. The questionnaire was designed to assess ocular rosacea associated symptoms of eyes and eyelids, and evaluate their frequency experienced by the respondents, regardless of their presence or absence of rosacea skin disease. 86.7 % (n=294) of respondents were women and 13.3 % (n=45) were men. The average age was 41.8 years (±12.8, [16;75]). All respondents were assigned to one of two groups depending on whether they had rosacea. 32.2 % (n=109) of respondents were diagnosed with rosacea, while 67.8 % (n=230) did not have rosacea and therefore assigned to the control group. Mean age of rosacea patients was 40.7 years (±9.7, [19;60]) and in the control group - 42.3 years (±14.0, [16;75]).

Results: After evaluating the eye and eyelid symptoms experienced by the respondents, it was found that the symptoms occurred in 31.2 % (n=34) respondents with rosacea and 26.5 % (n=61) in the control group. Although rosacea patients experienced them more often, this was not a statistically significant difference ($p>0,05$). In both groups, the most commonly observed symptoms were dry eyes: 24.8 % (n=27) in the rosacea group and 18.7% (n=43) in the control group, also eyelid redness and swelling: 21.1 % (n= 23) in the rosacea group and 15.7 % (n =36) in the control group. Evaluating the separate symptoms, it was observed that patients with rosacea experienced a statistically significant higher incidence of burning/stinging of the eyes ($p<0.001$), dilated blood vessels in the conjunctiva ($p=0.022$) and on the eyelid or its edge ($p=0.002$), and more frequent symptoms of both eyelids ($p<0.001$). In the control group, it was observed that eyelid skin symptoms occur more often only on one eyelid ($p=0.034$).

Conclusions: Ocular rosacea associated eye and eyelid symptoms are observed in a third of people diagnosed with rosacea. The most common symptoms are dry eyes and eyelid redness and swelling. Although the overall prevalence of eye symptoms is similar to the general population, burning or stinging of the eyes, dilated blood vessels of the conjunctiva or eyelid and symptoms of both eyelids are more prevalent for rosacea patients.

Quality of life and satisfaction of disease management from the perspective of rosacea patients

Greta Joskaudaitė

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Introduction: Rosacea is a chronic inflammatory disease characterized by repeated exacerbations that can often be challenging to treat. Due to rosacea affecting the face and eyes, it has a profound negative impact on quality of life. Patient satisfaction is the consequence of multiple factors which influence the patients' access to healthcare and to the treatment adherence.

Aim of the study: To assess rosacea-related quality of life, patients' satisfaction with rosacea treatment and satisfaction with information about the disease received from health care providers.

Materials and methods: 109 rosacea diagnosed respondents participated in quantitative questionnaire-based research. In this study, the Dermatology Life Quality Index (DLQI), satisfaction with rosacea treatment and with rosacea related information provided in the health care unit, and self-rated knowledge about rosacea were assessed. 94.5 % (n=103) of respondents were women and 5.5 % (n=6) were men. The average age was 40.7 years (±9.7, [19;60]).

Results: The mean DLQI score was 5.6 (±5), with ranges from 0 to 22, and a median of 5 points. Rosacea mostly, for 39.4 % (n=43) of respondents, caused a small impact on the quality of life. Most of the impact was due to the feelings (18.7 %) and symptoms (16.9 %) rosacea was causing. When assessing satisfaction with rosacea treatment, 41.3 % (n=45) respondents indicated that they were completely or partially satisfied with the prescribed rosacea treatment, 30.3 % (n=33) were moderately satisfied, and 28.4 % (n=31) respondents indicated that they were completely or partially dissatisfied with the treatment for rosacea. 33.9 % (n=37) respondents believe that they received an average amount of information about rosacea in a medical institution, and 24.8 % (n=27) – a lot. According to some respondents, little or too little information was provided (19.3 %, n=21 and 21.1 %, n=23, respectively). Assessing self-rated knowledge about rosacea, 48.6 % (n=53) of the respondents indicated that their knowledge is too little, 40.4 % (n = 44) think they have sufficient knowledge, and 10.1 % (n=11) - a lot of knowledge.

Conclusions: Rosacea usually has a little impact on quality of life, usually due to the emotions and symptoms caused by the disease. The majority of respondents are satisfied with the treatment for rosacea, but a third of patients have an opposite opinion. Although almost half of the patients rate their knowledge about the disease as insufficient, the most of them are satisfied with the received amount of information about rosacea at the medical institution. However, slightly more than a third consider communication about the disease to be insufficient.

Adolescents' comprehension of Human papillomavirus: Investigating awareness, knowledge and educational needs.

Joanna Najbar

Presenting author: Joanna Najbar

Tutors: Prof. hab. n. med. Agnieszka Owczarczyk-Saczonek

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Introduction: Adolescents represent a particularly vulnerable demographic to HPV infection, yet their understanding of the virus may be lacking. The HPV virus ranks among the most prevalent sexually transmitted infections, with oncogenic strains posing a significant risk factor for cervical cancer. Given this association, prioritizing primary prevention strategies becomes paramount, notably through education and vaccination prior to the initiation of sexual activity. Consequently, there exists a necessity to assess their awareness levels, knowledge base, and educational requirements in this domain.

Aim of the study: The aim was to identify knowledge gaps to improve future educational interventions targeting HPV infections among adolescents.

Materials and methods: The survey covered a randomly selected group of 200 high school students in the Warmian-Masurian Voivodeship aged 14 to 18. The questionnaire contained questions about awareness and knowledge about the HPV virus, including causes of infection, health consequences, and available methods of prevention and treatment. Data from the study were processed using the STATISTICA 12.0 statistical program.

Results: Among the surveyed students, 58% were familiar with HPV, yet only 35% were aware of its association with cervical cancer. 14% of the respondents believed that HPV leads to AIDS, thereby conflating it with HIV. Only 20% of responders heard about HPV at school, and 70% of them found this information insufficient or incomprehensible. Only 25% of respondents were aware of the existence of the HPV vaccine, and among those who were aware, 60% did not know who should be vaccinated. Only 13% of respondents had full knowledge of methods to prevent HPV infections. Despite 40% of students reporting having initiated sexual activity, only 10% of them had been vaccinated before their first sexual contact. Additionally, males accounted for only a minimal proportion (3%) of all vaccinated students, indicating disparities in vaccination coverage between genders.

Conclusions: The study findings underscore the imperative of incorporating HPV education into school curricula and furnishing young individuals with reliable information concerning the health ramifications of infection and accessible preventive measures. Noteworthy is the discernible discrepancy in awareness levels between genders, with girls exhibiting a higher awareness of HPV risks. It is imperative to actively engage boys, perhaps through targeted campaigns, accentuating the significance of the issue for their well-being as well. Furthermore, continuous research endeavors and educational initiatives are indispensable for augmenting awareness and comprehension of HPV among youth, thereby holding promise for reducing the occurrence of infections and enhancing public health outcomes.

Photodynamic therapy as an effective therapeutic approach for lichen sclerosus patients

Julia Kołodziejska, Iryna Predko

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Tutors: 3 - prof. Aleksandra Lesiak MD, PhD; 4 - Dorota Sobolewska-Sztychny MD, PhD

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Introduction: Lichen sclerosus (LS) is a rare chronic inflammatory disease, predominantly affecting peri-menopausal women. This condition typically manifests in the anogenital area with whitish atrophic patches, accompanied by itching, burning, and pain, making diagnosis challenging for many years. Initial treatment usually involves glucocorticosteroids or calcineurin inhibitors; however, due to high recurrence rates, photodynamic therapy (PDT) has emerged as a promising alternative.

Aim of the study: This study aimed to assess the efficacy of photodynamic therapy (PDT) in treating lichen sclerosus in the anogenital region.

Materials and methods: Adult patients diagnosed with lichen sclerosus, eligible for treatment with 5-aminolevulinic acid-induced PDT, were enrolled. Diagnosis was confirmed via histopathological examination. PDT efficacy was evaluated based on clinical examination scores ranging from 0 to 4 across four categories. Subjective complaints were assessed using a 0-10 scale for itching, burning, and pain before treatment, after 10 weekly PDT sessions, and at 6 months follow-up. Patient demographics, comorbidities, mean time to diagnosis, Dermatology Life Quality Index (DLQI), and treatment satisfaction were also analyzed.

Results: Among 62 adult patients included, 58 (93.5%) were females, and 4 (6.5%) were males, with an average age of 49 years. The mean time from symptom onset to diagnosis was 3 years and 4 months. Significant improvements were observed in clinical examination findings, particularly in sclerosis, hyperkeratosis, and ulcerations, at the 6-month follow-up. Subjective complaints notably decreased after 10 PDT sessions. DLQI scores decreased from 16.0 to 4.0 at the 6-month follow-up, with 92.0% and 84.0% of patients reporting high treatment satisfaction at 10 sessions and 6 months, respectively. Mental health referrals were made for 48.0% of patients due to reported psychological distress. Additionally, 25.0% of patients had autoimmune comorbidities, predominantly autoimmune thyroiditis.

Conclusions: PDT demonstrates notable efficacy in improving both clinical and subjective symptoms of anogenital lichen sclerosus, significantly enhancing patients' quality of life. This study underscores PDT's role as a safe and effective treatment modality for this condition.

The impact of COVID-19 pandemic on the incidence of alopecia areata - an epidemiological evaluation in the dermatological department.

Łukasz Chętko, Julia Kołodziejska

Presenting author: Łukasz Chętko

Tutors: prof. Aleksandra Lesiak, MD, PhD; Klaudia Kubikowska, MD

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Introduction: Alopecia areata (AA) is an autoimmune disease resulting in non-scarring hair loss, estimated to impact up to 2% of the global population. Clinical manifestations vary from distinct, smooth, hairless patches to complete absence of scalp, facial, or body hair. Given its susceptibility to immune dysregulation and psychological stress, there is speculation on the involvement of SARS-CoV-2 infection and major life stressors like the COVID-19 pandemic in its development, recurrence, or exacerbation. However, the precise relationship between these factors and AA remains unclear.

Aim of the study: Our research aimed to retrospectively analyze pediatric and adult patients diagnosed with AA and hospitalized in the dermatological department between 2015 and 2023. We sought to evaluate the impact of the COVID-19 pandemic on hospitalization rates among individuals with AA.
Material and methods : We conducted a 9-year retrospective analysis of 428 confirmed AA patients. Medical records were digitized, and data were analyzed for factors such as age, gender, disease subtype, number and duration of hospitalizations, and residential location. We compared the five-year period before the pandemic with the subsequent four years to assess any changes.

Results: Among the 428 patients, 292 were female (68.22%) and 136 were male (31.78%). Of these, 256 were children (59.81%), with 163 girls (63.67%) and 93 boys (36.33%). The median age among adults was 39.13 years, while among children, it was 8.66 years. Following the pandemic, there was a 13.81% decrease in mean age among adult males. Hospitalizations surged by 207.62% post-pandemic, rising from 223 to 686 admissions. The mean duration of hospitalization decreased by 15.15%, from 5.81 to 4.93 days. The diagnosis of alopecia areata totalis increased by 55.6%. The residential distribution of pediatric patients shifted notably, with 72.16% in urban areas and 27.84% in rural areas from 2020 to 2023.

Conclusions: Our research reveals a significant increase in hospitalizations and diverse disease subtypes among AA patients after the onset of the COVID-19 pandemic. These findings suggest a potential correlation between COVID-19 and the development or exacerbation of AA. A deeper understanding of this association could enhance dermatologic treatment outcomes. Thus, further research is warranted to elucidate the link between COVID-19 and AA.

The effectiveness of monthly benzathine penicillin administration as the prevention of recurrent erysipelas - a retrospective evaluation.

Małgorzata Sarzała, Agata Ciosek, Karolina Brzezińska

Presenting author: Małgorzata Sarzała

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Introduction: Erysipelas, a bacterial skin infection triggered by group A beta-hemolytic streptococci, poses significant morbidity and recurrence challenges. However, existing guidelines for preventing the disease remain ambiguous.

Aim of the study: Our study aimed to retrospectively analyze patients who underwent monthly prophylactic benzathine penicillin administration at the Department of Dermatology, Medical University of Lodz.

Materials and methods: We conducted a retrospective single-center analysis involving 38 adult patients. We examined data regarding erysipelas recurrence rates before and after initiating antibiotic prophylaxis, as well as the side effects of the prophylactic regimen and patient compliance.

Results: Among 38 patients with a history of recurrent erysipelas or severe initial episodes (characterized by prolonged hospital stays and high inflammation levels), prophylactic measures were instituted in the dermatological department. All patients received intramuscular benzathine penicillin injections at monthly intervals. Notably, prophylaxis markedly decreased erysipelas recurrence rates. Prior to prophylaxis, recurrence rates ranged from 0 to 11; afterward, the vast majority of patients experienced no relapses. The collected data indicates that after the introduction of prophylaxis, the severity of skin lesions in places where erysipelas had previously occurred gradually decreased (before the introduction of prophylaxis 13.16% of patients' skin lesions were assessed as IGA 1 or 0; after - 73.68%). Importantly, we observed no early complications or serious side effects associated with antibiotic administration. Patient compliance was notably high, as all patients completed the prescribed prophylactic regimen.

Conclusions: Our findings support the efficacy of monthly benzathine penicillin administration as a preventive measure against erysipelas recurrence. Furthermore, our study highlights the favorable tolerability and high patient compliance associated with antibiotic prophylaxis, underscoring its viability as a therapeutic approach.

Eczema coxsackium in dermatological pediatric patients - a retrospective single-center study.

Maria Rajczak

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Introduction: Eczema coxsackium (EC) is a rare viral infection caused by enteroviruses in patients with atopic dermatitis. Typically, EC presents as hemorrhagic vesicles atop dermatitis lesions. In contrast to hand-foot-mouth disease, EC lesions are more disseminated, especially on limbs or torso. General symptoms such as fever, sore throat, or general malaise may occur. While EC is not life-threatening, it is crucial to differentiate it from eczema herpeticum, which can be fatal.

Aim of the study: We conducted a retrospective single-center study of 8 pediatric patients diagnosed with atopic dermatitis and coexisting eczema coxsackium, hospitalized in the Department of Dermatology, Medical University of Lodz, between 2018 and 2023.

Materials and methods: Eight pediatric patients with atopic dermatitis and proven enteroviral infection in laboratory tests were enrolled. Data were analyzed for age, gender, lesion characteristics, and skin infection management.

Results: The study included an equal number of female (50.0%) and male (50.0%) pediatric patients, with a mean age of 3.38 years. Skin lesions mainly presented as papules with an erythematous base (6/8, 75.0%), with vesicles less commonly observed. Viral infection affected the upper and lower limbs in 100% of patients, and the torso, face, and neck in 62.5% of cases each. Pruritus accompanied skin manifestations in all patients. All participants tested positive for anti-enterovirus IgM, with a mean titer of 21.34. Four patients had elevated C-reactive protein levels. Three participants exhibited fever, one had diarrhea, and four had symptoms of upper respiratory tract infection during the viral skin infection. No patients required systemic management of atopic dermatitis; topical treatment was effective in all cases.

Conclusions: Our study indicates that eczema coxsackium is rarely hospitalized in dermatological departments. Skin lesions are predominantly disseminated, often accompanied by systemic symptoms. Statistical analysis suggests that topical treatment is sufficient for managing enteroviral skin infections, emphasizing the importance of an interdisciplinary approach in EC therapy.

NEPHROLOGY

10th of May 2024

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Impact of Intradialytic Cycling Exercises on physical performance and Quality of life of hemodialyzed patients

Marlena Radzka, Maria Wołyniak, Dariusz Popiela

Presenting author: Dariusz Popiela

Tutors: Monika Górska MD; Maja Nowicka MD

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Introduction: Hemodialysis (HD) is associated with progressive protein-energy wasting, sarcopenia, decline in physical fitness, and overall quality of life(QoL). Intradialytic cycling exercises (ICE) may mitigate the deterioration of physical capacity and QoL in HD patients.

Aim of the study: To analyze the impact of ICE on the muscle strength and QoL of HD patients following a 6-month intervention.

Materials and methods: Two groups of adult HD patients from the same center were included: the control group (CG) analyzed before and after 6 months without ICE and the intervention group (IG) analyzed before and after six months of ICE. ICE involved 30 minutes of cycling in a semi-recumbent position during HD sessions three times a week. We assessed the lower extremity muscle strength of 6 muscle groups with a handheld dynamometer and QoL with the SF-36 questionnaire. Labwork included complete blood count, levels of parathormone (PTH), plasma iron (Fe), ferritin, calcium (Ca), phosphorus (P), transferrin saturation (TfS), and total iron-binding capacity(TIBC).

Results: We included 60 CG patients (20F, 40M) with a mean age of 61.9±17 years and median HD time of 3.06±3.74 years, as well as 35 IG patients (14F, 21M) with a mean age of 62.02± 20.4 years and median HD time 3.71±3.40 years. Muscle strength deteriorated significantly in CG in triceps surae (left: $p<0.001$, right: $p<0.001$), biceps femoris (left: $p<0.001$, right: $p<0.001$), iliopsoas (right: $p=0.013$), rectus femoris (left: $p<0.001$, right: $p<0.001$) anterior tibialis: (left: $p=0.001$, right: $p= 0.003$) while IG patients showed comparable ($p>0.05$) muscle strength in all aside from right iliopsoas after 6 months of ICE; muscles that maintained strength longer due to intradialytic exercises were quadriceps femoris, triceps surae, biceps femoris, rectus femoris, anterior tibialis and left iliopsoas. Only right iliopsoas strength deteriorated significantly ($p=0.018$). Neither group experienced significant changes in self-assessed QoL. Only significant labwork changes in IG showed decreased ferritin ($p=0.001$), total protein ($p=0.013$), and TfS ($p=0.028$).

Conclusions: ICE interventions may prevent the loss of lower extremity muscle strength in HD patients. Any possible link to changes in QoL needs to be further investigated.

Assessment of seniors' knowledge regarding kidney diseases and their prevention, and health behaviors

Jakub Tambor

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Introduction: Chronic kidney disease (CKD) is highly prevalent, particularly among the elderly population, with the majority of individuals unaware of their impaired kidney function. Therefore, awareness of symptoms, screening techniques, and proper habits are crucial in identifying and preventing the development of CKD.

Aim of the study: To assess the knowledge and health behaviors of Polish seniors regarding symptoms, prevention, and management of CKD.

Materials and methods : An anonymous self-designed survey was administered to the participants of the University of the Third Age in Lodz. The questionnaire consisted of questions regarding sociodemographics, medical history, health behaviors, and knowledge regarding CKD; the patients were also asked to self-evaluate their health behaviors and knowledge.

Results: 102 participants (89 F, 13 M) with a median age of 73 (69-92) years were surveyed, 93.1% Łódź's inhabitants. 53.9% of them had higher education, only 3.9% vocational. 90.2% were retired. Hypertension (52%) and diabetes (24%) were the most common reported comorbidities. 87% reported no history of any renal disorders; 5.88% reported a history of nephrolithiasis, 3.92% of kidney cysts, 3.92% of acute kidney failure, and 0.98% of a kidney tumor.Only 38% had undergone a laboratory CKD screening in the past year and 25.5% regularly checked urine for color, frothing, and sediment. Despite a high rate of non-smokers (97.1%), 50% had previously smoked. One-quarter reported alcohol use several times per month. Only 32.4% engaged in daily physical activity, with the most preferred activity being walking and hiking.

General practitioners (38.2%) and the internet (37.2%) were cited as the primary sources of knowledge about CKD. Only 48% of the respondents knew that measuring the blood creatinine level is used to assess kidney function, while 82.4% stated that a general urine test is used to detect kidney disease. Regarding symptoms, pollakiuria (14.7%) and lumbar pain (13.7%) were profoundly associated with characteristic renal symptoms. Only 12.7% of surveys correctly identified the two most common causes of CKD. 51% of them recognized painkillers as harmful to the kidneys, whereas 41.1% identified antibiotics as potentially damaging. However, only 2.9% associated harm with vitamins, including vitamin D and C. Only 25.5% of the respondents associate a low-protein diet with nephroprotection, while the majority (89.4%) consider a low-sodium diet as kidney-protective. The median score of knowledge regarding CKD self-evaluation was 4 (3-5), and of CKD-related health behaviors 5 (3-6) on a scale of 1 to 10.

Conclusions: The majority of respondents exhibit a lack of sufficient basic knowledge regarding risk factors, diagnosis, and prevention of CKD. Our study indicates the necessity for educational initiatives regarding CKD within the community, including among seniors**.**

Enhancing blood pressure self-measurement accuracy through patient education program in chronic hemodialysis patients: a before-and-after study

Kamila Górak, Szymon Gnitecki

Presenting author: Jędrzej Janc

Tutors: Ewa Pawlowicz-Szlarska MD, PhD, Professor Michal Nowicki MD, PhD

Affiliations: Medical University of Łódź

Introduction: Arterial hypertension (AH) affects nearly all patients treated by hemodialysis (HD). Proper AH treatment leads to cardiovascular risk reduction. Home blood pressure self-measurement (HBPSM) is a simple and readily available method that has similar reproducibility and prognostic value as ambulatory blood pressure (BP) monitoring. HBPSM remains the main monitoring method of hypertensive HD individuals in the real-world clinical settings.

Aim of the study: To assess current practices of HBPSM and knowledge about proper BP measurement technique among HD patients and to evaluate the effect of the education program on HBPSM accuracy.

Materials and methods: 30 chronic HD patients (15 females, 15 males, median 66 years; [IQR = 21]) were included. After enrollment, subjects received semiautomatic OMRON M10-IT oscillometric devices (Omron Corporation, Kyoto, Japan), which store up to 84 discrete BP measurements with date and time. The patients were asked to use these devices at home for one week and note every measurement taken in the BP logbook. After one week, patients' knowledge and skills of BP measurement techniques were assessed. The patients were asked to evaluate each of 12 photographs showing both correct and incorrect HBPSM behaviors. This was followed by a face-to-face 5–10 minutes tutoring session based on the European Society of Hypertension 2021 guidelines. All patients were provided with leaflets presenting best practices in HBPSM. Then, patients were asked to use the device for another week, after which the BP monitors and BP logbooks were collected.

Results: Patients conducted around 1.8±0.52 BP measurements daily, totaling approximately 11.9±4.63 (median 11) measurements weekly, around 5.7±2.55 of which were conducted before 12 PM. Only 7% of patients managed to properly evaluate all 12 photographs, while 57% made 3 or more mistakes. The most commonly overlooked mistake in the presented behaviors was improper arm position. The most frequently noticed error was a telephone conversation during BP measurement. BP variability measured as a standard deviation (SD) of mean systolic BP was significantly lower compared to one week before tutoring (SD 11.52±5.53 vs. 15.00±3.52, respectively; $p = 0.003$). There were no significant differences in systolic and diastolic BP values before and after counselling session (median systolic BP 128 [29.3] vs. 138.4 [31.85] mmHg respectively; $p=0.17$; mean diastolic BP 77±10.34 vs. 78±10.79 mmHg respectively; $p=0.37$). Similarly, the total number of measurements conducted before and after tutoring did not differ (11.9±4.63 vs. 11±4.96 respectively; $p=0.4$). The differences between BP logbook patients' recordings and objective number of BP measurements as well as mean BP values were not statistically significant.

Conclusions: Dialysis patients' knowledge on the correct BP self-measurement technique is generally insufficient and requires improvement. Patient education program enhanced accuracy of BP self-measurements.

Risk factors for acute kidney injury in patients hospitalized with COVID-19

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Introduction: The emergence of Severe Acute Respiratory Syndrome Coronavirus 2 in late 2019 initiated the global spread of coronavirus disease (COVID-19), leading to numerous complications. Acute kidney injury (AKI) is one of the life-threating complication of SARS-Cov-2 infection.

Aim of the study: This study aims to examine the prevalence and risk factors of AKI development in patients hospitalized with COVID-19 across three distinct periods of infection.

Materials and methods: In this retrospective study we analysed laboratory results of all adult patients who tested positive for COVID-19 via a nasopharyngeal swab test and treated in a district hospital in Lodz, which had been repurposed to specialize in infectious diseases, specifically COVID-19 from 3/11/2020 to 31/12/2020, from 17/032021 to 8/03/2021 and from 4/11/2021 to 21/02/2022. All patients had to undergo at least two subsequent laboratory tests, including kidney function assessment. Diagnosis and stage of AKI was made using eKDIGO criteria only based on serum creatinine concentrations. The analysis included demographic data, comorbidities, and laboratory findings during hospitalization.

Results: A total of 1223 COVID-19 positive patients were hospitalized during the analysed period. The overall incidence of AKI was 29.02%, with 60.17% at Stage 1, 26.84% at Stage 2 and 12.99% at Stage 3. Patients with AKI were older (median age 76.0 vs 71.0, p<0.001), with more comorbid conditions, including pulmonary disease, heart failure, hypertension, arrhythmias, coronary artery disease, stroke, infarction, venous thromboembolism, and pre-existing renal diseases. The previous use of diuretics (37.01 vs 25.40, p<0.001), ARBs (13.28 vs 7.85, p=0.001) and ACE-Is (33.90 vs 27.14, p=0.004) was more common in AKI group. The severity of COVID-19, based on the blood oxygen saturation at hospital admission was higher in AKI patients, with 31.64% at level 3, compared to 24.94% of non-AKI patients. AKI patients more frequently presented with abnormal lung HRCT (70.63% vs 56.81%, p<0.001). AKI patients had higher median white blood cell count (7.4 (5.20, 10.60) x10^3/µl vs 7.1 (5.20, 9.80) x10^3/µl, p=0.002), lower percentage of lymphocytes (11.9 (7.70, 17.30)% vs 13.45 (8.20, 20.40)%, p=0.002) and lower platelet count (170 (130.00, 237.00) x10^3/µl vs 192.5 (150.00, 249.00) x10^3/µl, p=0.002). AKI patients were also more likely to require any oxygen therapy (97.74% vs 92.95%, p=0.0019), had longer hospitalizations (16.5 (11, 28) vs 12 (9, 16) days, p<0.001), and higher mortality (51.98% vs 24.60%, p<0.001).

Conclusions: AKI was a frequent complication in patients hospitalized for SARS-CoV-2. Older age, comorbidity burden, and use of diuretics and renin–angiotensin system inhibitors were the main risk factors of AKI development in this population. AKI incidence was also associated with a more severe course of the disease and worse prognosis.

Dapagliflozin impact on body composition, blood pressure, muscle strength and quality of life in various etiology chronic kidney disease patients – preliminary report.

Michał Olkowski, Szymon Gruszka, Jakub Tambor

Presenting author: Michał Olkowski

Tutors: Maja Nowicka MD, prof. Ilona Kurnatowska MD

Affiliations: Medical University of Lodz

Introduction: SGLT-2 inhibitors (SGLT-2i) are antidiabetic agents increasing glucose excretion with urine; recently, they have proven cardio- and nephroprotective effect and are currently recommended in patients with chronic kidney disease (CKD).

Aim of the study: To assess the impact of dapagliflozin on body composition, muscle strength, quality of life and metabolic profile in different stages and etiology of CKD patients.

Materials and methods: Anthropometric data, blood pressure (BP), body composition, lower extremity muscle strength, survey data regarding patients' dietary patterns, appetite, physical activity, quality of life, and laboratory data including metabolic profile were analyzed before, 3-months and 6-months after introduction of 10 mg/day dapagliflozin in CKD patients.

Results: 27 patients were included to the study, eleven and seven of them completing 3-month and 6-month follow-up, respectively. 5 patients dropped out the study due to personal reasons and one patient discontinued SGLT-2i treatment due to allergic reaction. Preliminary analysis includes survey, anthropometric and laboratory data from baseline and 3-month visits of 11 participants (3 F, 8 M) with a mean age of 53 SD 17.2. The tendency to lower patients body weight (81.06 kg, SD16.78 vs 79.96 kg, SD16.73, p=0.3225), BMI (28.61 kg/m2, SD7.14 vs 28.31 kg/m2, SD7.35, p=0.3914), body fat content (34.01 %, SD13.97 vs 32.59 %, SD14.62, p=0.6297), better relative lean tissue (55.03 %, SD19.73 vs 55.81 %, SD20.34, p=0.8675) and better lipids profile: TC (216.83 mg/dl, SD53.75 vs 199.83 mg/dl, SD36.99, p=0.4193), LDL (124.33 mg/dl, SD43.22 vs 105.67 mg/dl, SD25.84, p=0.2018), HDL (63.33 mg/dl, SD63.33 vs 63.00 mg/dl, SD17.63, p=0.9518), TG (178.17 mg/dl, SD115.97 vs 154.50 mg/dl, SD70.92, p=0.2713) waist to hip ratio (0.97, SD 0.09 vs 0.97, SD 0.08, p=0.7972), kidney function (eGFR: 48.91 SD 9.87 vs 48.59 SD 9.21, p=0.1132), proteinuria in spot urine (0.65 g/L, SD 0.56 vs 0.75 g/L, SD 0.75, p=0.5381), systolic BP (132.73 mmHg, SD 11.05 vs 133.73 mmHg, SD 14.92, p=0.8618), diastolic BP (80.91 mmHg, SD 12.02 vs 80.36 mmHg, SD 9.87, p=0.9151) between baseline and 3-month visits, but not statistical significance were observed, probably due to small study group. Serum uremic acid levels were significantly lower (9.30 mg/dl, SD2.80 vs 6.52 mg/dl, SD1.24, p=0.0295). There was also no statistically significant difference in self-reported dietary patterns (6.75, SD1.98 vs 7.00, SD2.33, p=0.7406), physical activity (15.00, SD2.62 vs 15.38, SD3.25, p=0.6344) and appetite (32.33, SD3.08 vs 31.50, SD1.87, p=0.3833).

Conclusions: Dapagliflozin shows a tendency to improve metabolic profile in CKD patients. The further study with a larger group of CKD patients and longer follow-up is needed to confirm the observations. The study was supported by the grant of Medical University of Lodz no 564/1-000-00/564-20-075.

Medical students knowledge of nephroprotection

Monika Dąbek, Aleksandra Marczyk

Presenting author: Monika Dąbek

Tutors: prof. dr hab. n. med. Michał Nowicki

Affiliations: Medical University of Lodz

Introduction: The incidence of chronic kidney disease (CKD) and its complications is increasing to epidemic proportions in most countries around the world including Poland. This may be largely due to late diagnosis of the disease as the initial stages are often asymptomatic. Appropriate education of medical students regarding the risk factors, prevention and treatment of CKD is a key factor in preventing its current epidemy.

Aim of the study: The aim of this study was to check the level of students' knowledge on nephroprotection in CKD.

Materials and methods: An anonymous survey was prepared. The form contained 20 closed questions, including 13 with multiple choice answers. The survey was available both online via Google Forms and in paper form.

Results: One hundred students of various years of medical studies responded to the survey. 70 of them completed the questionnaire online and 30 in the paper version.

Students of the 1st, 2nd, 3rd and 4th year of studies obtained a median of 14.5 [Q1=11.5; Q3=20.5] points out of maximum 29 from the entire test significantly less that the 5th and 6th year students who obtained a median of 23 [21; 24] points ($p<0.0001$). The scores for the knowledge about diet, lifestyle, pharmacotherapy and a total score of all questions about symptoms, comorbidities and pharmacotherapy were also higher for 5th and 6th year students ($p=0.04$, $p=0.01$, $p<0.0001$, $p<0.0001$, respectively). There were no significant correlations between the students' scores of questions on diet even in the case of students following any special diet. e.g. high-protein, vegan, DASH, ketogenic, etc. (ns). The students knowledge about the recommended daily physical activity was not related to their level of protein consumption. Following a vegetarian or vegan diet did not translated into a better knowledge of diets recommended in CKD which are based on the reduction of animal protein. The planned choice of non-surgical specialization did not influence test scores. The students who correctly chose the diet for a patient with CKD did not more often correctly identified micronutrients accumulated in excess in CKD. There was no relationship between gender and the survey results.

Conclusions: This study which provided insight into medical students' knowledge of nephroprotection in CKD, showed that although knowledge increases with subsequent years of study, many important gaps remain. Still there is lack of knowledge of pharmacotherapy, appropriate amounts of physical activity and specific dietary needs in CKD.

Clinicopathologic correlations of kidney biopsy findings from a single center in Central Poland

Natalia Feliniak, Jędrzej Janc, Maciej Borowski

Presenting author: Natalia Feliniak

Tutors: Ewa Pawlowicz-Szlarska MD, PhD; Professor Michal Nowicki MD, PhD

Affiliations: Medical University of Lodz

Introduction: Epidemiological data on biopsy-proven kidney diseases in Poland are scarce. Investigating the distribution and changes in the epidemiology of kidney diseases over the years may be helpful in paving the way for future research in nephrology.

Aim of the study: Assessment of epidemiology and clinicopathologic correlations of biopsy-diagnosed kidney diseases.

Materials and methods : Retrospective review of medical records from a tertiary nephrology center in Central Poland, including referrals and histopathological results of kidney biopsies from 2019 to 2023.

Results: 246 referrals for kidney biopsy and histopathological evaluation results were analyzed including 227 biopsies of native kidney and 19 of kidney graft. The number of biopsies performed in subsequent years increased, except for the pandemic year 2020, which saw a significant decrease.

Patients undergoing native kidney biopsy were 49.2 ± 15.4 years old, 65.2% were male. 9.8% (n=22) of biopsies were performed as part of monitoring of previously diagnosed disease. 76.2% (n=173) of patients were diagnosed with glomerular diseases (GN), 6.6 % (n=15) with diabetic nephropathy, 5.7% (n=13) with chronic tubulointerstitial nephritis, and 4.4% (n=10) with amyloidosis. The most common clinical indication for kidney biopsy was nephrotic syndrome (35.8%, n=88). Among GN cases, 41.6% (n=72) manifested as nephrotic proteinuria, 24.9% (n=43) with subnephrotic proteinuria, and 22.5% (n=39) with nephritic syndrome. 44.5% (n=77) of GN patients met the criteria for chronic kidney disease, 17.9% (n=31) presented as acute kidney injury, and 5.8% (n=10) as rapidly progressive kidney disease. 25.4% (n=44) of patients eventually diagnosed with GN had preserved kidney excretory function at the time of biopsy. The predominant finding, accounting for 37% (n=64) of GN cases, was immunoglobulin A nephropathy (IgAN), followed by focal segmental glomerulosclerosis (FSGS) which constituted 30.1% (n=52) of cases, crescentic GN – 10.4% (n=18), membranous nephropathy (MN) - 9.8% (n=17), lupus nephritis - 5.2% (n=9) and minimal change disease – 3.5% (n=6). IgAN was the most common finding in all the analyzed years except 2023, when FSGS predominated among GN diagnoses. The most common presentation of IgAN was nephritic syndrome (34.4%, n=22). FSGS and MN most often manifested as nephrotic syndrome (44.2% and 58.8%, respectively).

Conclusions: Our single-center analysis from Central Poland provides a snapshot of the epidemiology of biopsy-proven kidney diseases, showing changes in their incidence over the years. A nationwide study on kidney biopsy findings could shed more light on the epidemiology of kidney diseases in Poland.

Rituximab in childhood-onset steroid-dependent nephrotic syndrome: a retrospective single-centre study on its efficacy and impast on physical development

Natalia Pluta

Presenting author: Natalia Pluta

Tutors: Prof. Marcin Tkaczyk, MD, PhD; Małgorzata Stańczyk, MD, PhD

Affiliations: Medical University of Lodz

Introduction: Nephrotic syndrome (NS) is a condition characterised by simultaneous presence of proteinuria, hypoalbuminemia, hyperlipidaemia and oedema. Steroids are used as first-line treatment. In case of steroid-dependency standard pharmacotherapy includes cyclosporine A, mycophenolate mofetil, cyclophosphamide and levamisole. The use of rituximab, a monoclonal anti-CD20 antibody, novel off-label treatment for steroid-dependent NS (SDNS) has been studied for over a decade now and has shown promising results. However, there is still no consensus about the optimal treatment regimen.

Aim of the study: The main purpose was to investigate if rituximab modifies the course of disease in children with NS and if it allows dose reduction of other immunosuppressive drugs. Moreover, we investigated the impact of rituximab on physical development and the clinical significance of immunosuppression caused by biological therapy.

Methods: We conducted a retrospective review of rituximab treatment in patients who were diagnosed with SDNS in their childhood and received at least one infusion of rituximab.

Results: Seventeen patients with SDNS were included into the study (M:F, 11:6). The onset of NS occurred at the median age of 2 years (1-6). The median of patients' age at the time of analysis was 14 years (7-24). The first dose of rituximab was given at the median age of 13 years (5-22), after the median of 9 years (1-20) from the first episode of NS. Steroid therapy was discontinued in all patients after 1 month from the start of rituximab treatment. In 82% of cases after 3 months (1-12) it was also possible to discontinue second- and third-line therapy. Rituximab 350mg/m2 was administered on average every 5.8 months. About 65% of patients had decreased IgG levels during therapy without clinical relevance. About 24% of patients had relapses after a mean of 4 months after the 1st dose of rituximab. Complete suppression of B lymphocytes persisted for an average of 4 months and general reduction persisted for an average of 5 months after drug administration. In 63% of patients, the CD19 B lymphocytes did not completely recover before the next dose, which had a significant impact on remission of NS. Among patients without relapses 25% restored B-cells between the doses, the rest presented depletion (p=0.00004). Among patients with relapses, B-cells counts returned to normal in 75% of cases, and depletion persisted in 25% of cases (p=0.012). Rituximab treatment significantly improved height in boys (p=0.004) but not in girls (p=0.11). It also significantly reduced the BMI z-scores (p=0.01) but only in patients without relapses (p=0,03) and in boys (p=0,02).

Conclusions: Rituximab treatment improves the course of SDNS by allowing discontinuation of other immunosuppressive medications and reducing the risk of treatment-related complications. Remission is related to lymphocyte B depletion. Rituximab therapy improves height and BMI in male paediatric patients with NS.

ORTHOPEDICS

10th of May 2024

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Coordinators:

David Sherwin

Hanna Turkiewicz

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Jury:

Anna Fabiś-Strobin MD, PhD

Tomasz Zwierzchowski MD, PhD

Index finger pollicization in radial hand deficiency.

Tomasz Kucharski, Michalina Prowotorow

Presenting author: Tomasz Kucharski

Tutors: J. Michał Deszczyński MD, PhD, Tomasz Albrewczyński MD

Affiliations: Medical University of Lodz; Medical University of Warsaw

Introduction: Missing or hypoplastic thumb is present in type IV Radial hand deficiency (RHD) due to Bayne and Klug. Reconstruction of the forearm is just a first step to regain hand function. This is why a second stage reconstruction regarding pollicization is needed.

Aim of the study: The aim of this study is to present surgical technique and functional outcomes of index finger pollicization after ulnarization in radial hand deficiency.

Materials and methods: 9 patients diagnosed with RHD underwent index finger pollicization. One of the major disabilities of the hand was lack of the pincer grip. Operation was performed according to Manske technique. Patient functional outcomes were evaluated before and 2 months after the surgery. The Shriners Hospital Upper Extremity Evaluation (SHUEE), the Pediatric Outcomes Data Collection Instrument (PODCI) and the Pediatric Quality of Life Inventory (PedsQL) forms were used to assess patients' quality of life (QoL) and upper extremity function.

Results: After 6 weeks of hand immobilization followed by upper limb rehabilitation, the results were as follows: PODCI mean 63 out of 100 (Standardized Mean) in Upper Extremity Scale (mean 50/100 preoperatively) and 76/100 (Mean of Standardized Means) in Global Functioning Scale (mean 72/100 preoperatively), PedsQL mean score was 79/100 (67/100 preoperatively) SHUEE Dynamic Positional Analysis mean score was 58/72 (42/72 preoperatively).

Conclusions: Index finger pollicization combined with ulnarization gave satisfying QoL and upper limb function. Further research needs to be completed in order to assess predictability and efficiency of index finger pollicization.

Does age impact hemiepiphysiodesis in children and adolescents?

Monika Zaborska, Michał Sobczak

Presenting author: Monika Zaborska

Tutors: Dr hab. n. med. Piotr Morasiewicz, profesor UO

Affiliations: Faculty of Medicine, University of Opole, Department of Orthopaedic and Trauma Surgery, Institute of Medical Sciences, University of Opole

Introduction: Hemiepiphysiodesis is a well-established, minimally invasive and effective treatment method for the correction of genu valgum and varum deformities correction in children and adolescents. There are no papers evaluating the effect of age on the results of hemiepiphysiodesis.

Aim of the study: The study aimed to evaluate the impact of age on the process of hemiepiphysiodesis performed for the correction of genu valgum and varum deformity in children.

Materials and methods: We retrospectively analyzed 42 patients who undergone O-plate hemiepiphysiodesis of the distal femur or proximal tibia at the University Clinical Hospital in Opole in 2020- 2023. Patients were divided into two age groups: 3 - 10 years (16 patients) and 11 - 14 years (26 patients). The following parameters were analyzed based on medical and radiological records: hospital stay duration, deformity correction time, MAD (mechanical axis deviation) correction, amount of angular correction, correction velocity, correction rate, complete deformity correction, deformity recurrence, surgery duration, and complications.

Results: The average follow-up period was 19 months. The average surgery time in the 3-10 years subgroup (25.62 minutes) was significantly longer than in the 11-14 years subgroup (22.81 minutes, $p = 0.018$). A comparative study of subgroups divided by age showed that the average angular correction was 10.5° in younger children, which was significantly higher than the older children's 7.2°; $p = 0.027$. The difference in the average correction velocity between children aged 3-10 years (4.03 mm/month) and children aged 11-14 years (1.39 mm/month) was statistically significant; $p = 0.031$. The difference in the average rate of correction between the younger (1.08°/month) and older subgroups (0.59°/month) was also statistically significant; $p = 0.018$. A significant difference in the rate of deformity recurrence was observed between the younger subgroup (66.67%) and the older subgroup (only 10.53%); $p = 0.005$.

Conclusions: The age of patients impacts the results of treatment with hemiepiphysiodesis. The younger age group showed longer surgery time, higher angular correction value, higher correction velocity, higher rate of correction and higher percentage of deformity recurrence compared to these parameters in children aged 11-14 years.

A proposal for a new classification of the biceps brachii insertion with respect to their anatomical variations

Nazar Włodarczyk, Alexander Stolarczyk,Marta Pośnik, Nicol Zielinska

Presenting author: Nazar Włodarczyk

Tutors: dr hab. n. med. prof.UM. Łukasz Olewnik

Affiliations: Medical University of Łódź

Introduction: The biceps brachii is one of the three muscles that together form the flexor compartment of the arm. It consists of two heads, the short head and the long head, which join to form a single mass at their distal part. The insertion of the biceps brachii is comprised of two parts: the main tendon, which is attached to the radial tuberosity of the radius and the lacertus fibrosus, which attaches to the fascia of the posterior muscles of the forearm.

Aim of the study: This study aims to delve deeper into the morphological variations of the insertions of biceps brachii and to classify them. The gathered results can be found useful by surgeons performing surgeries in the area of the humeroulnar, humeroradial and proximal radioulnar joints.

Materials and methods: Fourty eight (24 right, 24 left, 28 female, 20 male) upper limbs in 10% formalin solution were examined.

Results: Three types of the insertion of the biceps brachii were observed. Type I was characterised by a single tendon and occurred in 83,33% of the examined limbs. Type II was characterised by a double tendon with an occurrence of 10,42%.Type III had a prevalence of 6,25% and was characterised by three tendons. Forbye in 5 of the specimens with type III the LF was absent. That can lead to an assumption of possible correlation of type III and the abscence of the lacertus fibrosus.

Conclusions: The tendon of biceps brachii has a high morphological variability rate. The proposed new classification consists of three different types of distal insertion of biceps brachii, type I, II and III.

Broken relationship? Correlation between neck-shaft angle and joint space in osteoarthritis of the hip

Krzysztof Bujak, Jakub Wąsik, Katarzyna Kwas, Mateusz Kobieracki

Presenting author: Krzysztof Bujak

Tutors: Sebastian Żabierek, MD, PhD; Prof Marcin Domżalski, MD, PhD

Affiliations: Students' Scientific Circle of Orthopedy and Traumatology in Medical University of Łódź, Department of Orthopaedics and Traumatology, Veterans' Memorial Teaching Hospital in Łódź, Medical University of Łódź; Department of Orthopaedics and Traumatology, Veterans' Memorial Teaching Hospital in Łódź, Medical University of Łódź

Introduction: Osteoarthritis (OA) is a degradation of articular cartilage manifested by pain, limited mobility, and stiffness of the joints. Coxarthrosis is the second most common form and about 40% of the population over 40 years have its radiological symptoms, such as joint space narrowing. Femoral neck-shaft angle is one of the most frequently used measurements to assess hip morphology, therefore, it can be assessed whether it is applicable as a predictor of OA.

Aim of the study: Consider the relationship between femoral neck-shaft angle and hip joint space narrowing in patients with OA.

Materials and methods: Adult patients hospitalized in 2022 with diagnosed coxarthrosis were included into this retrospective observational study. Patients with avascular neccrosis of the femoral head and and with developmenttal dysplasia of the hip were excluded from the study. X-ray pictures were taken from the hospital's medical record and the neck-shaft angle and hip joint space (from three points: lateral, central, medial) were assessed by two independent researchers with the use of the RadiAnt Programme. Statistical analysis was performed by using Pearson and Spearman's Rank-Order correlations. Bioethics committee approval was acquired.

Results: Among 141 analyzed patients (72 females, 69 males, mean age=65,54, SD=10,94) and a total of 161 lower limbs measured (74 left, 87 right), the mean neck-shaft angle was 126,56°(SD=6,76°). There was a weak positive correlation between mean neck-shaft angle and mean medial joint space (p=0,04, r=0,18) as well as mean neck-shaft angle and mean central joint space (p=0,019, r=0,21). There was no stastistically significant corellation between mean neck-shaft angle and mean lateral joint space (p=0,96, r= -0,0037).

Conclusions: According to our best knowledge, it is the first study considering these relationship in OA. Because of the weak positive correlations, the neck-shaft angle is not useful in OA diagnosis and evaluation. However, it is worth carrying out further research to observe this relationship in a groups of patients with this disease.

What does knee arthrosis have to do with skiing? Analysis of Posterior Tibial Slope in knee Osteoarthritis before and after Total Knee Arthroplasty.

Wiktor Pigólak, Tomasz Noras

Presenting author: Wiktor Pigólak

Tutors: MD PhD. Sebastian Żabierek; MD PhD. Marcin Domżalski

Affiliations: Medical University of Łódź

Introduction: Knee OA is a chronic disease of the knee joint which is very common in the adult population. It is characterized by progressive degeneration of the joint which may result in limited mobility and significant physical impairment. Knee OA is diagnosed mainly by RTG imaging in which we can observe joint space narrowing, osteophyte formation and destruction of tibial plateau and femur condyles. PTS is the angle between the vertical line of the anterior cortex and the tibial plateau.

Aim of the study: The aim of the study is to assess the correlation between PTS and age, sex or side before and after surgery.

Materials and methods: 400 adult patients with diagnosed OA were included into study. Two independent researchers measured PTS parameter with use of the Radiant program before and after arthroplasty. The statistical analysis was performed, bioethical committee approval was acquired.

Results: 264 patients (mean age=69 years (SD=7,54); MIN=35, MAX=87) were included. 73,4%(194) were female and 26,6%(70) men; 52,3%(138) with the right side and 47,7%(126) with the left side. Mean degree of PTS before arthroplasty was 12,47 (SD=4,1) and after 5,08 (SD=2,77). There was statistical correlation between mean degree of PTS before and after surgery Wilcoxon test p=0,000001.

Conclusions: We postulate that such a high PTS value is one of predisposing factor in knee osteoarthritis development.

Morphological variations in the proximal attachments of the long head of the biceps brachii

Alexander Stolarczyk, Nazar Włodarczyk, Marta Pośnik, Nicol Zielinska

Presenting author: Alexander Stolarczyk

Tutors: dr hab. n. med. prof. UM. Łukasz Olewnik

Affiliations: Medical University of Lodz

Introduction: The anterior compartment of the arm is composed of three muscles: the biceps brachii, brachialis and coracobrachialis. The many morphological variants that can occur in this region should be known to orthopaedic surgeons.

Aim of the study: The aim of this presentation is to describe possible variations in the morphology of the proximal attachments of the long head of the biceps brachii and to present a classification of the area, which may be helpful for surgeons performing procedures in that region as well as for physiotherapists working on rehabilitation with their patients.

Material and methods: Fifty-two upper limbs (26 left and 26 right; 22 female, 30 male) fixed in 10% formalin solution were examined.

Results: The main tendon of the long head of the biceps brachii presented three types of proximal attachment. The most common type, Type I (50.00%), was characterized by a single attachment to the supraglenoid tubercle. Type III (32.69%) was characterized by a single attachment to the glenoid labrum. Type II (17.31%) is characterized by a double attachment to the glenoid labrum and the supraglenoid tubercle. Additionally, two types of the accessory tendon of the long head of the biceps brachii were found (Type A and B). Type A (eight cases) was attached to the capsule of the humeral joint, and Type B (three cases) was attached to the greater tubercle of the humerus.

Conclusions: These research results demonstrate the high morphological variability of the long head of the biceps brachii. The new classifcation proposes three types of proximal attachment (I–III), with two types of accessory long head of the biceps brachii (A and B) tendon. When planning orthopedic procedures and physiotherapy of the anterior compartment of the arm, it is crucial to have a comprehensive understanding of the morphological variability of the long head of the biceps brachii.

PSYCHIATRY AND PSYCHOLOGY

10th of May 2024

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Coordinators:

Aleksandra Nasiłowska

Alton Mathew

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Jury:

Prof. Magdalena Kotlicka-Antczak

Prof. Tomasz Pawełczyk

Aleksandra Skiba, PhD

Association between Vitamin D3 serum levels and the presence of Dementia

Lydie Ngantcha, Kaythrriie Ganapathy

Presenting author: Lydie Ngantcha

Tutors: Agnieszka Guligowska, PhD, Ganna Kravchenko, MD

Affiliations: Medical University of Łódź

Introduction: Dementia is a complex progressive neurological syndrome caused by pathological damage to neuronal processes and cerebral function, leading to cognitive decline beyond physiological senescence. Vitamin D3 deficiencies are linked to cognitive dysfunction and dementia. However, an opposite effect can also be observed, dementia may lead to decrease outdoor activity and dietary changes, affecting Vitamin D3 levels.

Aim of the study: This research is to study the association between vitamin D3 serum levels and the presence of dementia.

Materials and methods: The patients aged 60 years and older who were admitted to the Geriatric Department of the Central Veterans Hospital in Lodz, Poland, from January 2017 to September 2023, were included in the study cohort. Levels of Vitamin D3 was measured for every participant at the admission. Information about presence of dementia was taken from discharge cards for every patient. Distribution type of the data was determined using Shapiro-Wilk test, with continuous variables shown as median (quartiles) and analysed using the Mann-Whitney U test ($p \leq 0.05$). Then, general linear model was employed to check the association between variables. Statistical analysis was conducted using Statistica 13.1.

Results: Study group consisted of 753 patients, 532 females (71%) and 221 males (29%), with a median age of 82 (75-88) years. 353 (46.9%) individuals with median vitamin D3 levels of 16.3 (7.42-27.8) ng/ml suffered from dementia, and 400 patients with median of 20.1 (11.9-32.8) ng/ml presented normal cognitive state. Subjects with and without dementia demonstrated significant difference in vitamin D3 level ($p<0.001$). There was no significant difference in prevalence of dementia between women and men, while participants with dementia were significantly older. Multivariate analysis showed that relationship between vitamin D3 and dementia is age- and sex-depended.

Conclusions: This study highlights a significant association between low levels of vitamin D3 and the prevalence of dementia in the elderly population, with patients suffering from dementia showing notably lower levels of vitamin D3 compared to those with normal cognitive function. Furthermore, the relationship between vitamin D3 levels and dementia appears to be dependent on age and sex, pointing to a complex interaction that warrants further investigation. These findings suggest that maintaining adequate vitamin D3 levels could be crucial in preventing or managing dementia, emphasising the need for additional research to understand the underlying mechanisms and to develop effective interventions targeting individuals at risk.

Disgust sensitivity: parenthood effect and child presence effect

Amelia Ciniawska

Presenting author: Amelia Ciniawska

Tutors: Michał Stefańczyk, MA

Affiliations: University of Wrocław

Introduction: Is there any difference between parents and childless people? Having an offspring, of course, but disgust sensitivity may distinguish them as well. Parents are the first protectors of a child when it does not have a fully developed immune system, which may increase parents' level of disgust sensitivity, especially when the child is around.

Aim of the study: To verify whether mothers and fathers are more disgust sensitive than childless women and men, and to test whether presence of the offspring has any effect on the parent's level of disgust sensitivity.

Materials and methods: 626 parents and 369 childless individuals filled the generalized pathogen disgust subscale from the Three Domains Disgust Scale (TDDS) and Food Disgust Scale – short (FDS). In addition, part of the parents filled questionnaires in the presence of their children.

Results: In the measurement of a parenthood effect the analysys revealed that TDDS scores of the childless participants were on average 0.17 point higher than the scores of the parents. Data from the FDS test proved to be insignificant. Child presence effect was not found.

Conclusions: Parents are less disgust sensitive to generalized pathogens than non-parents, and a presence of an offspring in close surrounding has no effect on a disgust sensitivity of a parent.

The role of different hormonal contraceptives in women's mental well-being

Jovita Patricija Druta

Presenting author: Jovita Patricija Druta

Tutors: Dr. Giedrė Bulotienė

Affiliations: Vilnius University, National Cancer Institute

Introduction: With mental health currently at risk due to many stressors affecting one's life, new stimuli impacting individual's psychological state are identified continuously. The use of hormonal contraception has brought positive outcomes in psychiatric diagnosis like premenstrual dysphoric disorder (PMDD), yet there is still an ongoing discussion about possible mood alterations conditioned by the use of hormonal pharmacologic agents.

Aim of the study: To compare and evaluate women's mental state that are using different contraceptive agents.

Materials and methods: Study data was collected using a Questionnaire Form. Questions from Generalized Anxiety Disorder – 7 Item (GAD-7) were included. A total of 100 respondents have filled out the form. Respondents were women aged 18 – 57 years. Individuals were split into 2 groups based on the active ingredients in the medication used: combined estrogen and progestin or progestin only. Statistical analysis was carried out through R Studio program using t-test and Chi-square test.

Results: The most common active ingredient in the contraception used was combined estrogen and progestin - 35 %. There was no significant association between the use of different contraceptive agents and generalized anxiety disorder (GAD) ($p = 0.4087$), attending psychiatric counselling ($p=0.178$) or having a psychiatric diagnosis ($p = 0.4148$). Only 4.5% of all respondents admitted having a GAD diagnosis, yet according to the answers of the GAD-7 around 27.7% of all respondents are likely to be suffering from GAD.

Conclusions: Study brings attention to the alterations of mood that hormonal contraception might cause yet no significant link has been established to a specific active ingredient. The clinical relevance of these findings needs to be further assessed.

Perinatal depression, labour anxiety, and the mental well-being of Polish women during the perinatal period in a war-economic crisis

Ewelina Barszcz, Maksymilian Plewka

Presenting author: Ewelina Barszcz

Tutors: Aleksandra Margulska, MD, PhD; Oliwia Gawlik-Kotelnicka, MD, PhD

Affiliations: Medical University of Lodz

Introduction: Perinatal depression, a common mental illness, has serious implications for both mother and child, including preeclampsia, low birth weight, and an increased risk of suicide. Often preceding and more frequently occurring than postpartum depression are perinatal anxiety disorders, with a 15.2% occurrence rate for any anxiety disorder and 22.9% for symptoms of anxiety during pregnancy. The outbreak of the conflict in Ukraine and Russia potentially worsened the mental well-being of women in the perinatal period.

Aim of the study: The primary aim of the study was to assess the prevalence of depressive symptoms among Polish women in the perinatal period during the economic-war crisis using the Edinburgh Postnatal Depression Scale (EPDS), with secondary objectives focusing on labour-related and economic-war crisis-related anxiety and identifying associated risk factors.

Materials and methods: From June 2nd, 2022 to April 11th, 2023, 152 women were recruited to complete a set of three online surveys - two during pregnancy and one after childbirth. To assess mental well-being and the severity of depressive and anxiety symptoms, the Edinburgh Postnatal Depression Scale (EPDS), Beck Depression Inventory (BDI-2), Labour Anxiety Questionnaire (LAQ), and questionnaires created by the research team assessing anxiety related to the war (WAQ) and global situation (GSAQ) were used.

Results: During the war-inflation crisis in Poland, approximately 32.2% of perinatal women were shown to have depression, as indicated by the EPDS scale with a threshold of ≥14. Meanwhile, nearly 70% scored 14 or higher on the LAQ scale, signalling a surge in labour-related anxiety. Additionally, 24.3% encountered significant anxiety due to war, while 25% suffered from major anxiety because of the global situation. The research revealed significant positive correlations between EPDS scores ($R=0.73$ $p<0.001$) and between EPDS and LAQ scores ($R=0.53$, $p<0.001$). Positive correlations were also noted between EPDS and GSAQ scores ($R=0.34$, $p<0.001$) as well as between LAQ and WAQ scores ($R=0.21$, $p=0.008$).

Conclusions: The prevalence of perinatal depression among women may be higher during periods of war and inflationary crises than in periods free of such disturbances. This emphasizes the vital need to improve screening for perinatal depression in Poland. Enhancing these screening procedures could be crucial in boosting the mental well-being of women during the perinatal period in the country.

CASE STUDY:
INTERNAL MEDICINE I

11th of May 2024

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Coordinators:

Maria Kaczmarek

Julia Stokowiec

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Jury:

Prof. Michał Nowicki

Marcin Kosmalski MD, PhD

Joanna Wójcik-Odyniec MD, PhD

Diagnostic and therapeutic challenges of IgG4-Realted Disease - Clinical Case

Dariusz Popiela

Presenting author: Dariusz Popiela

Tutors: Monika Górska MD; Prof. Ilona Kurnatowska MD, PhD

Affiliations: Department of Internal Medicine and Transplant Nephrology; Medical University of Lodz

Introduction: IgG4-related disease (IgG4-RD) is a rare, systemic, fibro-inflammatory disorder, characterized by tissue infiltration with lymphocytes and IgG4-secreting plasma cells, with various degrees of fibrosis. It is often associated with elevated serum IgG4 concentrations. Multiorgan involvement is typical, including pancreatic, renal, orbital, and retroperitoneal manifestations.

Case report: A 64-year-old female patient was admitted due to long-term proteinuria and deteriorated kidney function. Comorbidities included hypertension, diabetes type 2, chronic pancreatitis nodular thyroid goiter, autoimmune alopecia, and a history of right submandubular salivary gland excision. Laboratory tests revealed nephrotic proteinuria 4.25g/24h, with GFR 43/ml/1.73m2, hypoalbuminemia 20.5 g/L. Imaging studies revealed an atrophic pancreas with calcifications and an enlarged left kidney pelvis. Signs of monoclonal gammaglobulinopathy prompted further diagnosis of multiple myeloma - excluded due to no skeletal lesions and normal bone marrow biopsy. Kidney biopsy revealed membranous nephropathy, with negative anti-PLA2R. Further investigation of secondary causes of MN revealed elevated levels of IgG4 and IgE. Re-evaluation of kidney biopsy confirmed IgG4-positive cells. Based on the entire clinical picture the diagnosis of IgG4-RD disease was established. Steroid treatment was initiated. In follow-up due to relapse of proteinuria to 6.54 mg/dL, mycophenolate mofetil was added to the treatment with good clinical response.

Conclusions: IgG4-RD is a rare, poorly investigated disease often misdiagnosed as other rheumatologic conditions. Despite diagnostic challenges, IgG4-RD usually shows a good response to immunosuppressive treatment. Early recognition and appropriate treatment of IgG4-RD can halt disease progression, prevent organ damage, and improve patient outcomes.

Magnetic resonance imaging in autoimmune encephalitis with anti-GAD antibodies – discussion on its utility and clinical presentation of case series.

Dawid Delebis, Maja Mejza

Presenting author: Dawid Delebis

Tutors: dr n. med. Bartosz Bielecki

Affiliations: Medical University of Łódź

Introduction: Autoimmune encephalitis (AIE) comprise a group of disorders with autoantibodies tar-geting at various important proteins expressed in the CNS. Encephalitis with anti-glu-tamic acid decarboxylase (GAD) antibodies is a rare subtype of AIE typically manifest-ing with a cognitive impairment and epileptic attacks. Importantly, anti-GAD antibodies are associated not only with encephalitis, but also with other autoimmune conditions, such as type 1 diabetes mellitus, cerebellar ataxia and stiff-person syndrome. Clear di-agnostic guidelines in the clinical and radiological diagnostic path would contribute to better and faster treatment. The aim of this report is to assess radiological imaging im-portance and discuss clinical and therapeutic approach in three cases of patients with GAD-associated encephalitis.

Case report: Case 1: A 59-year-old man was admitted due to tonic-clonic cluster seizures. MRI showed abnormalities in the frontal and temporal lobes and in the left cingulate gyrus. Laboratory tests demonstrated pleocytosis in CSF and presence of anti-GAD antibod-ies. Treatment with steroids was initiated and the patient developed psychosis and later osteoporosis. After over a year intravenous immunoglobulin (IVIg) infusions were initi-ated.

Case 2: A 23-year-old man whose complaints were diplopia, blurred vision, coordination and balance disorder. The neuropsychological examination revealed mild cognitive im-pairment. No abnormalities detected in MRI ordered dur-ing the hospitalization. In labor-atory test, anti-GAD antibodies were detected. The initial therapy was azathioprine and then IVIg.

Case 3: A 54-year-old man reported with gait disturbance with muscle hypertonia. In ad-dition, he complained of worsened visual acuity and diplopia looking to the left. Earlier admitted to the hospital due to coordination and balance disorder and paresis in the left lower extremity. MRI revealed no major pathological findings but further examination performed showed anti-GAD antibodies. After treatment with pulse of methylpredniso-lone therapy with mofetil mycofenolate was initiated with good effect.

Conclusions: Presented case series supports observations in the literature referring to encephalitis with anti-GAD antibodies but gives new insights into clinical and radiological manifesta-tion of the disease. Cognitive impairment and seizure occurred at least in one patient but no hallucinations were reported. None of our patient had malignant neoplasm during observation. Interestingly, all of the presented patients are males, despite literature sug-gesting that this condition more frequently affects females. Immunotherapy was allevi-ated symptoms in all cases. MRI analysis was only partially helpful in the process of di-agnosis. This case series, as we believe, may contribute to establishing recommendations for diagnostic path in encephalitis with anti-GAD antibodies.

"Can you be allergic to exercise?" - Challenging biological therapy case

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Introduction: Cholinergic urticaria, mainly occurring in young adults, is triggered by non-physical factors such as physical exertion, increased body temperature, and stress. In extreme cases, it can cause angioedema, laryngeal edema, and even anaphylaxis.

Case report: A 24-year-old soccer coach with chronic, recurrent skin lesions since October 2019 was referred to the Clinic of Immunology and Allergy in May 2020 for further diagnosis. These lesions, scattered on the limbs and torso, mainly manifested as small blisters and papules with accompanying erythema, intense dermographism, but also with large, irregularly shaped urticarial wheals. They worsened upon exertion and temperature changes but also appeared spontaneously without identifiable stimulus. Skin symptoms were accompanied by intense itching and excessive sweating with an unpleasant odor and tended to spontaneously resolve within a few hours without leaving traces. No food hypersensitivity was ascertained although the patient suspected lactose intolerance. Treatment using bilastine, fexofenadine, levocetirizine, rupatadine, and methylprednisolone did not bring improvement. Treatment was changed to combined fexofenadine, montelukast and famotidine. Skin prick tests (SPT) with standard panel of allergens and autologous serum skin tests (ASST) were negative. The Dermatology Life Quality Index (DLQI) score was 24 and Urticaria Activity Score over 7 days (UAS7) was 40. The patient was started on omalizumab, and anti-IgE monoclonal antibody, with improvement. Suspension of omalizumab therapy leads to gradual recurrence of symptoms, therefore, continuation was recommended.

Conclusions: The diagnosis and treatment of cholinergic urticaria present numerous challenges, mainly due to frequently observed limited efficacy of standard urticaria medications. This case emphasizes the importance of comprehensive diagnostics and individually tailored treatment, which may include innovative therapeutic methods such as omalizumab therapy.

STEMI or myocarditis? - a patient with subacute STEMI and complications during coronary angiography

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Introduction: Myocardial infarction is one of the life-threatening coronary-associated pathologies characterized by sudden cardiac death and the main cause of human death, globally. This pathology is divided into two categories ST-elevation MI (STEMI) and non-ST-elevation MI (NSTEMI). STEMI is caused by critical stenosis or total occlusion of the coronary artery and requires timely diagnosis and management by urgent coronary angiography. Since reperfusion is time-sensitive, in STEMI late presenters, clinical benefit is disputable if they are without symptoms.

Case report: A 60-year-old female patient was admitted to the cardiac ward from the ER with suspected myocarditis due to chest pain with troponin I 2100 ng/L and 2600 ng/L in the follow-up. She had a flu-like syndrome 7 days ago, with chest pain that started 2 days ago and was still present at the time of admission. The laboratory results showed CRP levels of 5.1 mg/L and leukocytes at 12.7 x 10^9/L. ECG revealed discrete ST elevation with negative T waves in D3 and aVF, along with ST depression in V3-V6. Echocardiography showed akinesia of the basal inferior left ventricular wall. Subacute STEMI was diagnosed, but since the patient still had chest pain, urgent coronary angiography was performed through the right radial approach, revealing a 90% stenosis in the left circumflex artery (LCx) and thrombotic occlusion of the proximal right coronary artery (RCA). Immediately after RCA visualization, RCA dissection was noted with retrograde progression towards the aorta. To prevent further propagation of the dissection, a stent was placed in the RCA ostium. When trying to place a second stent more distally, it became lodged in the first stent. Subsequent retrieval pulled out the first stent that was found stuck in the right brachial artery, without compromising the flow. A new stent was placed in the proximal RCA via a right femoral approach. Post-interventional CT angiography did not show progression of the dissection towards the aorta. After the procedure, the patient was stable with the uneventful course. Before discharge, PCI LCx was performed. Echocardiography confirmed preserved systolic function of the left ventricle without valvular abnormalities with ejection fraction 65%, and hypokinesia of the basal inferior wall. The further course of treatment proceeded without complications.

Conclusions: Timely diagnosis and referring STEMI patients for urgent PCI improves prognosis and prompt care should be taken in the ER to recognize patients with acute coronary syndromes. The potentially life-threatening complication presented in this case shows the importance of careful attention to preventative techniques and knowledge of complications treatment.

A man who could have been saved.
Preventing and improving outcomes of out-of-hospital cardiac arrest.

Emilian Budny

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Tutors: Agnieszka Bartyka MD

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Introduction: Nowadays, the ability to properly perform advanced life support is the main skill of every medical doctor, however many other factors influence its success. Not only perfection in following standard algorithm but also bystanders actions and individual approaches influence the final outcome.

Case report: This case report concerns an 18-year-old male with cardiac arrest due to ventricular fibrillation (VF) with the return of spontaneous circulation (ROSC) after 10 defibrillations and the use of adrenaline and amiodarone. Upon arrival, the emergency medical team found a patient with no signs of life, on whom witnesses were performing basic life support with no Automated External Defibrillator (AED). The Patient's family reached the place of the incident when ROSC had been achieved. Collected medical history allowed to determine that the patient suffered from bidirectional catecholaminergic tachycardia, channelopathy, bradycardia, and a prolonged QT interval. Moreover, the emergency medical team learned that the Patient had been qualified for implantable cardioverter-defibrillator (ICD) implantation as a child, which never took place. After ROSC Patient was transported to the intensive care unit.

Conclusions: This case report is intended to encourage the search for solutions that could prevent severe complications from cardiovascular causes at a young age such as early defibrillation with an AED by witnesses of the event. Moreover, the authors want to emphasize the role of early information to the emergency medical team about the main diseases that may significantly change the management.

Mucormycosis - shadow of transplantology

Jan Kasprzyk

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Introduction: Mucormycosis is an opportunistic fungal infection that predominantly affects chronically ill patients with compromised immune system. Due to its widespread presence in the environment and refractoriness, it poses a significant threat to patients who have undergone heart transplantation (HTx).

Case report: A 53-year-old male patient, 6 months post HTx due to dilated cardiomyopathy was admitted to the hospital due to pain in the left eye, left frontal and temporal headache, with partial inability to raise the left eyelid, double vision, epistaxis, and overall weakness.

On admission, the SARS-Cov-2 test turned out to be positive. Laboratory tests noted moderately elevated CRP (95 mg/l), very high glycemia levels (500 mg/dl) and toxic level of tacrolimus (24µg/ml). Neurological consultation raised suspicion of cavernous sinus thrombosis, which was ruled out after an angio-CT scan. On the next day the patient reported loss of vision in the left eye with complete loss of the ability to open the eye. After passive lifting of the eyelid, the pupil was dilated with no light reaction. MRI showed signs of acute inflammation of left maxillary sinus and swelling of fatty tissue in the left optic canal. Patient was qualified for Functional Endoscopic Sinus Surgery (FESS) to relieve the pressure on the optic nerve. During the operation white, caseous mass was evacuated. Empirical therapy with caspofungin was deployed. Unfortunately, the procedure did not bring any improvement neither in the clinical status nor imaging tests. Histopathology examination confirmed the presence of Mucor sp., prompting initiation of therapy with amphotericin B and arrangements for surgical intervention.12 days after that, exenteration of the left orbit, left lateral rhinotomy, and Caldwell-Luc operation were performed. However, the patient’s neurological status progressively deteriorated with palate necrosis and tooth loss. Following consultation with an infectious disease specialist, antifungal treatment was escalated and voriconazole was added. Unfortunately, further imaging test, including MRI showed progression of inflammation to the central nervous system. Despite intensive care and thorough diagnostics over a period of 4 months, the patient ultimately died of brain oedema.

Conclusions: Mucormycosis presents as a challenging and often treatment-resistant infection, particularly in patients who have undergone heart transplantation and are on immunosuppressive therapy. In such cases, it is imperative to prioritize environmental factors, ensuring that the patient resides in a dry and hygienic environment to minimize the risk of fungal exposure. Additionally, measures should be taken to prevent exposure to pathogens such as SARS-CoV-2. Furthermore, it is crucial to optimize the management of underlying conditions, such as diabetes mellitus, to ensure that the patient's overall health is supported and that any potential risk factors for infection are minimized.

When the phenotype doesn’t match the genotype - a case of a patient with unusual lipid profile results

Laura Biskup

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Introduction: Chylomicronemia, a complex metabolic condition, is characterized by the accumulation of chylomicrons due to impaired lipolysis, leading to markedly elevated levels of triglycerides in the blood. This disorder often arises from a combination of genetic predisposition and environmental factors, and manifests as recurrent abdominal pain or acute pancreatitis.

Case report: A 41-year-old male, with a history of persistent hypertriglyceridemia and prior acute pancreatitis, was referred to the Lipid Disorders Treatment Center at the Department of Internal Medicine and Clinical Pharmacology, Medical University of Lodz, for a further diagnosis. Notably, he exhibited extensive eruptive xanthomas, indicative of persistent triglyceride elevation. Laboratory tests indicated extremely high triglyceride levels of 9143 mg/dl and total cholesterol of 1198mg/dl, while direct LDL cholesterol remained within the normal range. The patient also presented with uncontrolled diabetes type 2, diagnosed at the age of 36.
Despite the hospitalization and treatment with fenofibrate, insulin, LMWH in an intermediate dose, fluids and dietary restrictions, triglyceride levels remained elevated. Genetic testing identified a pathogenic variant in the APOB gene, characteristic of Familial Hypercholesterolemia. Notably, no mutations associated with hypertriglyceridemia were detected. Despite improvements in clinical parameters, including reduction of triglyceride levels and improved glycemic control, the triglycerides still persisted significantly above the normative range, prompting consideration of alternative therapeutic strategies such as plasma exchange.

Conclusions: The discordance between phenotype and genotype in severe hypertriglyceridemia underscores the complex nature of lipid metabolism disorders. Comprehensive genetic evaluation is crucial as it can significantly modify the treatment strategy.

Challenges in Systemic Scleroderma treatment with multimorbidity patient

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Introduction: Scleroderma is a systemic connective tissue condition of unknown ethiology that affects blood vessels, skin, muscles and important internal organs like heart, lungs and gastrointestinal tract.

Case report: A 64-year-old female patient with hypertension and hypercholesterolemia has been chronically treated for systemic scleroderma since 2010. The patient presents Raynaud's syndrome on fingers and toes, cardia inefficiency, recurrent functional LES disorder and interstitial lung disease with fibrosis. Patient underwent the uterine body removal in 2008 due to myomas and chemoterapy and ovarectomy with cervix removal in 2021 due to clear cell ovarian carcinoma. Scleroderma treatment consisted initially of azathioprine, thereafter, because of lung fibrosis progression, of cyclophosphamide but couldn't be continued because of cancer and currently consists of mycophenolate mofetil. In 2022 the patient was included to B.135 drug programme – nintedanib treatment of interstitial lung disease related to systemic scleroderma. As of this moment fibrosis covers 25% of right lung and 20% of left lung and does not progress. Medication also includes esomeprasole, losartan, acetylsalicylic acid, cholecalciferol, amlodypine, itopride and timonacicum.

Conclusions: Scleroderma treatment, because of its unknown ethiology and progressive character, is difficult and is based on disease-modifying immunosuppressants and symptomatic treatment, that only slows down the progression of the disease. The course of the disease can also be interrupted by neoplastic disease which can exclude the possibly used drugs.

Overcoming side effects of atopic dermatitis treatment with biologics and small molecule drugs

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Introduction: Atopic dermatitis (AD) is an inflammatory skin disease characterized by dryness, erythema, lichenification, oozing, and itching. Symptoms typically begin in childhood and subside by the age of 10, although they can persist into adolescence and adulthood in some cases.

Case report: In April 2022, a 28-year-old woman presented to an allergy clinic for evaluation and treatment. The patient (PT) was diagnosed with AD at the age of 22 but had experienced skin symptoms as a child due to the consumption of certain foods. The PT's symptoms subsided at the age of 12 but returned ten years later when she began working as a hairdresser. She was forced to switch to the office job due to symptoms. The use of topical corticosteroids, prednisone, methotrexate, phototherapy, and nemolizumab did not result in improvement of the treatment. For the last five years, she has been taking cyclosporine, recently 250 mg per day. Upon evaluation, she presented with dry and itchy skin, eczematous lesions on lower and upper limbs, and on head and neck. There was lichenification, papules, and single oozing lesions, mainly on her upper limbs. The affected body surface area (BSA) was 21%, and Eczema Area and Severity Index (EASI) score was 19.2.

Despite cyclosporine treatment, the disease progressed, and the lesions became more pronounced, resulting in EASI reaching 22.0, BSA of 33%, and an Investigator's Global Assessment (IGA) score of 4. Total IgE (cIgE) level reached 968 kU/l and a specific IgE (sIgE) for cat allergens was in class 4. The PT was deemed eligible for treatment with dupilumab which commenced in July 2022.

After initial improvement. During the May 2023 visit, the PT reported recurrence of symptoms, with an EASI score value of 17.6. Additionally, the PT experienced conjunctivitis as a side-effect of dupilumab, leading to discontinuation of the drug.

In July 2023, the PT was started on daily upadacitinibat the dose of 15 mg. Before starting upadacitinib, the PT had an EASI score of 29.3 and a Dermatology Life Quality Index (DLQI) score of 27. Despite discontinuing therapy for 8 weeks due to the appearance of side effects in the form of hemiplegia and tonsillitis, PT demonstrated significant improvement upon resumption (recent results: EASI 1.4, IGA 2, DLQI 5). Laboratory results indicated an increase in total cholesterol (218 mg/dl), LDL cholesterol (127 mg/dl), and a slight elevation in AspAT and ALT activity, which may be associated with subsequent upadacitinib side effects. Monitoring of the lipidogram as well as statin therapy were recommended. The PT continues upadacitinib with stable improvement and no new complications

Conclusions: The presented case highlights the intricacy of contemporary AD disease treatment. The treatment significantly affects the quality of life of the patient, alleviating symptoms of the disease while also leading to the occurrence of disorderly side effects.

Splenectomy as a cause of secondary immunodeficiency and serious medical consequences.

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Introduction: Secondary immunodeficiencies (SID) are disorders of the immune system that occur as a result of external stimuli or result of certain diseases. SID can vary in severity. Sometimes the failure of just one element causes very serious health consequences - as the following case.

Case report: Patient M.P. was healthy man who had a road accident in 2006. As a result, it was necessary to make a splenectomy. Since then, the patient has had multiple infections that required antibiotic therapy. In 2014, he was diagnosed with bronchial asthma. The patient was also diagnosed with peritonsillar abscess (2016), perianal abscess (2022), perilabral cyst (2023) and suspected periradicular abscesses. The patient suffers from chronic sinus infections and frequent asthma exacerbations. The patient's clinical picture should be also supplemented with orthopedic aspects - pseudarthrosis of the scaphoid and degeneration of the right wrist. M.P. visited an immunological clinic for enhanced diagnosis and optimization treatment of his immunodeficiency. The laboratory tests showed numerous abnormalities, including: decreased IgM level, increased IgD level, thrombocythemia, leukocytosis, and increased B-globulin. Therefore, it is significant to plan and implement appropriate primary prevention – preventive antibiotic therapy and vaccinations. Additionally, it must be noticed that the patient requires treatment of each individual disease, but also a holistic approach and searching for a common cause of abnormalities.

Conclusions: The spleen is a delicate organ that can rupture due to trauma. Then, it should be removed. Many patient do not experience significant changes in the functioning of their immune system after this procedure. But in some cases, immunodeficiencies, more frequent infections, dangerous abnormalities in laboratory tests, and autoimmune diseases may be observed. This shows that the elements of the immune system are interconnected and the absence or disfunction of one of them may disturb the functioning of the entire system. Patients with secondary immunodeficiencies require comprehensive medical care including early diagnosis of any abnormalities, appropriate treatment and regular monitoring.

The Application of Autologous Stem Cell Transplantation in a Patient with Multiple Myeloma

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Introduction: Autologous stem cell transplantation uses the patient's own stem cells, which are collected in advance and returned to the body after the application of the myeloablative chemotherapy protocol. It is commonly used to treat patients with multiple myeloma who are eligible for the procedure.

Case report: A 55-year-old male was hospitalized with COVID-19 pneumonia and critical intensity of symptoms when hyperproteinemia (139g/L) with IgG 94.5g/L was detected. Presence of monoclonal IgG kappa protein, 45% bone marrow infiltration with plasma cells and osteolytic lesions revealed the diagnosis of multiple myeloma. He started treatment with bortezomib, lenalidomide and dexamethasone combination (VRD regimen), but developed a lenalidomide-related liver lesion after 2 cycles, requiring a change to the VCD regimen which was given for an additional 5 cycles. IgG levels reduced from 94.5g/L to 29g/L during VRD regimen, but rose and subsequently fell from 50g/L to 25g/L during VCD, and plasma cell infiltration reduced to 15%. The patient achieved suboptimal response (partial remission) and was unable to continue with lenalidomide. Tandem ASCT was performed and patient continued bortezomib maintenance. Over time normalization of IgG levels was achieved but monoclonal protein was still detectable.

Conclusions: ASCT is the most potent therapeutic option for multiple myeloma patients. It enabled long-term disease control in a young patient with a suboptimal response to modern therapy and an inability to continue treatment with lenalidomide.

Various therapy options and effects in paroxysmal nocturnal hemoglobinuria depending on the components of the complement system involved

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Introduction: Paroxysmal nocturnal hemoglobinuria (PNH) is a rare clonal hematopoietic stem cell disease caused by the somatic mutation of the PIGA gene located on the X chromosome. This gene codes the enzyme, which is responsible for glycosylphosphatidylinositol synthesis, being an anchor for membrane proteins, including complement inhibitors CD55 and CD59. Deficiency of these proteins on the erythrocyte surface leads to chronic intravascular hemolysis, thrombosis and episodes of hemoglobinuria. In 2007 eculizumab, the first drug for PNH, was registered in Europe. This significantly improved patient prognosis and reduced mortality, but the therapy did not always bring the desired results. Since then, some new therapies have been introduced, for example ravulizumab, which is the first long-acting C5 inhibitor of the complement system, and pegcetacoplan, a C3 inhibitor of the complement system. This gives a whole new perspective on the PNH treatment.

Case report: A 77-year-old patient was diagnosed in 2016 with PNH, the first symptoms of which were persistent weakness and jaundice. Initially, she was treated with transfusions of red blood cells concentrate until 2018, when she was qualified for the eculizumab treatment program. The drug was administered at a dose of 900 mg once every 2 weeks. The weakness disappeared, the yellowing of the skin was less intense compared to the beginning of the treatment. The patient tolerated infusions without complications, however, during treatment multiple episodes of recurrent erysipleas occured. Various antibiotic therapies did not bring lasting effects. Despite the implemented therapies, there were also increases in hemolysis parameters, probably caused by the intensification of the activity of the complement system as the result of streptococcal infection and SARS-CoV-2. PNH manifests itself in the patient's anemia with marked drops in hemoglobin levels between subsequent doses of the drug and an increase in total bilirubin corresponding to the level of erythrocyte breakdown. There is also an increased level of LDH. With each episode of erysipelas, the patient decompensated. In 2023, preparations began to switch the patient to pegcetacoplan therapy. On February 2, 2024, the first dose of pegcetacoplan along with eculizumab was administered. After four administrations of both drugs, on February 19, the treatment was finally changed to pegcetacoplan monotherapy. It was well tolerated and there have been no recurrences of erysipelas since then.

Conclusions: The treatment of PNH with eculizumab may be effective, but in some cases it can be insufficient. The implementation of new therapies, such as pegcetacoplan treatment, can significantly improve the patient's prognosis. The 77-year-old patient achieved a better treatment effect with pegcetacoplan than with eculizumab. This is due, among other things, to the inhibition of various steps of the complement activation cascade by both of the above drugs.

When excluding meets including - Interstitial Lung Disease of unidentified source and its differential diagnosis

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Introduction: Interstitial Lung Diseases (ILD) include a wide-ranging and diverse spectrum of non-infectious and non-cancerous pulmonary disorders, both with identifiable causes and those of unknown origin. There is a great variety of ILD to be included in differential diagnosis, for example: Idiopathic Pulmonary Fibrosis (IPF), sarcoidosis, Cryptogenic Organizing Pneumonia (COP) or pneumoconiosis.

Case report: A female patient was admitted to the pulmonary ward for diagnostic evaluation of pathological changes in the lung interstitium that were discovered during another hospitalization for pulmonary embolism. High Resolution Computer Tomography (HRCT) showed signs of ground glass opacities (GGO), thickening of intralobular septa and mosaic attenuation. There were no signs of proliferative changes shown in performed Bronchofiberscopy (FOB). Bronchoalveolar Lavage (BAL) fluid was cultured, the culture was positive for Klebsiella pneumoniae. Patient was diagnosed with ILD. Treatment with Methylprednisolone and Amoxicillin was instituted. Within 3 months, the patient was readmitted to the pulmonary ward for reassessment after treatment. Performed HRCT, in comparison to the previous one, showed complete regression of lung parenchymal changes. Residual post-inflammatory changes and minimal fibrosis were found. Second FOB was not performed, due to regression in HRCT. Based on clinical presentation and spirometry after infection treatment, patient was diagnosed with chronic obstructive lung disease (COPD), discharged from hospital, and followed-up in an outpatient clinic.

Conclusions: Despite BAL fluid culture not being a standard diagnostic test for ILD, it is a procedure worth considering in certain cases. Excluding infectious background in patients with an atypical clinical presentation and imaging results may be crucial for making the correct diagnosis. Moreover, the possible contribution of infectious agents to the onset of specific ILDs still remains a topic of concern and requires further clarification.

From malignancy to hypersensitivity

Aleksandra Świdzińska

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Introduction: Hypersensitivity pneumonitis (HP) is a heterogenic group of conditions caused by the repetitive exposition for inhalable antigens. It is commonly associated with occupations, hobbies or living conditions. In susceptible it leads to diffused inflammatory alterations and interstitial granulomas.

Case report: A patient aged 64 was admitted to the Rheumatology Department with suspected IgG4-related disease. Previously extensively diagnosed in pulmonology departments - imaging studies showed a change in the larynx and numerous lesions in both lungs, then suspicion of disseminated neoplastic disease was raised. Subsequently, the patient was hospitalized in the Palliative Medicine Department and the Brachytherapy Department, symptomatic treatment including steroid therapy was initiated with significant improvement. A month after that, the PET/CT showed metabolically inactive lung changes with substantial regression compared to the last CT, suggesting an inflammatory and post-inflammatory nature. Steroid therapy was discontinued in five months - since then, there has been a gradual worsening of the general condition - fatigue, weakness, loss of appetite, nausea, weight loss, fever up to 38°C. In Rheumatology Department patient reported progressive weakness, weight loss of approximately 15 kg over the past year, worsening mood, sometimes accompanied by productive symptoms. On physical examination, gynecomastia, single scaling lesions on the forehead and lower limbs were noted. Additional tests revealed mild anemia, slight neutrophilia and monocytosis, elevated parameters of inflammation. Histopathology from the left lung showed interstitial inflammatory infiltration with lymphocytes, plasma cells, and macrophages. Chest CT revealed nodular changes and ground-glass opacity areas. Low IgG4 levels argued against the diagnosis of IgG4-related disease. After obtaining more information about hobbyist exposure to parrot allergens and observing the disease history, the patient was referred to the Pulmonology Department for further evaluation for hypersensitivity pneumonitis. Precipitin tests were positive for Candida albicans and Pantoea agglomerans. Functional tests did not show ventilation or CO transfer disorders. The patient was discharged in stable condition and prescribed prednisone at a dose of 40 mg, with further follow-up at the Pulmonology Clinic.

Conclusions: HP should be considered in the differential diagnosis of patients with interstitial lung lesions. Symptoms such as fever of unknown origin, weight loss and fatigue may lead to suspicion of malignancy, therefore histopathological confirmation is necessary before instituting treatment. Detailed environment-oriented medical interview can be a crucial part of diagnosis.

Bronchiectasis - a pulmonological sisyphean task in an interdisciplinary team.

Aleksandra Tlak

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Introduction: Bronchiectasis is an irreversible widening of the airway diameter due to damage to their walls mainly manifesting as chronic cough with expectoration, hemoptysis and dyspnoea. It is a progressively worsening disease, irreversible in nature and can lead to a decrease in quality of life, disability, and in some cases, death due to severe respiratory failure. The origin of bronchiectasis is explained by the "vicious cycle" hypothesis. The primary cause of the condition is damage to the ciliated epithelium of the airways and the resulting impairment of mucus clearance mechanisms. This leads to colonization of the airways by bacteria, the development of inflammation and further structural failure of the airways. Therefore, therapeutic management of bronchiectasis should include airway clearance exercises and infection treatment, which enable intervention in the key elements of the "vicious cycle" in the pathogenesis of this disease.

Case report: A 76-year-old patient with previous history of chronic diseases including pulmonary fibrosis complicated by respiratory failure, during long-term steroid therapy, was admitted to the ward due to productive cough, fever, and dyspnoea. Upon admission: patient presented with cachexia (BMI 14 kg/m^2), desaturation, crackles over lung fields, fever of 38.5°C and elevated parameters of inflammation (CRP 140.3 mg/L). Diagnosis of bronchiectasis was suspected (during next infectious exacerbation), previously untreated with respiratory physiotherapy program due to permanent cachexia. A chest CT scan was ordered, revealing significant bronchiectasis progression. Inhaled antibiotic therapy according to antibiogram with colistin and intravenous meropenem was initiated, along with Simeox device therapy. A decrease in inflammatory parameters was achieved. The patient condition improved and was discharged with a recommendation to continue inhaled antibiotic therapy with colistin and to be included in the respiratory physiotherapy program after achieving an increase in BMI (dietary treatment recommended) and overall improvement in condition.

Conculusions: Due to aging of societies, an increase in the percentage of patients with bronchiectasis in the palliative care stage accompanied by coexisting diseases and increasing bacterial resistance to conventional antibiotic therapy can be observed. The significant exacerbation in the general condition of patients resulting from the above complicates the treatment of the two main "treatable traits" in bronchiectasis - the treatment of infections and excessive mucus production in the airways. The lack of a target for therapy leads to progressive destruction of the respiratory tract tissue in the "vicious cycle" mechanism. Therefore, holistic patient care led by a specialized team of doctors, as well as physiotherapists, dietitians and psychologists, is necessary.

DRESS syndrome in a patient with endocarditis and spondylodiscitis – the role of a multidisciplinary team

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Introduction: Endocarditis onset can be acute, rapidly destroying the valves, or subacute and chronic. DRESS is a systemic drug hypersensitivity reaction characterized by fever, skin rash, eosinophilia, lymphadenopathy and internal organ involvement.

Case report: We present a 53 year old patient presented with sepsis (Germella morbilorum positive hemoculture), high fever of 39,7 °C and a heart murmur. The echocardiography reveled two verrucous changes alongside the aortic valve and moderate aortic valve regurgitation, assumed to be aortic valve endocarditis. Moreover, his back pain was proven to be Th6 spondylodiscitis on a PET CT with a degeneratively changed vertebra, requiring persistent antibiotic therapy. In the process of aggressive antibiotic treatment with vancomycin and gentamicin he has formed a skin rash, difficulty breathing and elevated eosinophilic levels, acute kidney failure, pneumonia or pneumonitis all indicating possible DRESS syndrome. Acute kidney injury was treated by hemodialysis and a resistant pathogen Klebsiella OXA-48 was found in the urine culture. Team of infectious disease specialist, cardiologist, neurologist, neurosurgeon and pharmacology specialist upon three weeks decided to stop antibiotics and introduce high dose of corticosteroids followed by two-week treatment of ceftriaxon. This resulted with resolution of acute kidney failure, pneumonitis and skin rash. The valve lesion remained moderate, not requiring surgery. Patient is in follow up for two years.

Conclusions: Infective endocarditis is a systemic disease and requires a multidisciplinary approach. Although its` treatment consists of potent antibiotics, DRESS syndrome and drug hypersensitivity are rare complications that should not be neglected and can be resolved in multidisciplinary team decision making.

Transthyretin Amyloidosis: An Underdiagnosed Culprit in Heart Failure

Ayaana Ibshaan, Yara Zakko, Phillip Kiełbowicz

Presenting author: Ayaana Ibshaan

Tutors: Maria Sawościan MD, Prof. Małgorzata Lelonek MD PhD

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Introduction: Amyloidosis is a disorder characterised by extracellular deposits of misfolded proteins leading to organ damage and dysfunction, with the heart being one of the most critically affected organs. These misfolded proteins form insoluble fibrils known as amyloid which accumulate in tissues and contribute to the clinical manifestations of amyloidosis. Numerous proteins can aggregate and deposit as amyloid, one of which is transthyretin causing transthyretin amyloidosis (ATTR). An under-diagnosed cause of heart failure and other cardiac symptoms, such as atrial fibrillation/flutter, is transthyretin amyloidosis. Incidence of ATTR is rare, but epidemiological studies have shown that approximately 13 percent of patients admitted with heart failure with preserved ejection fraction may have ATTR. The main cardiac manifestation is heart failure, present in nearly 60 percent of patients at the time of diagnosis with the median survival ranging between 20 - 66 months depending on the presence of elevated cardiac biomarkers. Risk factors for ATTR include age over 60, male sex, positive family history, and African race.

Case report: A 78 year old male patient presented with chronic heart failure with a preserved ejection fraction (EF 55%), paroxysmal atrial fibrillation, mild ventricular arrhythmia, and hypertension.

On admission, lab tests performed revealed an elevated NT-pro BNP of 321 pg/ml and an elevated high sensitivity troponin T (hs-TnT) of 19 ng/L. Echocardiography showed hypertrophy of the inter-ventricular septum (IVS) of 19 mm and features of diastolic dysfunction of the left ventricle (LV) - E/e' 8.8; Left atrial volume index (LAVi) 37 ml/m2. Chest X-ray showed an enlarged heart silhouette and enhanced vascular pattern. The ECG shows no abnormalities. The patient previously underwent surgery for carpal tunnel syndrome. A chest scintigram with the administration of 99mTc-HMDP revealed pronounced tracer uptake in the myocardium, Grade 3 on the Perugini scale. These scintigraphic features pointed towards the diagnosis of ATTR amyloidosis.

Conclusions: This case underlines the critical role of advanced imaging techniques and awareness of ATTR amyloidosis in the differential diagnosis of heart failure. The complicated course of this disease which is often caused by delayed diagnosis can be avoided with adequate knowledge about the presenting signs and symptoms. Early diagnosis along with early treatment can significantly alter disease progression, as well and patient prognosis and outcomes.

Embryonal carcinoma in the mediastinum infiltrating vessels, pericardium and lungs - Case Report of a 39-year-old patient

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Tutors: Tomasz Kaziród MD (3)

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Introduction: Pathological lumps developing in the mediastinum are heterogeneous - various tumors may appear in this localization. One of them is embryonal carcinomas, rarely described in this location. These tumors originate from primary germ cells remaining in the body after the gonad development process and can be divided into benign and malignant. The following work will present the diagnostic process of a 39-year-old patient with a mass in the mediastinum.

Case report: A 39-year-old patient was admitted to the Department of Pulmonology with the Sub-Department of Allergology with suspicion of a proliferative process visible on X-ray in the mediastinum and left lung. In the interview a month ago, he had a generalized infection with low-grade fever, cough, reduced exercise tolerance, and significant weight loss. Additional laboratory and imaging tests were ordered. Laboratory tests showed elevated LDH and B-HCG values. Chest computed tomography revealed an infiltrative change in the mediastinum with an extension to the superior vena cava, pericardium, and left lung. FNA of the infiltrative lesion was performed, and a histopathological examination result was obtained, indicating the diagnosis of a malignant germ cell tumor. The patient was redirected to the Oncology Clinic, where, after a PET CT scan, chemotherapy was planned.

Conclusions: Since tumors in the mediastinum can be diverse, diagnosis often takes place in multiple stages using various methods. Embryonal cancers are most often located in the reproductive organs, but they can occur anywhere in the body, including the mediastinum. Diagnosis and treatment of mediastinal germ cell carcinomas are still casuistry issues.

Desensitization of hypersensitivity to acetylsalicylic acid in a 63-year-old female patient

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Introduction: Hypersensitivity drug reactions (HDR) to non-steroidal anti-inflammatory drugs (NSAIDs) is an increasing clinical problem due to their high prevalence affecting from 0.5% to 1.9% of the world population and 0.6% of the Poles. Possible manifestations of HDR to acetylsalicylic acid (ASA) include urticaria, angioedema, bronchial asthma or chronic sinusitis with nasal polypi. Considering ASA as a drug of absolute necessity, if no alternatives are available, desensitization is the only option that can be maintained. It involves inducing a temporary state of tolerance to the drug that caused HDR.

Case report: 63-year-old woman with coronary heart disease was referred to the Department of Allergology of the University Hospital in Opole for ASA desensitization. The patient was referred from the Department of Cardiology because no more profitable therapeutic option than ASA was offered. She had a history of hypersensitivity to NSAIDs after taking ibuprofen, which initially manifested 8 years ago with swelling of the eyelids, nose and mouth.The reaction recurred a year later after taking ASA. Since then, the patient has not taken any NSAIDs. She was desensitized according to the Silberman protocol, to a total dose of 150 mg, with a maintenance dose of 75 mg/d. The patient was discharged home with a referral to the Department of Cardiology for further treatment and with recommendations of healthy lifestyle and daily ASA intake.

Conclusions: The desensitization procedure provides patients an opportunity to be treated with the most optimal treatment even for those suffering from NSAIDs-HDR. The present clinical case confirms the effectiveness of desensitization and its utility in daily clinical practice.

Obliterative bronchiolitis of unknown etiology in a 26-year old man – Case Report

Adam Lasota, Kamil Marszałek

Presenting author: Adam Lasota

Tutors: Ewa Miądlikowska MD

Affiliations: Medical University of Lodz

Introduction: Obliterative bronchiolitis (OB, also known as constrictive bronchiolitis, bronchiolitis obliterans syndrome) is a condition that most commonly occurs after lung or haematopoietic stem cell transplantation (HSCT). However, it may rarely develop in the course of accompanying autoimmune disorders (especially connective tissue diseases), pulmonary infections, after inhalation of toxic substances or with the use of pneumotoxic drugs. The treatment of OB depends on the cause.

Case report: A 26-year-old male patient, a smoker, was admitted to the Pulmonology Department due to dyspnea at rest, non-productive cough, fever and general malaise. Over the past few months, he had presented to the hospital multiple times due to severe abdominal pain. He lost 10 kg in the last six months. His medical history includes Crohn's disease and mediastinal lymphoma in childhood. Arterial blood gas analysis revealed type I respiratory failure. In the pulmonary function test severe obstruction and a significant decrease in transfer factor for carbon monoxide (TLCO) were detected. High resolution computed tomography (HRCT) showed extensive ground glass opacities bilaterally, mosaic attenuation and small consolidations, as well as peribronchial nodules. The diagnosis of obliterative bronchiolitis has been made. The treatment was started with systemic corticosteroids, antileukotriene and azithromycin. It was assumed that the pulmonary problems may be associated with Crohn's disease or the pneumotoxic effects of mesalazine. During the subsequent hospitalization, the patient was caught using psychoactive substances. The urine drug test was positive for AB-pinaca. The patient was consulted by a psychiatrist and qualified for addiction therapy. Due to the lack of improvement in lung function despite the treatment, the patient was referred to the lung transplantation centre. The use of synthetic cannabinoids was also found to be the most probable cause of OB in this patient.

Conclusions: Obliterative bronchiolitis is a rare disease that can be caused by many different triggers. The symptoms are nonspecific. Nevertheless, the therapeutic options are limited and the prognosis for patients is serious.

Stenting complications and Full Metal solutions

Adam Wójcikiewicz

Presenting author: Adam Wójcikiewicz

Tutors: Prof. Miłosz Jaguszewski, MD, PhD

Affiliations: Medical University of Gdańsk

Introduction: Coronary artery dissection (CAD) is a cardiovascular condition, where due to rupture and separation of arterial wall blood is able to flow between the layers of coronary arterial wall. Iatrogenic CAD is very rare complication of coronarography and percutaneous coronary interventions (PCI), however it's consequences may be fatal for patient. One of the treatment strategies is full metal jacket (FMJ) which can be described as long series of stents (60mm or longer) in one of coronary arteries or their branches.

Case report: 71-year-old patient (smoker, 50 pack-years) was admitted through emergency department to the clinic due to severe retrosternal pain. Dyspnea, coughing, hemoptysis were negated and oedemas were not observed. Patient had previous neurosurgical treatment for brain aneurysm (which led to memory impairment), previously without any chronic treatment. Patient was also diagnosed with alcohol use disorder, on admission 1.5 per mille of blood alcohol. ECG showed sinus bradycardia along with ST-segment elevations in II, III and aVF. Hipokinesis of inferior heart wall in Echo confirmed ST elevation myocardial infraction (STEMI) suspicion so the patient was transported to catheterization laboratory for coronarography which showed that Right Coronary Artery (RCA) was completely obstructed. To clear the lumen of the RCA thrombectomy was performed with the Pegase catheter. The stenosis in the middle section of RCA was dilated with an Emerge balloon, followed by implantation of an abluminus stent (44mm long) with a pressure of 20 atmospheres. Unfortunately, during the procedure extensive dissection of the RCA and aortic bulb occurred, so to prevent further dissection a Promus stent (20mm long) was implanted in the proximal section on RCA therefore creating Full Metal Jacket (68mm long in combined length) inside patient's RCA. Final angiographic result obtained in the middle section of RCA was good, with TIMI 3 flow and 0% residual stenosis. The day after the procedure patient was in good general condition, reporting good well-being and no complaints.

Conclusions: Usually, FMJ technic is used to treat suboptimal results of revascularization, but as presented in this case study FMJ can be also used to prevent further dissection and other potentially fatal aftermath of CAD.

CASE STUDY:
INTERNAL MEDICINE II

11th of May 2024

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Coordinators:

Agata Kaczmarzyk

Martyna Grzywacz

…●●●…

Jury:

Prof. Maciej Chałubiński

Prof. Tadeusz Robak

Prof. Marlena Broncel

IgA Nephropathy progression to renal failure – a case report of 25-year-old female patient

Lilianna Jasińska

Presenting author: Lilianna Jasińska

Tutors: Iwona Filipska MD

Affiliations: University of Warmia and Mazury in Olsztyn

Introduction: IgA nephropathy is the most common cause of primary mesangial glomerulopathy. Progression of the disease is mostly slow and within 20 years does not lead to kidney failure. Classical clinical picture consists of recurrent haematuria attendant on upper airways infection but most often consists of asymptomatic haematuria and minor proteinuria.

Case report: A 25-year-old female patient with a history of IgA nephropathy and hypertension since childhood and short bowel syndrome was admitted to Nephrology Unit with exacerbation of chronic kidney disease. Blood lab test showed creatinine level of 10,5 mg/dl.

The patient was hospitalized one month earlier because of acute abdomen and shock symptoms – heart rate 130/min, arterial blood pressure 90/60 mm Hg and cold, pale skin. At first, she was diagnosed in the gynaecology unit, then transferred to the surgery unit. Abdominal ultrasound showed free fluid in abdominal cavity that led to a decision to perform exploratory laparotomy. Intra-operatively, gastrointestinal perforation and peritonitis with faecal and purulent content that led to partial jejunectomy, appendectomy and forming jejunostomy were diagnosed. After surgery, the patient was transferred to intensive care unit where she was haemodialised several times. When renal parameters normalized the patient was discharged from hospital without a continuation of haemodialysis. At this time creatinine level was 3,1mg/dl.

The latest worsening of a chronic kidney disease visible in blood results - creatinine 12,9 mg/dl, urea 228 mg/dl, phosphorus 10,4 mg/dl, potassium 6,58 mmol/l - caused a necessity to start haemodialysis. Also, hemoglobin level dropped from 9,3 g/dl to 7,2 g/dl, which required a blood transfusion.

Conclusions: A substantial part of a chronic kidney disease caused by IgA nephropathy does not progress rapidly. In the above case, an unexpected factor leading to progression from G4 to G5 stage of chronic kidney disease occurred. Given the patient's young age, renal transplant should be considered.

Poker face - the effect of botox or the symptom of scleroderma?

Paweł Edyko

Presenting author: Paweł Edyko

Tutors: Prof. Ilona Kurnatowska, MD PhD; Monika Górska, MD

Affiliations: Medical University of Lodz

Introduction: Systemic sclerosis (SSc) is a rare, life-threatening autoimmune disease characterized by collagen overproduction leading to skin and internal organs fibrosis. We present an immensely complex case of systemic fungal infection which delayed diagnosis of SSc.

Case report: A 72-year-old female with no comorbidities and a history of aesthetic medicine procedures, had presented significant weight loss within 6 months and deterioration of general health. The patient was admitted to the Nephrology Department due to acute kidney injury bronchial respiratory sound on the left side, finger edema and subungual petechiae. Laboratory test revealed elevation of inflammatory markers, leukocytosis, thrombocytopenia, mild anemia, non-respiratory acidosis and signs of acute pancreatitis. Subsequently meningeal symptoms, supraventricular tachycardia and progressive weakness of the lower extremities appeared. Cerebrospinal infection and endocarditis were excluded. Due to progressive auscultatory and inflammatory changes in the lungs CT scan, bronchoscopy was performed and revealed large volumes of purulent secretion with negative cultures. Further laboratory examination indicated strongly positive anti-nuclear antibodies (ANA) titers. However, positive results of blood and bronchoaspiration for Candida albicans led to deferral of diagnosis and treatment of underlying disease. After six weeks of systemic antifungal therapy and normalization of inflammatory markers, the full ANA panels detected anti-Scl-70 (+++), antiribosomal protein (++) and anticentromere (+) antibodies. Due to the history of dysphagia, thickened skin of the hands, Reynaud's symptom observed during the hospitalization, tachyarrhythmia and characteristic facial features (mistakenly attributed to botox injection) the patient was diagnosed with SSc. Positive anti-SOX1 antibodies detected on further diagnosis, supported the suspicion of paresis in the course of combined paraneoplastic syndrome, although subsequent examinations revealed no sign of neoplasm.

Conclusions: The differential diagnosis between infection and autoimmune disease might be challenging. Various infections can imitate autoimmune diseases, manifesting in increased inflammatory markers and levels of ANA and anti-neutrophil cytoplasmic antibodies. The proper diagnosis should be established with great caution after the resolving of infection.

Is COPD and bronchiectasis the most neglected overlap nowadays? - A case report

Wiktor Golus

Presenting author: Wiktor Golus

Tutors: Joanna Miłkowska-Dymanowska MD, PhD

Affiliations: Medical University Of Lodz

Introduction: Chronic obstructive pulmonary disease (COPD) is the most common respiratory disease and the third cause of death in society. When COPD is compounded by non-cystic fibrosis bronchiectasis (NCFB), an irreversible widening of the airways, such patients require careful and particularly thoughtful selection of therapy. Moreover severe exacerbations of both conditions can be expected. The amount of new diagnoses of both diseases is steadily increasing. Additionally, they lead to an increased risk of death due to cardiovascular diseases. The overlapping exacerbations of them mutually lead to their progression, which, combined with concurrent Pseudomonas aeruginosa colonization, renders these common and seemingly uncomplicated to treat conditions very challenging clinical cases to diagnose, manage, and treat. Often, treatment fails to yield the expected results, and even after several therapy modifications, the patient's condition inevitably deteriorates. Moreover, P. aeruginosa colonization increases the risk of death eightfold.

Case report: A patient with a long history of COPD, NCFB, and P. aeruginosa colonization, despite previously receiving comprehensive therapy (antibiotics against P. aeruginosa, bronchodilators, and supportive therapy), was rehospitalized due to exacerbation of dyspnea and respiratory failure and cough, which additionally had a purulent character. Bilateral crackles and wheezing were noted on physical examination over the lung fields. Furthermore, CRP was 19.7 mg/L, leukocytosis 12.3 G/L, neutropenia 9.5 G/L. Results of acid-base balanse showed respiratory failure type 2 - pH 7.46, hypoxemia 46.1 mmHg, hypercapnia 50.8 mmHg and SpO2 was 82.2%. During hospitalization, bronchoscopy with bronchial tree lavage and culture sampling was performed, revealing features of bronchiectasis. Chest radiograph ruled out pneumonia. Exacerbations of COPD and bronchiectasis were diagnosed. This overlap required comprehensive treatment and careful polypharmacotherapy, including eradication treatment of colonization with antibiotics, bronchodilators, rehabilitation and respiratory support therapies such as long term oxygen therapy (LTOT) and non-invasive ventilation (NIV). The patient condition initially improved, but after several weeks, there was a recurrence of exacerbation again, despite advanced treatment.

Conclusions: This case highlights challenges in diagnosis and treating exacerbations of these diseases and extensively discusses the therapeutic options for the complicated condition of a patient, simultaneously experiencing COPD and NCFB exacerbation, and colonization of the airways by P. aeruginosa. This bacterium, unsuccessfully eradicated, caused further exacerbations of these conditions, despite appropriate therapy. This case also considers other or additional therapeutic methods that could have been used in this patient to improve his condition.

When should we consider oral provocation tests in patients with hypersensitivity to multiple foods

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Tutors: dr hab. n. med. Marcin Kurowski

Affiliations: Medical University of Łódź

Introduction: A 30-year-old female patient with a history of atopic dermatitis (AD) pollen-induced allergic rhinitis (AR) since childhood was seen in the outpatient allergy clinic in April 2018 for further evaluation and treatment.

Case report: The patient's history includes specific immunotherapy with grass pollen allergens terminated in 2016. She reports worsening of skin symptoms after consuming poultry, raw and cooked eggs, citrus fruits, cocoa, sweets, and beef. Additionally, she reported throat and face swelling, and shortness of breath after consuming fish and shellfish. Previous treatments included topical corticosteroids, cyclosporine, and oral prednisone during AD exacerbations. In March 2018, the patient started treatment with tralokinumab within the clinical trial, with moderate improvement.

Patient's total immunoglobulin E (tIgE) concentrations was 2306 kU/I. and high levels of specific IgE (sIgE) to grass, tree and weed pollen, dust mites, horse epithelium, ovalbumine, ovomucoid, beef, cod, pork, almond, and sesame were. Interestingly, sIgE tests for shrimp and walnut were negative despite presence of severe symptoms after ingestion. Patient complained of nasal congestion and shortness of breath. Slightly prolonged expiration was noted upon auscultation but baseline spirometry and reversibility test with bronchodilator were normal. Treatment with inhaled and intranasal steroids, long-acting beta-adrenergic drugs, short-acting bronchodilator on demand and oral antihistamine was prescribed. AD treatment was continued. Eczematous lesions persisted with variable intensity while respiratory symptoms subsided gradually. The patient noted that the severity of symptoms was additionally associated with the consumption of tomatoes (to which she was not sensitized) and peaches (specific IgE present in class 1). The patient is currently on an elimination diet with variable results and is still participating in a clinical trial program with tralokinumab. Oral provocation testing has been suggested.

Conclusions: Oral provocation tests with suspected foods are recommended to determine clinical importance of a culprit agent in eliciting food allergy symptoms. They are particularly recommended in case of discrepancy between data from anamnesis and results of IgE testing. Oral food challenge in this patient may help to determine actual clinical relevance and significance of given food as a causative agent for symptoms, irrespective of the presence of IgE-sensitization.

It’s a lung tumor, isn’t it? A case report

Julia Młyńska

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Tutors: dr n. med. Anna Romaszko-Wojtowicz

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Introduction: Tuberculosis is an infectious disease caused by mycobacteria from the Mycobacterium tuberculosis complex group. It is a disease that usually affects the lungs and may present with cough, fever and chest pain. However, extrapulmonary tuberculosis is more difficult to diagnose due to the lack of characteristic symptoms and complicated diagnostics.

Case report: A 69-year-old man treated for hypothyroidism and prostatic hyperplasia, with a history of nicotine addiction, was admitted to the Pulmonology Department of the Warmian-Masurian Lung Disease Center in Olsztyn in February 2023 for the diagnosis of chest pain. The patient reported fever, dry cough and significant weight loss in a short period of time (10 kg in 3 months). Computed tomography (CT) revealed the presence of an infiltrative-nodal mass in the left hilum and small fibrous changes in the apexes of both lungs. Examination revealed a pathological mass at the level of the C6/C7 cervical spine, appearing to be extending into the spinal canal. FOB examination of lesions in the left bronchial tree did not reveal any cancer. Laboratory examination revealed decreased hemoglobin levels and elevated inflammatory markers. The patient was hospitalized again in March 2023 after undergoing rescue radiotherapy of the C4-Th2 area due to spinal cord compression syndrome. CT scan showed regression of the tumor mass in the left lung hilum. Adopted in April 2023 for the treatment of pulmonary tuberculosis and perineal skin confirmed histopathologically. The X-ray showed small fibronodular changes in the upper fields of both lungs. Negative HIV test result. A biopsy of the C7 vertebra was performed, which showed the presence of chronic granulomatous inflammation with necrosis. Treatment with isoniazid, rifampicin and ethambutol was initiated. The patient was discharged home with a recommendation for further treatment and follow-up at a lung disease clinic.

Conclusions: Tuberculosis is a disease that perfectly imitates other diseases - especially lung cancer, where many clinical symptoms and radiological diagnostics are similar. This creates a risk of incorrect diagnosis and, consequently, incorrect treatment. Therefore, patients in a similar clinical situation should be subjected to in-depth diagnostics.

Development of a new complication of type 1 diabetes as a result of 'insulin neuritis' - a case report

Julia Modzelewska

Presenting author: Julia Modzelewska

Tutors: lek. Robert Modzelewski

Affiliations: Collegium Medicum, University of Warmia and Mazury

Introduction: 43 year old male with a over 30 year history of type 1 diabetes was admitted to the hospital with newly onset of peripheral painful diabetic neuropathy for intravenous admission of alpha-lipoic acid. His medical history contains proliferative diabetic retinopathy and photocoagulation of the both eyes, diabetic nephropathy, abdominal obesity, hyperlipidemia treated with statin and vitamin D deficiency. Additionally he is treated for arterial hypertension with combo-pill (perindopril, indapamide, amlodipine).

Case report: Due to diabetic neuropathy and lack of the sense of pain, temperature and vibration, architecture of the right foot was changed. For this reason, the patient developed ulceration of the changed foot with bacterial contamination, which resulted in foot phlegmon. He underwent tissue debridement and antibiotic therapy according to culture, which was unsuccessful. After 7 days of therapy, the patient developed sepsis and necrosis of II, III and IV toes of right foot. He underwent amputation of these toes with a part of the forefoot, which resulted in improvement of patient's status. During therapy he didn't obtain good metabolic control of diabetes, his HbA1c was 10,6%. He was introduced with aggressive insulin therapy in the first three days with intravenous infusion. After that, the patient developed painful diabetic neuropathy, probably due to "insulin neuritis". For this reason, the patient was introduced with alpha-lipoic acid, vitamin B1 and pregabalin therapy. Now, he is in a wheelchair in order to off-load the right foot and he was switched into functional intensive insulin therapy with a personal insulin pump. The patient is also implanted with continuous glucose monitoring with Dexcome 6. In the future, he is planned to be switched into CGM/insulin pump loop.

Conclusions: Lowering the hyperglycemia over 500 mg/dl in patients with type 1 diabetes should be careful and slow in order to avoid the risk of developing "insulin neuritis". It may cause development of painful diabetic neuropathy, due to fast osmolality changes in the plasma.

Low Dose Naltrexone as a potential treatment for arrhythmias in the post covid syndrome

Julia Resch, York Kosegarten

Presenting author: Julia Resch

Tutors: Maria Sawościan MD, Prof. Małgorzata Lelonek MD, PhD

Affiliations: Medical University of Łódź

Introduction: Post covid syndrome is characterized by symptoms caused by the SARS-Cov-2 virus lasting beyond 3 months of time after the initial infection with the virus, with some papers suggesting it can be induced by the vaccine against SARS-Cov-2 virus. The symptoms mainly include fatigue, muscle weakness and cardiovascular abnormalities, such as arrhythmias. The rising number of patients suffering from the described symptoms together with a lack of efficient treatment pushes our medical community to its limits - in regards to costs as well as vacancies. This calls for an urgent investigation in an efficient cure for symptoms occurring during the post covid syndrome to prevent a collapse of our medical system.

Case report: A 59 years old female patient was vaccinated twice against the SARS-Cov-2 virus in 2021. A few hours after each vaccine the patient developed besides other symptoms tachycardia, palpitations, and arrhythmias. Over the following 8 months, the patient repeatedly reported to her primary physician with complaints about general weakness, tachycardia, arrhythmias, palpitations, and attacks of dizziness followed by episodes of nausea. After the third vaccination in December 2021, the previously described symptoms intensified and the patient reported new onset of episodes of severe dizziness, symptoms of migraine appearing together with abdominal pain and cramps, discolored stool, loss of appetite, increased resting pulse rate (85 bpm), anxiety and a weight loss of 5 kg over 5 weeks. A full neurological examination and two ECGs were performed with no abnormalities. Laboratory tests collected 4 months after onset of the symptoms showed decreased IL-2, IL-10, IL-6, and Interferon-gamma. The patient was diagnosed with post covid syndrome and started on therapy with low dose naltrexone (LDN) of 0.5 mg/day which was increased over the following 8 months up to 2 mg/day. Control laboratory examinations every 4 months showed normalization of IL-2 and interferon-gamma. However, it showed a severe increase in IL-4, IL-10 , and IL-6. The patient reported clinical improvement with the alleviation of palpitations, dizziness, and GI tract disturbances. The treatment with LDN is continued and the patient is scheduled for regular laboratory controls.

Conclusions: Naltrexone in low dosage (up to 5 mg) could be used as a possible treatment for symptoms occurring more than 4 weeks after the acute Covid-19 disease. This case study calls for further research in this topic.

Diffuse Alveolar Hemorrhage in Systemic Lupus Erythematosus: A Case Report

Kacper Pawlak

Presenting author: Kacper Pawlak

Tutors: dr n. med. Aleksandra Opinc-Rosiak, dr n. med. Olga Brzezińska

Affiliations: Medical University of Lodz

Introduction: Systemic lupus erythematosus (SLE) is a chronic autoimmune disease known for its diverse manifestations across multiple organ systems. Diffuse alveolar hemorrhage (DAH) in SLE, though rare, represents severe complications often associated with pulmonary vasculitis.

Case report: A 21-year-old male presented to the Infectious Disease Department complaining of pain and swelling in ankle, carpal, and elbow joints, morning stiffness, fever up to 38 degrees, and night sweating without body mass loss. He had a history of circular erythematous lesions with oedema on the torso and upper and lower limbs, and a previous suicide attempt due to depression. Investigations revealed normocytic anemia, increased levels of ferritin, creatinine, D-dimer, CRP, ESR, and positive ANA antibodies (1:320, homogenous), C3 and C4 levels were decreased, and urine analysis showed proteinuria and presence of Candida.

Due to suspicion of multi-system connective tissue disease the patient was referred after a week to the Rheumatology Clinic in order to broaden diagnostic measures. A day after admission, patient developed haemoptysis. Computed tomography scan was remarkable for bilateral pulmonary infiltrates, lymphadenopathy in both lung hili and fluid in left pleural cavity. The radiograph image is distinctive for diffuse alveolar hemorrhage.

In the Rheumatology Clinic, specific autoimmune laboratory tests revealed hipoproteinemia, hipoalbuminemia, decreased level of folic acid. Antibodies ANA 1:320, homogenic, dsDNA ++, nRNP/Sm+, histon+, nucleosom++. Transfusion of red blood cells concentrate was administered. The patient was consulted multidisciplinary. Blood marrow dysplasia and hematological tumours were excluded. During hospitalization patient reported vision impairment, nausea and muscle weakness. MRI revealed ischemic brain lesions. On auscultation, crackles and dry rales were detected in the base of left lung.

All things considered, the patient was suspected with neuropsychiatric SLE accompanied with vasculitis. Due to the respiratory failure and necessity of albumin plasmapheresis, the treatment was continued in the Intensive Care Unit. After plasmapheresis, the patient returned to Rheumatology Clinic. Since the onset, the treatment was initiated with methylprednisolone, continued sequentially with fluconazole, cyclophosphamide, azathioprine, rituximab, IVIG, hydroxychloroquine, methotrexate. The remission has been successfully induced.

Conclusions: Pulmonary hemorrhage can be one of the rare manifestations of SLE with an unoptimistic prognosis. Successful treatment of DAH involves a combination of pharmacotherapy and plasmapheresis, capable of inducing remission. SLE predominantly affects women in 20-40, with young men less likely to be affected. However if they are, the disease tends to progress more aggressively with severe complications.

How to mask rheumatic symptoms? Hide behind the COPD! The case report of patient with pulmonary manifestation of connective tissue disease.

Kamil Marszałek, Adam Lasota, Ewa Miądlikowska, MD

Presenting author: Kamil Marszałek

Tutors: Ewa Miądlikowska, MD

Affiliations: Medical Univeristy of Lodz

Introduction: The antisynthetase syndrome is the subtype of idiopathic inflammatory myositis. It is characterized by the progressive weakness of muscles and other symptoms like arthritis, Raynaud syndrome and fever. Interstitial lung disease (ILD) is one of the most common manifestations of the antisynthetase syndrome. Due to the rarity of this rheumatologic disease and its complex clinical presentations, the diagnosis is often delayed.

Case report: A 73-year-old male with history of chronic obstructive pulmonary disease (COPD) was admitted to the Pulmonology Department with dyspnea at rest. The patient had been treated for COPD's exacerbations with steroids and antibiotics during the previous five hospitalizations within a few months, always with partial resolution of symptoms. On the current admission the patient was reporting pain in joints of limbs and loss of weight. Because of weakness in recent months, he was bedridden. The patient's skin of arms and area of clavicles were reddened with telangiectasias on the face. Respiratory failure type I was identified through arterial blood gas analysis. However, ordered laboratory tests revealed elevated levels of aminotransferases, troponin, creatine kinase. The high-resolution computer tomography (HRCT) revealed emphysema in the upper lobes of lungs and the features of pulmonary fibrosis in the lower lobes. Due to suspicion of myositis, a panel of antibodies was tested which showed high levels of autoantibodies: ANA and presence of Ro-52, Jo-1. The diagnosis of antisynthetase syndrome was established. The treatment with glucocorticoids was initiated, followed by cyclophosphamide in the Rheumatology Department. The previous diagnosis of COPD was ruled out. Despite the improvement in muscle strength, the pulmonary symptoms were gradually exacerbating. After three weeks of treatment the patient died.

Conclusions: The rare diseases should always be considered if the patient presents untypical symptoms. The delayed diagnosis of myositis may conduct to fatal complications, particularly when manifests ILD. The glucocorticosteroidal therapy used in the treatment of other diseases may mask symptoms associated with connective tissue diseases and prolong the final decision about the diagnosis.

Back to the past - cerebral form of HIV

Karolina Zalewa

Presenting author: Karolina Zalewa

Tutors: Marcin Czeczelewski, Maryla Kuczyńska

Affiliations: Medical University of Lublin

Introduction: According to data from the National Institute of Public Health, 2,384 new HIV infections were detected in Poland in 2022, and from January to mid-November 2023, the number surged to 2,590, marking a record high in the history of recorded positive cases. At the beginning of 2024, approximately 19,496 patients were receiving antiretroviral treatment. The cerebral form of HIV can manifest in various ways, posing numerous diagnostic challenges. Cognitive, behavioral, and motor abnormalities are typically present in 25-70% of cases. White matter changes in the course of HIV vary in etiology and can be divided into primary effects of HIV, opportunistic infection, neoplasms and others. Magnetic resonance imaging can be a helpful tool in identifying HIV-induced pathologies.

Case report: A 41-year-old patient had been experiencing gradually increasing weakness of the left upper limb muscle strength and speech disturbances for the past 3 months. The patient was referred to the neurological department. On non-contrast CT there was a suspicion of a neoplastic lesion in the right frontal lobe.

MRI of the head in both cerebral hemispheres and cerebellum showed scattered abnormal areas with irregular outlines; hyperintense on T2-weighted images and FLAIR sequence, and without diffusion restriction features. The largest of the described lesions was visible in the right frontal lobe extending to the genu of the corpus callosum and measuring 5.0 cm in the long axis. Apart from that, the visualized brain structures showed no abnormalities. Post-administration of paramagnetic contrast agent, no signs of pathological contrast enhancement were observed.

Based on the clinical picture and MRI results, the patient underwent a panel of laboratory tests, including an HIV antibody test, which was positive. This allowed for the diagnosis of inflammatory brain changes of HIV etiology.

Conclusions: MRI examination allows for the detection of inflammatory changes in the brain in the course of HIV. Familiarity with the typical imaging findings in HIV infection facilitates the early identification of patients presenting with non-characteristic neurological symptoms, which allows for prompt initiation of the treatment process.

Experience is the mother of wisdom – do you remember the roots of the chylothorax?

Kinga Lis

Presenting author: Kinga Lis

Tutors: Joanna Miłkowska-Dymanowska MD, PhD

Affiliations: Medical University of Łódź

Introduction: Lymphangioleiomyomatosis is a rare, multiorgan disease that belongs to the group of phacomatosis or neuroectomesodermal dysplasia which results in dermal, neural, and vascular symptoms. It affects mostly premenopausal women. Pathomechanism is based on the abnormal growth of smooth muscle-like cells in the vasculature and lymphatics of the lungs, mediastinum, and abdomen. This leads to the formation of multiple cysts in the lungs and subsequently results in cystic lung damage. Chest radiography in early disease may show normal lung parenchyma (despite the presence of symptoms) whereas, in an advanced disease stage, there are multiple, bilateral, thin-walled cysts equispaced in the lungs' parenchyma, with no other interstitial features. Clinical presentation of LAM appears through effort dyspnea, cough, and chest pain. Furthermore, some patients suffer from angiomyolipomas in the kidneys or lymphoblastoma in the retroperitoneum.

Case report: A 39-year-old patient was admitted to the pulmonology ward due to suspected LAM. On admission, she presented effort dyspnea with chest pain. During physical examination, the features of chylothorax in both lungs were observed, with the prevalence on the left side. Other than that, no skin lesions were found that may suggest tuberous sclerosis. Within the ward, laboratory examinations were performed and pointed out increased levels of D-dimer and slightly elevated markers of inflammation. The pleuracentesis was advised, resulting in the evacuation of cloudy, exudative fluid resembling chylothorax. HRCT revealed the lung parenchyma filled with multiple, cystic structures and fluid in the left pleural cavity, which indicated LAM. In addition to that, the patient underwent an MRI examination. It proved the presence of multiple fluid collections in the retroperitoneum and dilated lymphatic ducts with cystic structures containing lymph. The spirometry pointed out the features of obstruction, whereas TLco – severe diffusion disorders. On the basis of the clinical presentation, the LAM was diagnosed. The doctors decided to treat the patient with sirolimus. Within the next few days of hospitalization, the drug tolerance was observed thus the patient was discharged from the hospital with recommendations about treatment and follow-up appointments.

Conclusions: Lymphangioleiomyomatosis is a progressive disease burden with plenty of complications. The condition formerly regarded as fatal, nowadays - thanks to lots of research is deemed a chronic disease. Even though the knowledge of the disease is widespread, identifying LAM is often delayed due to insidious onset and misdiagnosis. Correct and early diagnosis, along with treatment, is crucial to diminish progressive impairment of pulmonary function.

A case report of unusual underlying cause of renal AA amyloidosis.

Krzysztof Badura, Laura Kulbacka

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Tutors: Błażej Kieszek, MD, prof. Michał Nowicki, MD, PhD

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Introduction: Amyloidosis is a group of disorders characterized by extracellular deposition of insoluble protein that causes organ dysfunction. Amyloid A or secondary/reactive amyloidosis occurs secondary to chronic inflammatory diseases, infections or, in rare cases, neoplasms making the symptoms non-specific and requiring complex diagnostic approach.

Case report: A 67-year-old woman with a history of hypertension, chronic kidney disease (CKD) and heart failure with preserved ejection fraction presented to the Clinic of Nephrology due to dyspnea, weakness, unintentional weight loss, proteinuria and positive titers of antinuclear antibodies (ANA), perinuclear antineutrophil cytoplasmic antybodies (pANCA) and anti-double-stranded DNA antibodies (anti-dsDNA). Moreover, the patient has been suffering from massive, recurrent, bilateral lymphocyte-rich pleural effusion for at least 12 months. To the date, the patient undergone two pleurodeses with poor outcome. Thus, bronchoscopy and wedge resection of the lung via videothoracoscopy were performed and revealed no significant lesions. On admission bilateral pleural effusion and post-pleurodeses adhesions were confirmed using point-of-care ultrasound. Laboratory tests revealed mild proteinuria (1g per 24 hours) and accelerated erythrocyte sedimentation rate. Interestingly, dsDNA and ANA antibodies were negative in repeated test. Performed echocardiography, chest and abdominal computer tomography, abdominal magnetic resonance, gastroscopy and colonoscopy have not shown any lesions explaining patient's symptoms. Further serological tests revealed presence of lambda light chains, whereas serum protein electrophoresis has shown hypoproteinemia with hypoalbuminemia and hypogammaglobulinemia. Due to uncertain dsDNA and ANA measurements, presence of serum lambda light chains and hypoproteinemia with proteinuria, renal and bone marrow biopsy have been performed. Interestingly renal AA amyloidosis has been shown, whereas serum A amyloid persisted within normal range. Bone marrow biopsy revealed clonal bone marrow plasma cells of 19%. After introducing a nephroprotective and diuretic treatment clinical improvement has been achieved. The patient was referred to the Department of Hematology and diagnosed with multiple myeloma. Since the treatment with proteasome inhibitor has been introduced no recurrence of pleural effusion occurred and significant clinical improvement has been observed.

Conclusions: Monoclonal gammopathies such as multiple myeloma are often associated with immunoglobin light-chain related amyloidosis (AL), whereas AA amyloidosis is rare in this group of patients. Accurate diagnostic work-up among multimorbid patients with amyloidosis should help to determine underlying causes of the disease and identify individuals that may benefit from targeted treatment.

Diagnostic odyssey with a happy ending? – a case report of aggressive systemic mastocytosis.

Łukasz Chętko, Olga Wojtyczka, Maciej Wójcik

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Tutors: Katarzyna Muras-Szwedziak, MD, PhD; Krzysztof Kaczmarek, MD, PhD

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Introduction: Mastocytosis is a rare haematological neoplasm characterized by tissue accumulation of clonal mast cells (MCs). The disease entity encompasses heterogeneous conditions divided into two major categories: cutaneous mastocytosis (CM) and systemic mastocytosis (SM). Advanced SM (AdvSM) leads to deposition of neoplastic MCs in various organs, which results in their progressive failure and contributes to reduced life expectancy. The major diagnostic criterion of SM is presence of multifocal clusters of spindled MCs, usually revealed on bone marrow histological examination. Minor criteria include elevated serum tryptase level, atypical MC morphology and abnormal MC CD 25 or CD 2 expression. Besides, the vast majority of SM cases (95%) is associated with the gain of function KIT D816V mutation. Based on this finding, targeted therapies for AdvSM with tyrosine kinase inhibitors (TKIs) are becoming increasingly implemented. Patients are now more likely to achieve molecular remission, improved quality of life and better overall survival.

Case report: A 50-year-old female patient was diagnosed with SM in January 2018. According to the anamnesis, she initially presented with parotitis followed by bronchitis treated with doxycycline. The drug induced anaphylactic shock with flushing, urticaria, severe headache and syncope, which was followed by the appearance of vesicular rash that resolved leaving behind small, pigmented red-brown macules. Later, there occurred further syncopal episodes and another incident of shock triggered by clarithromycin. The patient, previously misdiagnosed by an allergologist, was assessed by a dermatologist who formed the suspicion of SM and referred her for further evaluation in the allergology department. Laboratory tests showed elevated serum tryptase level (47.4 μg/L) and bone marrow examination revealed the presence of multifocal MC aggregates with abnormal CD25 and CD2 expression. Molecular tests confirmed the presence of KIT gene D816V mutation, which validated the diagnosis. Consequently, treatment with antihistamines and systemic corticosteroids was instituted, yet with poor response. Soon, clinical suspicion of systemic lupus erythematosus was aroused due to persistent muscle pain, dermal lesions, presence of pericardial effusion and concurrent diagnosis of bilateral carpal tunnel syndrome. In 2023, the patient was admitted to our department for reevaluation. On admission, she presented with cutaneous lesions diffused all over the body and reported weight loss of 6 kg within the previous month. The diagnosis of AdvSM was formed, where upon the qualification process for therapy with midostaurin (TKI inhibitor) was initiated.

Conclusions: Multifaceted clinical manifestations and inadequate response to therapy make AdvSM challenging to both diagnose and treat. Nevertheless, the growing availability of TKIs provides the patients with a chance of more effective management of the disease.

Use of Eculizumab in case of atypical hemolytic-uremic syndrome with acute kidney injury

Benedykt Baljon (1), Justyna Bogdan (2), Monika Błądek (3)

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Introduction: Eculizumab is an immunosuppressive remedy containing a humanized IgG2/4κ monoclonal antibody. It binds to the C5 complement protein, blocking its degradation into C5a and C5b molecules. It can be used in atypical hemolytic uremic syndrome (aHUS), resulting from dysregulation of the alternative complement pathway. Lack of control over the last stage of the complement cascade causes endothelial damage, platelet activation, and consequently, thrombosis localized in the microcirculation. The disease is characterized by systemic thrombotic microangiopathy because of the formation of blood clots in small blood vessels throughout the body, which can lead to stroke, heart attack, kidney failure, and death.

Case report: A 48-year-old man came to the emergency room with muscle, abdominal, and chest pain. Additionally, he reported shortness of breath, weakness, expectoration of secretions for two days, and a decrease in urine output. A few years ago, the patient was diagnosed with alcoholic cirrhosis, but on admission, there were no ascites, and the results of transaminase and GGTP tests were normal. In a thorough medical history, the patient denied alcohol abuse. The spleen was slightly enlarged. Due to suspected acute renal failure accompanied by severe thrombocytopenia - he was admitted to the Department of Nephrology. Biochemical tests and complete blood counts showed anemia due to microangiopathic hemolysis (high LDH, significantly low haptoglobin, presence of schistocytes), thrombocytopenia, parameters of acute kidney injury, and no markers of inflammation. The patient was qualified for urgent hemodialysis treatment; implantation of a temporary dialysis catheter required a transfusion of platelet concentrate. Fresh frozen plasma transfusion was started at the same time. Thrombotic microangiopathy was diagnosed, which required further diagnostics. A test for ADAMTS 13 activity and a genetic panel for enteropathogenic E. coli strains were performed (negative results). Additionally, a panel of genetic tests for aHUS was collected (still in analysis). aHUS was diagnosed, the Bioethics Commission's consent was obtained, and on March 12, 900 mg of Eculizumab (SOLIRIS) was administered after the patient was vaccinated against meningococci. The patient remains in the Nephrology Clinic for future observation and admission of the following doses.

Conclusions: Confirmation of the diagnosis of aHUS involves excluding other causes of thrombocytopenia and the presence of blood clots in small vessels. According to ORPHAET, aHUS is a rare disease, it occurs more often in children and is extremely rare in adults. It has a complex cause related to the presence of numerous factors influencing the lack of inhibition of the complex attacking the membrane of the alternative complement pathway. The use of eculizumab is aimed at curing acute kidney injury and inhibiting severe microangiopathic hemolysis. Since the approval of eculizumab (Soliris) the prognosis for aHUS patients has improved greatly.

Exercise-induced laryngeal obstruction in a competitive athlete.

Dominik Przychodniak, Wojciech Jankowski

Presenting author: Dominik Przychodniak

Tutors: dr hab. n. med. Professor UM Marcin Kurowski

Affiliations: Medical University of Łódź

Introduction: Exercise-induced laryngeal obstruction (EILO) is a rare condition characterized by abnormal, involuntary closure of the larynx during physical activity, particularly during strenuous exercise. Estimates of prevalence typically range from 5% to 10% among athletes undergoing evaluation for exercise-induced respiratory symptoms.

Case report: Patient is a 23-year-old male athlete engaged in track and field, particularly middle-distance running. He first presented to the outpatient allergy clinic in 2018 due to recurrent exertional dyspnea and chronic rhinitis symptoms. He was diagnosed with asthma and allergic rhinitis. Since 2018, the patient was treated with budesonide/formoterol, montelukast, salbutamol PRN, intranasal mometasone and oral antihistamines. However, he continued to experience exercise-induced respiratory symptoms. In 2019, nebulized GCS and bronchodilators were started, but the symptoms did not improve. He kept suffering from periodic wheezing, nasal obstruction, watery rhinorrhea and throat discomfort. In 2022, the patient underwent fiberoptic laryngoscopy during exercise testing due to suspected exercise-induced laryngeal obstruction (EILO), which was confirmed.

After optimization of pharmacotherapy, speech therapy at a specialized center in Copenhagen, and breathing exercises, symptoms gradually improved. Currently, the patient is doing well, and after modifying his training and implementing breathing exercises, he is satisfied with the therapy. Symptoms have significantly decreased, although the patient had to give up running 1500 m races in favor of shorter distances.

Conclusions: Management of this patient, including training modification, breathing exercises and speech therapy, resulted in remarkable improvement in symptom control. The challenging diagnosis of EILO highlights the need for precise, interdisciplinary diagnosis of common respiratory conditions in allergy outpatient clinics and individualized therapeutic approaches for patients with respiratory symptoms. Less frequent conditions should be regarded as possible differential diagnoses in subjects with exercise-induced respiratory symptoms. Thorough and detailed approach may help optimize therapy and improve their quality of life.

Atypical case of aHUS – case study of 70-year-old female

Gabriela Kot, Agata Wróbel

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Tutors: Błażej Kieszek, Prof Michał Nowicki

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Introduction: Atypical Hemolytic Uremic Syndrome (aHUS) is a rare and potentially life-threatening condition characterized by microangiopathic hemolytic anemia, thrombocytopenia, and acute kidney injury. It may be caused by inherited defects of complement proteins or formation of autoantibodies against complement regulatory proteins. Due to incomplete penetrance of genes associated with aHUS, the disease manifests after a triggering stimulus. Genetic testing is considered crucial for a diagnosis and identification of predisposing factors.

Case report: A 70-year-old female with multiple comorbidities, including history of mitral valve replacement, was transferred from district hospital to the reference nephrology center with suspected HUS. The patient was in poor general condition, complaining of malaise and recurrent episodes of bleeding from the oral mucosa and hematuria. The physical examination revealed massive edema of the lower extremities. Laboratory tests revealed anemia (7.5 g/dL), thrombocytopenia (111 G/L), evidence of hemolysis with numerous schistocytes in the blood smear, elevated serum lactic dehydrogenase (4578.8 U/L) and bilirubin (39.6 μmol/L) and low haptoglobin (<8.0 mg/dl). Additionally, acute kidney injury was diagnosed.

Antibody tests were performed, ANA, ANCA, anti-GBM and direct antiglobulin test were negative. C3 and C4 complement factor serum levels were within the normal range and the terminal pathway product levels were increased, suggestive of complement overactivation. Stool examination for Shiga toxin-producing bacteria was negative. ADAMTS-13 activity was decreased, but not deficient. A blood sample was collected for further genetic testing for complement factors defects.

Considering the clinical and laboratory features of massive hemolysis and the exclusion of cardiac surgery-related causes by cardiac surgeons in district hospital, the patient was qualified for treatment with eculizumab.

However, due to the history of complicated mitral valve replacement, a more thorough cardiac workup was performed. Repeated echocardiograms, were suggestive of perivalvular leakage and confirmed dysfunction of the mitral valve prosthesis. Due to accumulation of comorbidities and general condition, the patient referred to the department of invasive cardiology. Two-step intravascular mitral valve repair was performed. Combined with ongoing eculizumab treatment, these procedures resulted in complete resolution of the thrombotic microangiopathy.

Conclusions: The diagnosis and treatment of aHUS remains challenging, particularly due to the necessity for prompt action. In most cases of aHUS there is an underlying genetic complement disorder, with the overactivity of the complement system being central for aHUS pathogenesis. However, even in cases with reported complement overactivity, other causes of hemolysis need to be explored. It is essential to pay attention to the patient's medical history and expand the diagnostic in order to implement the most effective treatment.

Uncommon side effect of “safe” drug

Grga Roglić (1)

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Tutors: Petra Ćaćić MD (2), Vedran Tomašić MD PhD (3),
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2, 3, 4, 5 - Department of Gastroenterology and Hepatology, University Hospital Centre Sestre Milosrdnice

Introduction: Mesalazine is commonly used medication in treatment of ulcerative colitis (UC). Its safety profile surpasses all other available medication and it is usually prescribed as first line therapy. Although its primary site of action is topical, targeting colonic epithelial cells, a certain proportion of the drug is absorbed systemically, potentially leading to side effects.

Case report: A female patient was diagnosed with moderate left-sided UC in 1997 (at age 42). Until 2008, she was treated with topical and oral mesalazine, occasionally receiving systemic corticosteroids during flares. In 2008, combo-therapy with infliximab and azathioprine was introduced. Upon the patient's request and after confirming deep remission, biologic therapy was discontinued in 2018. Since then, she has been taking 1g of oral mesalazine daily, increasing the dose during periods of clinical relapse.

Her first presentation in our Clinic was in February 2022, when she had active proctitis (Mayo 2), so 4g of oral mesalazine and 1g of topical mesalazine were prescribed. On follow-up, two months later, clinical and biochemical remission were observed, but the patient developed mild neutropenia, which persisted in subsequent follow-ups. A hematologist and immunologist ruled out any underlying autoimmune or hematological disease. Since remission was maintained, and no other causes of neutropenia were detected, only rectal mesalazine was continued. Oral mesalazine exclusion from her therapy led to an increased neutrophil count about a month later.

Conclusions: Although mesalazine is excellent and safe drug in the management of UC it is imperative to be vigilant in identifying and managing side effects when they arise.

Antiphospholipid syndrome: a cause of deep venous thrombosis in a female patient – a case report

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Presenting author: Hana Franić

Tutors: Nikola Kos

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Introduction: Among patients younger than 50 years, thrombophilia is a common cause of DVT, therefore the following screening should be ordered: Protein C and Protein S deficiency, factor V Leiden, prothrombin gene mutation, antithrombin deficiency, and APS markers. Apart from younger age (<50y), indications for thrombophilia screening include recurrent DVT, positive family history of venous thromboembolism, and neonatal and pregnancy-related thrombosis.

Case report: A 48-year-old patient with a smoking history presented with leg edema and confirmed deep venous thrombosis (DVT) of femoropopliteal and tibial veins. Detailed patient history revealed the patient had three deliveries and three spontaneous abortions in the first trimester, extensive laboratory workup revealed high levels of Anticardiolipin antibodies, Anti-beta2 glycoprotein, and Lupus anticoagulant. Consequently, the suspicion of antiphospholipid syndrome (APS) was raised. During the in-hospital stay, the patient was treated with heparin, followed by the introduction of warfarin. The diagnosis was confirmed by repeated laboratory testing after 12 weeks. Two years later, the patient suffered from acute myocardial infarction, and two stents were placed. On top of warfarin, long-term aspirin was initiated.

Conclusions: APS is a rare autoimmune disorder that encompasses both laboratory evidence and related clinical complications, with an estimated incidence between 1 and 2 cases per 100000. It is important to notice that use of all DOAK is contraindicated in patients with APS and the patient should be treated with warfarin (with a targeted INR of 3) or heparin. Patients with APS can also develop arterial ischemia (both embolic and atherosclerosis) and aspirin is indicated in those scenarios.

Indication and Adequate Assessments on Lung Transplantations

Hsin-Lu Ho, Hannah Drea, Marwan Zeini

Presenting author: Hsin-Lu Ho

Tutors: Dr. n. med. Joanna Miłkowska-Dymanowska

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Introduction: Lung Transplantation is a lifesaving surgical procedure in which one or both diseased or failing lungs are replaced by healthy lungs from a donor. The criteria in which qualifies a patient for a lung transplant consist of many levels of assessment, but overall, it is reserved for those who have exhausted all other medications and treatment without sufficient improvement. The 2021 Consensus Statement outlines that lung transplantation should be considered for adults with chronic, end-stage lung disease who have 1. >50% risk of death from lung disease within 2 years if lung transplantation is not performed. 2. >80% likelihood of 5-year post-transplant survival from a general medical perspective provided there is adequate graft function. In addition to these general considerations and certain risk factors that may affect an individual's candidacy for lung transplant, there are important disease indications that can influence referral and listing. The aim of the study is to present how difficult, complicated and interdisciplinary the decision to qualify a patient for a lung transplant can be.

Case report: A 59 years old male patient was diagnosed with hypersensitive pneumonia in 2016 , a type of interstitial lung disease, first symptoms appeared in 2009. The condition was treated with according to guidelines, but it still progressed rapidly into fibrosis and chronic respiratory failure. Treatment of steroids and azathoprine was ineffective, leading to unwanted adverse effects such as osteopopsis with compression fracture of the spinal vertebra, cryptococcus and disseminated molluscum infection, then COVID-19. All of the diseases were treated. All the obligatory tests and before lung transplantation were performed. Despite all of the adversity the patient was referred to a lung transplantation center. However, waited for a suitable donor for 2 years due to the assessment process. After succeeding in the operation, the patient is nearly recovered at present continuing his work life regularly and is no longer in need of oxygen therapy.

Conclusions: It is of utmost importance to individually assess the patient's necessity for lung transplantation, considering indications and, more importantly, exclusions. It is a life-changing procedure which aims to prolong a patient's life by simply providing one of life's basic survival mechanisms, breathing. In some situations, this may be the optimal treatment plan rather than multiple drug prescriptions despite the unfortunately long waiting time. Along with the treatment of primary lung disease, such as the systemic steroids, azathoprine prescribed to our patient, comes undesirable adverse effects. Therefore, we underline how accurately and subjectively assess the patient's needs and limitations for lung transplantation keeping adverse effects at a minimum. In this case report, we will draw attention on this crucial topic, to broaden our knowledge and present lung transplantation as an option in ILD treatment.

Therapeutic Breakthrough in Lupus Treatment: Anifrolumab as the First Monoclonal Antibody Against Type I Interferon Receptor

Jagoda Rogowska

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Tutors: Olga Brzezińska, MD

Affiliations: Medical University Of Lodz

Introduction: Systemic Lupus Erythematosus (SLE) is a chronic systemic disease that can affect multiple organs including the skin, kidneys, joints, and bone marrow. Existing treatment methods are often not entirely effective in the most severe cases of SLE or may be associated with serious side effects. Serum IFNα levels are frequently elevated in patients and correlate with disease activity and severity. Anifrolumab has emerged as a revolution in SLE therapy, being the first monoclonal antibody against the type I interferon receptor.

Case report: A 24-year-old female patient diagnosed with SLE at the age of 13 was admitted to the Rheumatology Department for disease evaluation and inclusion in the anifrolumab therapeutic program (B.150). The diagnosis was made in 2012, noting significant edema, joint pain and limited mobility, hair loss, soft palate erosions, butterfly rash on the face, and Raynaud's symptoms. Laboratory tests showed ANA 1:1280, anti-dsDNA at 1:2560, proteinuria, and erythrocyturia. Initially treated with prednisone, hydroxychloroquine, methotrexate, and subsequently mycophenolate mofetil from age 15. Despite the treatment, the patient progressed to end-stage renal failure, currently on dialysis for 3 years and awaiting transplantation. The decision was made to treat with off-label rituximab. Despite intensified treatment, it was not possible to reduce the dose of corticosteroids, inflammatory parameters remained elevated, and arthritis persisted. Given the highly active form of SLE and lack of improvement after standard therapy, the decision was made to qualify the patient for anifrolumab treatment, achieving significant disease remission.

Conclusions: Anifrolumab is the first biological drug in SLE therapy in Europe, with its indication for use not limited solely to patients with a high degree of disease activity. The drug modulates type I interferon signaling, crucial for the pathogenesis of systemic lupus erythematosus. Further research is necessary to identify other potential areas of selective efficacy for anifrolumab and possibly extend its indications to other patients.

Transcatheter Mitral Valve-In-Ring Procedure (TMVIR) as complement to annuloplasty

Author and co-authors: Jan Kasprzyk

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Tutors: Dr.n.med Natasza Gilis-Malinowska

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Introduction: Annuloplasty is one of the mitral valve repair method to treat and reduce mitral regurgitation (MR). Even though transcatheter techniques of annuloplasty are developing over the years, surgical approach is still the most efficient treatment. Despite annuloplasty's high success rate of reducing MR, there is a risk of recurring MR after the procedure. That is where a transcatheter approach such as the Transcatheter Mitral Valve-In-Ring (TMVIR) procedure finds its purpose. TMVIR is a complex procedure that uses the previously implanted annuloplasty ring as a chassis for the mitral prosthesis.

Case report: A 76-year-old male patient was admitted to the hospital for evaluation of mitral regurgitation (MR) and determination of optimal treatment. Upon admission, he was stable with no abnormalities noted on physical examination. The patient reported a decline in exercise tolerance over the past few years, with worsening symptoms in the last six months (NYHA class III, CCS class III at admission). So far, the patient suffered from paroxysmal atrial fibrillation, hypertension, pulmonary hypertension, hypothyroidism, and diverticulosis. Twelve years prior, he underwent annuloplasty for severe MR. Also in 2023 the patient had another pulmonary vein isolation, first time performed in 2018. Transthoracic echocardiogram (TTE) revealed atrial enlargement with a complex mitral valve defect, including moderate stenosis and severe regurgitation. The patient was consulted with the Heart Valve Team and due to age, comorbidities and previous procedures was qualified for TMVIR intervention. The intervention was successful, with no periprocedural or short-term complications observed. Follow-up transesophageal echocardiography (TEE) demonstrated no paravalvular leak, absence of stenosis, and only mild residual MR.

Conclusions: Annuloplasty is a well-established surgical approach in the treatment of mitral regurgitation (MR), known for its high success rate in reducing MR. However, the most common complications are mitral regurgitation or stenosis, that require re-treatment. In cases where patients are burdened with numerous comorbidities and are at high surgical risk, TMVIR presents as an optimal solution. This minimally invasive technique offers significant advantages, particularly for patients who have experienced complications following annuloplasty. Implementation of TMVIR has been associated with a substantial improvement in patients' quality of life and a reduced incidence of postprocedural complications.

Exploring the impact of recurrent infections and comorbidities on triple kidney transplant rejection - a case report

Joanna Najbar

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Tutors: lek. Iwona Filipska

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Introduction: Kidney transplantation is a common treatment for patients with kidney failure. However, some patients may have transplant-related complications due to comorbidities and infections, which can lead to graft rejection. We present a rare case of a patient with multiple comorbidities, who underwent four kidney transplants, analyzing factors that may have contributed to three graft rejections.

Case report: The patient, a 51-year-old male, was urgently admitted to the hospital ward due to COVID-19 infection. Notably, the patient had undergone four kidney transplant procedures, with the most recent operation occurring two months before hospitalization. His medical history revealed a multitude of concurrent conditions, including cholestatic liver damage, right sagittal nerve palsy, hypertension, hypercholesterolemia, persistent hyperparathyroidism, osteoporosis, hiatal hernia, gall bladder stones, and sigmoid diverticulosis. These comorbidities significantly complicated the management of renal failure and posed challenges in maintaining graft stability.

Furthermore, the patient had previously experienced AH1N1 influenza virus infection, multiple urinary tract infections of varying etiologies, and K. pneumoniae sepsis. Notably, one month post-fourth transplant, the patient developed CMV infection. Additionally, he had been hospitalized twice in the past due to COVID-19 infection, with one instance necessitating mechanical ventilation.

Laboratory analyses revealed leucopenia, lymphopenia, elevated C-reactive protein (CRP), and urea levels. As part of the treatment regimen adjustment, Paxlovid was introduced, mycophenolate mofetil (MMF) was discontinued, and the dosage of Advagraf was reduced. Moreover, laboratory assessments conducted on the day of discharge indicated markedly elevated tacrolimus concentrations. The patient was advised to refrain from taking Advagraf until a follow-up appointment at the transplant clinic.

Conclusions: In the case of an infection, occurring in a transplant recipient, meticulous drug selection is paramount, considering the kidney function limitations and the systematic use of immunosuppressive medications. To enhance clinical outcomes and quality of life, analyzing factors contributing to graft rejection and implementing appropriate therapeutic management are imperative. The patient's medical history indicates numerous infectious complications, encompassing viral, bacterial, and fungal infections that represent significant risk factors for graft instability. Vigilant monitoring for infectious symptoms and administering tailored anti-infective therapies are essential. Individualized therapy, tailored to each patient's clinical condition and comorbidities, is indispensable.

CASE STUDY:
INTERNAL MEDICINE III

10th of May 2024

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Coordinators:

Adrianna Załęska

Kimberly C Sebastian

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Jury:

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Do parents know best? - the importance of early diagnosis in lysosomal storage diseases

Maciej Wójcik, Olga Wojtyczka

Presenting author: Maciej Wójcik

Tutors: Katarzyna Muras-Szwedziak, MD, PhD; Krzysztof Kaczmarek MD, PhD, MUL professor

Affiliations: Medical University of Lodz

Introduction: Gaucher's Disease (GD) is one of the two most common lysosomal storage disorders. It is caused by an inherited autosomal recessive mutation in the glucocerebrosidase gene (GBA), leading to a deficiency of this enzyme and accumulation of glucocerebroside in tissues. Thus, hepatosplenomegaly is one of the first symptoms of the disease, which may be observed as early as in the first months of life. There are three types of the disease, depending on the underlying mutations. The most common is type 1, which is characterized also by bone disorders. Its prognosis is good when treated. Type 2, termed the acute neuropathic variant, manifests during infancy, typically resulting in death before the age of 2. Type 3 is also known as the chronic neuropathic form - its organ symptoms consist of those present in type 1 but progressive encephalopathy - although less severe than in type 2 - is observed. Causal treatment of GD is based on enzyme replacement therapy (ERT).

Case report: 19-year-old patient was diagnosed with GD in 2019. According to his mothers' account, in the first months of his life she was concerned about abdominal pain and colic episodes. This prompted her to ask for an abdominal ultrasonography of her son. The examination revealed minor hepatosplenomegaly. At the age of 2, slight delay in the child's motor development, weakness and the occurrence of night sweats were observed. Diagnostic tests confirmed persistent hepatosplenomegaly, but was described as physiological variant. Further observation was recommended. In the subsequent years, sleep disturbances, growth delay, lymphadenopathy, and hematological disorders added to the aforementioned symptoms. In 2018 patient experienced severe pain in his left lower limb coexistent with temperature elevation. Differential diagnosis ruled out malignancy and showed the presence of foam cells in the bone marrow, which was the reason of the referral to the clinic of pediatric hematology where GD was considered. Conducted genetic testing detected the following homozygous mutation: c.[1226A>G]:[1226A>G], which confirmed the diagnosis. Since September 1, 2019, the patient has been treated with imiglucerase, and since 2023, he has been under the care of the Rare Diseases Clinic, where treatment is continued. Currently, the patient reports no pain complaints. Reduction in organ size and improvement in hematological parameters have been observed. Additionally, his current height can be described as above average.

Conclusions: Contemporary diagnostic methods facilitate identifying patients with some lysosomal storage diseases by using non-invasive, quick and easy dried blood spot tests. Such a confirmation is sufficient to qualify the patients for the proper drug programs and commence treatment that impedes disease progression. Early diagnosis provides hope for leading normal life, but to make this possible, spreading rare diseases' awareness is crucial.

Managing the complexity of tuberous sclerosis treatment

Roman Brekalo (1), Petar Brlas (2), Tina Čukman (3)

Presenting author: Roman Brekalo

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Introduction: We present the complex clinical course of a 24-year-old male with tuberous sclerosis(TS), a rare genetic disease characterized by the development of hamartomas in multiple organ systems.

Case report: The patient was born full-term to healthy parents. After birth, a heart murmur was identified, and echocardiography revealed cardiac rhabdomyoma, raising suspicion of TS. He underwent cardiac surgery at 6 weeks of age. At 3 months of age, hypomelanotic macules appeared on the skin, followed by epileptic seizures at the age of 6 months. MRI confirmed cortical glioneuronal hamartomas and subependymal nodules. Over time, a diagnosis of autism spectrum disorder and mental retardation was established. At the age of 2, facial angiofibromas appeared, and at the age of 5 angiomyolipomas(AML) and kidney cysts were detected for the first time. The patient underwent multiple lines of antiepileptic therapy without success, ultimately receiving a vagus nerve stimulator, resulting in a reduction in the number of seizures. Cutaneous changes are being treated with local everolimus. Kidney function is still preserved, and AMLs do not require additional treatment beyond monitoring. Cardiac functi on is normal without conduction defects. Regular psychological, neurological, dermatological, cardiological and nephrological monitoring is performed and will be required life-long due to the risk of progression of existing hamartomas, development of new ones as well as potential malignancies.

Conclusions: This is the case of de novo TS with serious organ involvement, primarily CNS. The case highlights the complexity of managing TS with affection of multiple organ systems as well as necesitiy of multidisciplinary approach in order to optimize care and outcomes for these patients.

Occupational dermatoses in a professional horseback rider - Case Report

Tessa Grospic Hrkac, Hana Franic

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Tutors: prof. dr. sc. Romana Ceovic

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Introduction: Occupational Dermatosis is described as any alteration in the skin or mucosa that is caused or aggravated by agents present in the occupational activity or work environment. Occupational dermatosis is determined by the interaction of two groups of factors: Indirect or predisposing causes and concomitant diseases such as pre-existing dermatosis, environmental factors, easy access to hygiene and cleanliness. Occupational dermatosis can appear as contact dermatitis, panniculitis, acne, cancers, ulcerations… It is diagnosed and established by clinical symptoms, history of occupational exposure, localization of lesions and improvement with work withdrawal and recurrence upon return to work.

Case report: We present a 26-year-old woman with occupational dermatosis due to professional horseback riding. The patient has no prior illnesses. The patient's dermatosis is provoked with exposure to cold during the winter months of her training and gets resolved with change of air temperature. The patient first presented with pruritic, tender, erythematous patches with eczema-like blisters on her upper thighs. Initially the lesions presented as several small papules that progressed to cold panniculitis with red-to-violet plaques and nodules as a cutaneous response to the cold temperature and everyday professional training. Panniculitis is an inflammation of the subcutaneous tissue caused by crystallization of subcutaneous fat on exposure to cold temperatures. The lesions are self–limiting and subside with coming of warmer weather, no treatment is required.

Conclusions: Equestrian Panniculitis is a rare but self-limiting eruption on the skin that is exposed to the cold. It resolves slowly, with no scarring. Although it is not a serious skin condition it should not be overlooked since various symptomatic therapies can help with the possible symptoms.

Maculopapular Rash as an Early Sign of Blastic Plasmacytoid Dendritic Cell Neoplasm (BPDCN)

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Tutors: doc.dr.sc.prim. Delfa Radić Krišto

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Introduction: Blastic plasmacytoid dendritic cell neoplasm (BPDCN) is a rare disease accounting for less than 1% of all hematologic malignancies. The entity was recently defined and the diagnosis is generally made by skin biopsies. It is necessary to apply appropriate immunohistochemistry to recognize the disease. There is no consensus on therapy and the survival rates are low.

Case report: A 71-year-old male presented to the emergency ward with painful left leg edema and was processed with DVT as the working diagnosis. Laboratory findings showed pancytopenia after which the patient was referred to the hematology department. Cervical ultrasound revealed substantial lymphadenopathy in III. and IV. cervical areas bilaterally. The patient was subsequently hospitalised due to fever, leukopenia and progression of general weakness. A week after hospitalisation, painful cough and disphonia developed along with an execerbation of a painless, month-old maculopapulous rash from the back to torso, neck, face and thighs. Contrast MSCT showed signs of an inflammatory process in mediastinum and middle right lung lobe. Pathohistological analysis of bone marrow confirmed pancytopenia but also revealed an infiltration of abberant cells resembling blastic plasmocytoid dendritic cells (BPDCN). Bone marrow flow cytometry revealed the presence of a dominant clonal cell population with the phenotype: CD4+, CD56+, HLA-DR+, CD117+, CD123+, CD3–, CD8–, CD38–, CD138– Three weeks after hospitalisation, cervical LN biopsy was performed and PHD revealed an infiltration similar to one in the bone marrow. The patient treated with chemotherapy as agressive disease with cyclophosphamide, vincristine, doxoyrubicin and dexamethasone (hyper-CVAD regimen). Blood transfusion was also ordained. Back skin biopsy was performed, which revealed hyperkeratosis and dermal BPDCN infiltration. Two weeks after the start of hyper-CVAD therapy, the patient died.

Conclusions: In summary, BPDCN is a rare disease with poor prognosis. More studies are necessary to have a better understanding of the disease for proper management.

Hypercalcemia Induced by Excessive Non-Prescribed Vitamin D Supplementation: A Case Report

Tina Čukman, Roman Brekalo, Hana Ćurtović , Maro Bjelica, Rafael Kovač, Sandra Ćulap, Borna Barić

Presenting author: Tina Čukman

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Introduction: Vitamin D supplements have been growing in popularity due to numerous health benefits in today's wellness culture. As such supplements are mistakenly considered non-toxic, many individuals self-medicate, which poses a severe health risk and can lead to intoxication. High doses of vitamin D may reduce the burden of cluster headache (CH) symptoms. This case report underscores the dangers described in a patient who developed hypercalcemia following the non-prescribed vitamin D therapy for CH.

Case report: A 41-year-old woman presented to the emergency department with nausea and mild thirst over the past three days. She self-administered high doses of vitamin D (10,000-50,000 IU daily) for CH for the last six years. She had been taking 50,000 IU daily for the past two months but stopped taking vitamin D once she began experiencing nausea. Laboratory results showed high calcium levels of 3.47 mmol/L (normal value (NV): 2,14 – 2,53 mmol/L) , low PTH levels of 0.53 pmol/L (NV: 1,6 – 6,9 pmol/L) , high vitamin D levels of 736 nmol/L (NV: 75 – 125 nmol/L) , high creatinine levels of 152 μmol/L (NV: 49 – 90 μmol/L) , and high urea levels of 11.1 mmol/L (NV: 2,8 – 8,3 mmol/L) . Treatment started with physiological saline solution and parenteral zoledronic acid 4 mg. The patient was replenished with potassium the following day and was advised to discontinue vitamin D intake. After three days of hospitalization, she was discharged from the emergency department with improved serum calcium and creatinine levels, experiencing flu-like symptoms attributable to zoledronic acid infusion. Follow-up after one month showed normal serum calcium and creatinine levels, with no symptoms reported.

Conclusions: This case highlights the dangers of excessive non-prescribed vitamin D supplementation, which can lead to severe complications such as hypercalcemia. Before starting any supplement regimen, patients should consult healthcare professionals and strictly adhere to prescribed dosages. Healthcare providers must emphasize the importance of responsible supplement use to prevent potentially harmful outcomes.

The zebra patient

Wiktoria Budzyńska, Patryk Knieja

Presenting author: Wiktoria Budzyńska

Tutors: Aleksandra Lesiak MD, PhD; Małgorzata Skibińska MD, PhD

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Introduction: Linear and whorled nevoid hypermelanosis with hyper IgE syndrome (LWNH) is a rare disorder characterized by painless, linear hyperpigmentations of the skin aligned with the Blaschko lines. These lesions typically manifest as flat hyperpigmented areas without inflammatory reactions during infancy. LWNH often presents alongside various congenital defects of the nervous, cardiovascular, and skeletal systems, including microcephaly, ventricular septal defects, deafness, and tetralogy of Fallot. Diagnosis relies on clinical examination and characteristic histopathological features.

Case report: We present the case of a 6-month-old infant admitted to the dermatology department with hyperpigmented lesions. The initial lesion appeared on the trunk shortly after birth, with subsequent lesions developing along the Blaschko lines over time. Clinical examination revealed ankylodactyly of the second and third toes in both feet, along with premature closure of the anterior fontanelle. Histopathological analysis demonstrated increased pigmentation of the basal cell layer without pigmentary incontinence. Laboratory tests revealed elevated levels of IgE immunoglobulins, leading to the diagnosis of LWNH based on the characteristic clinical presentation.

Conclusions: When encountering hyperpigmented linear lesions in infancy, clinicians should consider the possibility of LWNH in the diagnostic process. Early diagnosis is crucial as it facilitates timely medical intervention for associated congenital defects and reduces the risk of serious complications.

A Common Presentation with an Uncommon Cause – a case of diarrhea caused by drug-induced colitis

Yin Qi Lee

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Tutors: Mateusz Staciwa, MD

Affiliations: Medical University of Łódź

Introduction: Diarrhea is defined as the passage of three or more loose or liquid stools per day in less than 2 weeks. It is one of the most common conditions encountered during day-to-day clinical practice. Although the etiology is extensive, infections remain the most common cause of acute diarrhea. Noninfectious cause should always be taken into consideration in the diagnosis of diarrhea, as mismanagement is often potentially fatal. Hence, understanding the complexities of diarrhea and its implications are crucial. We present an interesting case of diarrhea secondary to drug-induced colitis masked by challenging findings and presentation, and aim to shed light on diagnostic and management difficulties in lesser-known cause of such condition.

Case report: A 71-year-old patient was admitted to the internal department due to diarrhea. He complains episodes of watery diarrhea up to 5-6 times a day lasting for about a week. The patient denies symptoms of infection and common infectious causes of diarrhea (C. difficile, rotavirus, adenovirus, norovirus and astrovirus) were rule out. On admission, the patient was generally in a good condition besides diarrhea, and fluids and electrolytes were administered. Medical history was only significant for hypertension, dyslipidemia, hypothyroidism and recent melanoma while physical examination findings were insignificant. Lab results showed consistent negative for any infectious cause despite consistent elevation of neutrophils and C-reactive protein. Fecal calprotectin was also positive. A colonoscopy performed revealed rectal polyps, inflammation of the colon mucosa and hemorrhoids. Upon consultation, suspicion of drug-related diarrhea was raised and he received systemic corticosteroid (CS) therapy with resolution of symptoms. The patient was discharged shortly after with discontinuation of systemic CS. However, he was admitted again 2 days after discharge with the recurrence of diarrhea. The second hospitalization was further complicated by Sars-Cov-2 infection. Upon reviewing the medications, ipilimumab (anti-CTLA-4) was found to be the cause of drug-induced colitis in him. The patient was then discharged several days later with resolution of infection and recommendation to continue oral prednisolone.

Conclusions: Despite the common occurrence of diarrhea, the management and treatment varies differently depending on the cause. According to a recent systematic review about colitis associated with anti-CTLA-4 therapy, CS should be administered until stabilization and tapered over 6-8 weeks, and not discontinued abruptly. Unfortunately, in this case, it was discontinued upon improvement and the patient was readmitted shortly after with the same complaints. To sum up, a multidisciplinary cooperation is emphasized, and it is crucial to keep in mind that drug-related diarrhea should always be considered in differential diagnosis of diarrhea, especially in patients undergoing anti-cancer treatment.

Life-threatening anemia as a complication of upper gastrointestinal bleeding. A case report.

Zuzanna Ostrowicz

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Tutors: dr hab. n. med. Anna Turska- Szybka

Affiliations: University of Warmia and Mazury in Olsztyn

Introduction: Life-threatening anemia, defined as a hemoglobin concentration below 6.5 g/dl, is a rare but serious condition. Severe anemia poses significant health risks, particularly when it arises as a complication of upper gastrointestinal bleeding. In this context, life-threatening anemia emerges as a critical concern, necessitating prompt recognition and intervention to prevent adverse outcomes.

Case report: A 33-year-old male undergoing chemotherapy for gastric cancer was first admitted urgently in September of last year due to signs of recent upper gastrointestinal bleeding and severe hemorrhagic anemia (Hb 3.6 g/dl). Upon admission, physical examination revealed pallor of the skin and conjunctivae, and on rectal examination, there was evidence of melena. Hematologic deficiencies were corrected by transfusing a total of eight units of packed red blood cells. In subsequent hospitalizations (November, December), the patient continued to exhibit symptoms of active bleeding, such as vomiting blood and progressive anemia (Hb 8.6 g/dl and 5.0 g/dl, respectively). Due to the lack of feasibility for endoscopic or surgical treatment - attributed to the patient's poor general condition and pathological abdominal metastases - the patient was enrolled in a trial of interventional radiology methods, including embolization of the gastric fundus area.

Conclusions: This abstract presents a case study highlighting the grave implications of life-threatening anemia secondary to upper gastrointestinal bleeding, underscoring the importance of timely diagnosis and management in such critical scenarios.

Multidisciplinary treatment of mitral and tricuspid regurgitation

Martin Brežanski , Elena Cahun , Marija Bukvić , Martin Bojić , Đivo Antić , Matea Bilić Pavlinović

Presenting author: Martin Brežanski

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Introduction: Mitral and tricuspid regurgitations result from inadequate closure of the atrioventricular valves, leading to the backflow of blood from the ventricles to the atria. They are categorized as primary and secondary regurgitation, depending on whether the cause is within the valves or in the ventricles. Chronic mitral and tricuspid regurgitation often remain asymptomatic, but severe cases can present with fatigue, dilated neck veins, peripheral edema, hepatomegaly, and the development of atrial fibrillation.

Case report: A 73-year-old patient with arterial hypertension, chronic obstructive pulmonary disease, and a history of permanent atrial fibrillation was admitted to the cardiology department due to dyspnea, fatigue, and a systolic murmur for further cardiac evaluation. Transthoracic and transesophageal echocardiography revealed moderate tricuspid and severe mitral regurgitation. The patient was subsequently discussed in a cardiothoracic surgical consultation, and cardiac surgery was indicated. Mitral valve replacement with a bioprosthetic valve and tricuspid valve annuloplasty with ring insertion were performed. The patient was admitted to the intensive care unit after surgery, where he received inotropic support with dobutamine, which was discontinued on the third postoperative day, along with the removal of mediastinal drains. On the 5th postoperative day, the patient was stable and in good general condition, and was transferred to the post-intensive care unit of the cardiac surgery clinic where they were mobilized and underwent physical therapy. On the 13th postoperative day, patient was transferred back to cardiology. The course of treatment in the cardiology department was uneventful, the wound was without secretion, and the patient was asymptomatic, with normal laboratory findings and he was discharged home with therapeutic recommendations.

Conclusions: Patients with cardiac conditions may require complex management, involving not only cardiologists but also cardiothoracic surgical intervention and subsequent recovery in the intensive care unit. Cardiologists, cardiac surgeons, and anesthesiologists must maintain constant communication and collaboration as a team to provide patients with the highest quality care.

Central pontine myelinolysis of multifactorial etiology in a 36-year-old pregnant woman

Michalina Figiel, Natalia Wolak

Presenting author: Michalina Figiel

Tutors: Krzysztof Nosek MD, PhD

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Introduction: Central pontine myelinolysis is one of the forms of osmotic demyelination syndrome. Electrolyte disturbances play a major role in the pathogenesis of the disease, leading to secondary damage to myelin sheaths. In typical cases, it manifests as quadriplegia, pseudobulbar palsy, and features of encephalopathy. The disease can be associated with iatrogenic factors, but it can also occur in individuals abusing alcohol, malnourished individuals, individuals with chronic diseases such as kidney or liver diseases, or after liver transplantation.

Case report: A 36-year-old pregnant patient (HBD +/-29), addicted to alcohol and nicotine, presented to the hospital due to weakness, loss of appetite, and vomiting worsening over approximately 4 weeks. The patient lived in poor socio-economic conditions and was unemployed. Upon admission, the patient was in a moderate state with full logical contact, respiratory and circulatory efficient, unable to move independently due to weakness, without focal or segmental neurological deficits. Laboratory tests revealed elevated inflammatory parameters, elevated renal function parameters, and water-electrolyte disturbances (hyponatremia and hypokalemia). Intravenous vitamin B1 supplementation and correction of water-electrolyte disturbances were prescribed. During hospitalization, after initial partial improvement, the patient's condition suddenly worsened, balance disturbances intensified, dysarthria and dysphagia appeared, left-sided pyramidal syndrome features and respiratory failure developed. MRI of the head revealed hyperintense changes in T2, corresponding to central pontine myelinolysis. Due to deteriorating neurological status, the pregnancy was terminated by cesarean section. The patient was transferred to the Intensive Care Unit. Tracheostomy was performed during hospitalization, bedside rehabilitation was conducted, psychiatric consultation was obtained for the patient, and after improvement, the patient was transferred to a Care and Nursing Facility for further treatment and rehabilitation.

Conclusions: Central pontine myelinolysis is a life-threatening and debilitating condition. In the described patient, there were several possible causes, such as alcohol addiction, poor socio-economic conditions leading to malnutrition. Diagnostic difficulties arose from initially nonspecific symptoms, pregnancy, lack of cooperation from the patient, and severe water-electrolyte disturbances, which could cause neuropsychiatric disorders. Osmotic demyelination syndrome should be suspected in any patient with risk factors for chronic hyponatremia.

Acute Kidney Injury after ARNi Therapy in Heart Failure: A Detailed Case Study

Nafea Inayat, Philip Kiełbowicz

Presenting author: Nafea Inayat

Tutors: Dr. Maria Sawościan MD, Prof. Małgorzata Lelonek MD PhD

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Introduction: Despite the widespread use of standard therapeutic agents for HF, such as ACE inhibitors and ARBs, the mortality rate remains persistently elevated. In recent years, the use of a combination of drug classes, particularly, angiotensin receptor II blocker and neprilysin inhibitor (ARNi) has demonstrated significant improvement in the management of heart failure (HF), especially HF with a reduced ejection fraction (HFrEF), as compared to standard therapy alone. ARNi represents a pivotal advancement in heart failure therapy, addressing the limitations of ACE inhibitors and ARBs. However, multiple studies including PARADIGM-HF and ARNi-TR revealed that the most common side effect of ARNi was hypotension, as exhibited by 14% and 16.9% of the participants, which in turn leads to acute kidney injury (AKI) developing as an adverse effect of the therapy. It is hypothesised that the ARNi-induced AKI may be mediated by mechanisms such as renal hypoperfusion due to drug-induced hypotension.

Case report: A 56-year-old male with multiple pre-existing comorbidities, presented with signs and symptoms of AKI such as dyspnea, peripheral edema and elevated renal parameters (5.9 mg/dl creatinine and 104 mg/dl urea). The patient has a history of stage 4 chronic kidney disease (according to KDIGO criteria), which is suspected to be hypertensive nephropathy, as well as an HFrEF with an EF of 24%. Temporary hemodialysis and renal replacement therapy were initiated, resulting in the alleviation of symptoms and a reduction in body weight by 6kg. After hospitalisation, ARNi therapy which had been prescribed for HF management, was discontinued based on the suspicion of inducing AKI, and being the cause of the patient's presenting symptoms. Given the patient’s stage 4 CKD and history of hypertensive nephropathy, the risk of ARNi-induced AKI was notably heightened. This episode of drug-induced AKI, coupled with the HFrEF of 24%, underscores the precarious balance in managing the patient’s HFrEF with ARNi to ensure a healthy functioning of the kidneys.

Conclusions: This case underscored the imperative for a careful and personalised approach in deploying ARNi therapy, particularly among patients with compromised renal function. Regular monitoring of renal function and cautious dose adjustments are recommended to mitigate AKI risk in the vulnerable HF population. The population of HF patients are treated with a plethora of drug classes, particularly those that reduce blood pressure. Moderation of drug dosing is required, to ensure and maintain proper glomerular perfusion. Moreover, patients with multiple comorbidities may require a more gradual titration for better drug tolerance and to reduce the risk of adverse effects. Patients with predisposing factors, such as long-standing hypertension, may require regular check-ups to prevent exacerbation induced by superimposed AKI.

A rare complication of SARS-CoV-2 infection - Multisystem Inflammatory Syndrome

Natalia Józefczak

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Tutors: Dr n.med. Olga Brzezińska; Dr n.med. Aleksandra Opinc-Rosiak

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Introduction: Multisystem inflammatory syndrome (MIS) generally appears after SARS-CoV-2 infection. Typical presentation includes fever, gastrointestinal and cardiovascular manifestations with highly increased inflammatory biomarkers especially CRP, procalcitonin and ferritin. It often presents as a shock due to cardiac dysfunction. The most effective treatment strategies are intravenous immunoglobulin, intravenous steroids or biological therapy including interleukin 1 antagonists, IL-6 receptor blockers, and anti-TNF agents. Children are more likely to develop this syndrome, however sometimes adults can also be affected.

Case report: A 35-year-old male patient was admitted to the Rheumatology Unit after one week stay at Intensive Care Unit. He presented symptoms like high fever, musculoskeletal symptoms and lost the ability to walk. He developed septic shock due to S.pyogenes in blood culture.. He had a SARS-CoV-2 infection before the hospitalization. He was complaining of exhaustion, muscle weakness and pain in his left arm and left wrist. He denied dyspnoea, pain in his chest and stomach or dizziness. The inflammatory markers were highly elevated: CRP= 640mg/l, PCT=92ng/ml, ferritin>2000ng/ml, FBG=1090mg/dl and Il-6>5000ng/ml. Further blood examination revealed decreased level of anaemia, neutrophilia, hypoalbuminemia. Due to increased liver tests (AST, ALT, GGT) computed tomography of the abdominal cavity was performed, revealing enlargement of the right lobe of liver to 190mm. The examination showed abscesses in both iliacus and left pleural effusion. Level of GFR was 25 ml/min/1,73m’2 and creatinine was 273 µmol/l. Urine analysis exposed proteinuria. Based on immunological antibodies panel connective tissue diseases were excluded. According to normocytic anaemia transfusion of packed blood cells was administered. In the further diagnostic process patient was admitted to cardiology department where cardiac MRI was performed. Due to suspicion of infective carditis he was treated with ceftriaxone, linezolid and 500mg pulses of methylprednisolone. In the meantime he expanded massive thrombocytosis amounting 1409*10^3µl which indicated hiperinflammatory reaction. Summing up all symptoms we received image of multi-organ dysfunction occurring in MIS. The treatment started with changing methylprednisolone to 60mg oral prednisone and 120g intravenous immunoglobulins. The effects were satisfactory. The treatment was continued with reducing tapering doses of steroids.

Conclusions: The symptoms of MIS are non-specific. There is no isolated clinical or laboratory test to clearly diagnose MIS. The syndrome needs to be differentiated with other diseases like Acute Rheumatic Fever or Kawasaki disease due to immunological similarities. Although the patient did not belong to the distinctive age group of the syndrome, his disfunction was related with previous SARS-CoV-2 infection and the symptoms were consistent with MIS. He responded well to the treatment.

The therapeutic puzzle presented by pseudoaneurysm as a complication arising from permanent catheter placement in a dialysis patient - case report.

Oskar Makuch

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Introduction: While false aneurysms can occur in various locations throughout the cardiovascular system, pseudoaneurysms involving the apex of the right ventricle pose unique challenges in diagnosis and management. This is a rare but potentially serious cardiac condition that requires prompt recognition and appropriate management. It typically arises as a complication of cardiac surgery, myocardial infarction, or cardiac trauma. However, it can also occur spontaneously or as a result of invasive cardiac procedures, such as catheterization, highlighting the need for increased clinical awareness.

Case report: The 79-year-old patient, chronically undergoing dialysis with a Perm-Cath inserted through the right internal jugular vein, was urgently referred from the dialysis station to the nephrology department because the catheter had slipped out, approximately 10 cm, rendering the scheduled hemodialysis procedure impossible. The permanent catheter was removed, and a new one was implanted into the left internal jugular vein. Given the malfunction of the new catheter, an angio CT scan of the chest was performed. On examination, a contrast-filled blood collection was observed near the cardiac apex, seemingly filling from the right ventricular cavity through a narrow, poorly visible channel, raising suspicion of damage to the right ventricle. The patient was monitored for signs of tamponade. An echocardiogram targeting right ventricular perforation was ordered, in which concern was caused by increased echogenicity of the atrial roof. Moreover minor enlargement of the right atrium, leaflet fibrosis, and calcifications in the mitral and aortic valve rings, without significant pressure gradients across the outlets, and minor tricuspid, pulmonary, and aortic regurgitations were noticed. Diagnostic procedures were continued, and a follow-up angiographic CT was conducted. Tangentially to the right ventricular apex, between the inner lamina of the pericardium and the epicardium, an oval pseudoaneurysm of 16x25x20 mm was noted within the epicardial fatty tissue, contracting from the right ventricular apex, with a narrow 2x4mm channel, initially suspected to be a catheter-related injury. Due to the presence of the pseudoaneurysm, the patient was deemed eligible for cardiac surgery - closure of the right ventricular perforation and removal of the pseudoaneurysm.

Conclusions: The intricate management of complications associated with permanent catheter placement in dialysis patients demands prompt diagnosis and intervention, which play pivotal roles in averting potentially life-threatening consequences. Multidisciplinary collaboration among nephrologists and cardiac surgeons is imperative to optimize patient outcomes. Further research is needed to refine strategies for preventing and managing catheter-related cardiac complications, enhancing patient safety in this vulnerable cohort.

Diagnostic challenges of vascular inflammation mimicking B symptoms: a case report

Patricija Griškaitė

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Tutors: Renata Komiagienė, MD, Augustinas Bielinis, MD

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Introduction: Takayasu arteritis is a chronic vasculitis characterised by granulomatous inflammation primarily affecting the large vessels, in particular the aorta and its major branches, resulting in complications such as stenosis, occlusion, aneurysms. The estimated incidence of Takayasu arteritis in Europe ranges from 0.4 to 1.5 cases per million individuals, whereas in Japan and Kuwait the incidence reaches 1-2 per million and 2.2 per million, respectively. Aetiology of Takayasu arteritis remains idiopathic, it commonly affects Far Eastern women up to 40 years of age, nevertheless the presented case demonstrates manifestation in an atypical demographic. Diagnosis of Takayasu arteritis presents challenges due to lack of specific symptoms/biomarkers, resulting in delayed diagnostic imaging.

Case report: 78-year-old female patient presents with weakness, fatigue, difficulty walking, freezing hands and feet. Three weeks prior the patient noticed partially darkened vision of the right eye. B symptoms were also present. Peripheral blood flow cytometry and bone marrow biopsy suggested a possible phenotype of clonal B lymphoproliferative disorder as well as minimal infiltration of low-grade lymphoma (<2%). Results of a full-body CT scan (2 months after first symptoms) as well as an abdominal MRI (3 months after) suggested no major pathology. Four months after initial symptoms, 18F-FDG PET/CT was performed for possible occult infection source as well as progression of lymphoma. Consequently, the scan indicated signs of metabolically active process in the large vessels, including all branches of the aorta, mesenteric and femoral arteries, suggesting Takayasu arteritis.

Conclusions: Diagnostic imaging plays a pivotal role in the assessment of Takayasu arteritis as it is one of the two absolute requirements of 2022 ACR/EULAR classification criteria. Nevertheless, the absence of pathognomonic symptoms and specific biomarkers for Takayasu arteritis usually postpones the diagnostic imaging process, therefore delaying the diagnosis for up to two decades. Regarding specific modalities, 18F-FDG PET/CT is considered the most sensitive test for the early phase of vessel inflammation. The radiological differential diagnosis for Takayasu arteritis involves giant cell arteritis, IgG4-related disease, polyarteritis nodosa, granulomatosis with polyangiitis, syphilitic aortitis, as well as atherosclerosis. Compared to other imaging modalities, 18F-FDG PET/CT allows the assessment and differentiation of metabolically active processes in the early phases of Takayasu arteritis, leading to precise diagnosis and early treatment initiation.

Innovative risk management: Transcatheter valve-in-valve approach for degenerated bioprosthetic mitral valve replacement

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Tutors: Vlatka Rešković Lukšić, MD, PhD (5), prof. Jadranka Šeparović Hanževački, MD, PhD (6), Sandra Jakšić Jurinjak, MD, PhD (7), Ivica Šafradin, MD, PhD (8), Zvonimir Ostojić, MD, PhD (9), Joško Bulum, MD, PhD (10)

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Introduction: In patients with degeneration of mitral prosthetic valves and indication for a re-do mitral valve (MV) surgery, operative risk is high. Transcatheter mitral valve replacement (TMVR) using balloon-expandable (BE) aortic transcatheter heart valve (THV) is an emerging method for treating those patients, with good technical success rates, improvement of symptoms and stable performance in the follow-up. We present the case of the first valve-in-valve (ViV) TMVR procedure at UHC Zagreb.

Case report: A 78-year-old female patient was admitted to our department for an elective pacemaker battery replacement. The patient previously underwent an MV replacement 12 years ago with a bioprosthetic valve (Carpentier-Edwards 25mm) due to Staph. aureus endocarditis. On the postoperative echocardiograms, a moderate paravalvular leak (PVL) was registered, and the patient was without symptoms. Ten years ago, a pacemaker was implanted due to an atrioventricular heart block. Upon the current exam, the patient complained of marked limitations during daily activity; she was in functional NYHA III status with high NTproBNP levels (9952 pg/mL). Multiple comorbidities were noted: type II diabetes mellitus, chronic kidney disease, and arterial hypertension. Transthoracic (TTE) and transoesophagel (TOE) echocardiography revealed a degenerated bioprosthetic MV with thickened, immobile cusps causing severe mitral stenosis (MS) - mean pressure gradient (PG) 17 mmHg, MV area 1 cm2. A moderate PVL was evident. Also, a severe tricuspid regurgitation (TR) due to the impingement of the pacemaker lead between tricuspid valve leaflets was noted. Right heart catheterization showed a severe combined pre- and postcapillary pulmonary arterial hypertension along with a reduced cardiac index (PAP 79/24(48)mmHg, PVR 13 WU, TPG 25mmHg, CI 1,3L/min/m2). On the account of the high surgical risk, the heart team decided on a transseptal ViV TMVR with BE aortic THV as the treatment of choice. Under the guidance of TEE, a transseptal puncture was performed, and the septum was dilated with a 12mm balloon. Two guidance wires were placed in the left ventricle to help the positioning of the THV inside the degenerated bioprosthetic MV. Finally, an implantation of a BE aortic THV was performed during rapid pacing and respiratory arrest. Postoperative echocardiography showed a good position of the valve, with a mean PG of 3 mmHg. The procedure was uneventful, as was the follow-up period.

Conclusions: Transcatheter mitral ViV implantation using BE aortic THV has proven to be a safe and effective therapeutic option for high-risk patients with degenerated bioprosthetic MV. Long-term outcomes are yet to be determined.

Long-term cardiovascular effects of thorax radiation

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Presenting author: Petra Knežević

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Introduction: Aortic valve stenosis (AS) is the most common valvular pathology with an increasing incidence with age. Patients with AS have heightened coronary risk factors and increased incidences of coronary events and mortality. Chest radiation can induce aortic stenosis and ostial left main coronary artery (LMCA) stenosis in younger patients. These patients, although younger, are often refused as surgical candidates for high/prohibitive risk, and necessitate alternative and unconventional treatment options.

Case report: A 64-year-old woman was hospitalized due to acute heart failure. The patient reported exertional intolerance over the past year, experiencing fatigue after a few steps and orthopnoea, but denied chest pain. She has a past medical history of Hodgkin's lymphoma treated with radiotherapy 40 years ago, and non-Hodgkin's lymphoma treated with chemotherapy 31 years ago. Upon admission, the patient was tachypneic and had partial respiratory insufficiency. Echocardiography revealed severely reduced left ventricular ejection fraction (LVEF 20%) with concomitant severe AS. Coronary angiography showed significant stenosis of the right coronary artery with subocclusive ostium of the LMCA. Computed Tomography revealed numerous aortic calcifications caused by radiation, presenting an absolute contraindication for surgical aortic valve replacement. The patient's condition further declined to cardiogenic shock with a total atrioventricular block. Therapy with dobutamine, isoproterenol, and norepinephrine infusions, stabilized the patient. Due to the abovementioned factors, the decision was made to proceed with high-risk percutaneous coronary intervention (PCI) followed by potential future transcatheter aortic valve implantation (TAVI). After the placement of a temporary pacemaker, VA-ECMO was instituted. This was followed by balloon dilation of the aortic valve and complex PCI of the ostial LMCA, stabilizing the patient's condition. Two days later, the VA-ECMO system was removed, and the patient was released in good general condition with the indication for TAVI. The LVEF increased to around 35%. The TAVI was performed using a balloon-expandable valve after three months. During the valve deployment, a balloon was inflated in a previously stented LMCA to ensure its patency, leading to global ischemia and asystole, which recovered after a brief resuscitation. The patient was discharged without subjective complaints. Echocardiography revealed further improvement in LVEF to around 45%.

Conclusions: Utilizing all aspects of contemporary interventional cardiology including percutaneous circulatory support, modern complex PCI techniques, and TAVI, even the most challenging cases can be treated. These procedures can be performed in a staged manner, solving the most life-threatening pathologies first. Such an approach ensures patients' recovery enabling better outcomes of consecutive procedures.

Team approach in treating tricuspid regurgitation due to endocarditis associated with intravenous drug abuse

Luciana Koren, Andro Koren, Mislav Bubanj

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Tutors: doc. dr. sc. Sandra Jakšić Jurinjak, PhD

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Introduction: Infective endocarditis is associated with high short and long term- mortality mainly due to its cardiac and systemic complications. The local inflammatory and immunological reactions result in extensive structural changes of the affected valve (necrosis, vegetations, fibrosis) and subsequent hemodynamic compromise. The pathophysiological mechanisms behind systemic complications are thromboembolic manifestations, immunocomplex deposition and development of SIRS.

Case report: A 50-year-old male presented with symptoms of right sided heart failure (HF). Patient was a former IV drug abuser, but now substance abuse is managed by a psychiatrist with methadone. Due to his drug use, he was previously infected with HBV and HCV that was successfully treated. In 2017. he developed infective endocarditis of the tricuspid valve that was complicated with BHS-A sepsis. He initially presented with a new precordial murmur and Janeway lesions on his feet. Echocardiography, at that time, revealed tricuspid valve vegetations, but mild tricuspid regurgitation, this resulting in follow up by a team of infectologist and cardiologist. After initial treatment of HF, cardiac workup showed severe tricuspid regurgitation as a complication of a previous episode of infective endocarditis. Echocardiography revealed extensive destructive and fibrotic changes of the tricuspid valve with chord rupture, massive TR and consequent RA and RV dilatation. He was treated with optimal HF therapy (b-blocker, ACEi, MRA) and was presented to cardiac surgery for valve replacement procedure. The psychiatrist was part of the treatment team to ensure better patient compliance.

Conclusions: This case report aims to emphasize the severity of tricuspid valve endocarditis complications in an IV drug abuser, which inevitably requires a multidisciplinary approach. A team of cardiologist, infectious disease specialist, psychiatrist and cardiac surgeon is essential in providing a desired treatment plan.

Underlying Lung Fibrosis in Complex Asthma Diagnosis

Marcin Mazur, Ewa Wojtanowska

Presenting author: Marcin Mazur

Tutors: dr n. med. Małgorzata Pietrusińska

Affiliations: Medical University of Lodz

Introduction: According to GINA guidelines, 300 million people worldwide suffer from asthma. The disease contributes to numerous deaths, including among young people. Diagnosis is based on the patient's clinical picture and functional tests including spirometry. Although it is one of the most common respiratory diseases, we must take into account other causes of the symptoms also presented in the course of asthma.

Case study: A 33-year-old woman with uncontrolled asthma for three years was admitted to the pulmonology department to assess her eligibility for biological treatment. She reported experiencing dyspnoea attacks and a gradual decline in exercise tolerance despite receiving asthma treatment. She denied chest pain, oedema, or weight loss. There was a history of exposure to pigeons and also textile fibres in relation to her work. Upon physical examination, bilateral basal crackles on auscultation were detected. On the basis of this clinical presentation, further diagnostic investigations were considered to be warranted.

The high-resolution CT scan showed that interstitial fibrosis was present mainly in the basal and peripheral segments of the lung. Functional tests indicated restrictive features with severe diffusion impairment. Serological diagnostics were conducted to detect IgG class antibodies, which confirmed exposure to antigens associated with chronic pigeon exposure. After a 5-day hospitalisation, the patient was discharged from the hospital in a stable condition.

Based on the test results during hospitalisation and positive serological results, the patient's diagnosis was expanded to include an additional disease. During the subsequent 6 months of outpatient treatment, no disease progression was observed. The baseline ventilation parameters and the lack of radiological, clinical and functional improvement indicated the need for evaluation of the patient's eligibility for lung transplantation.

Conclusions: The case study illustrates a dangerous scenario in which a serious illness coincides with a common illness, resulting in a delay in diagnosis. Conducting a comprehensive evaluation and obtaining a detailed history of environmental exposures at an earlier stage could have prevented permanent complications.

Patient with multiple brain lesions – metastases or something else?

Author and co-authors: Marija Bukvić, Marija Ćorić, Martin Brežanski, Elena Cahun, Maro Bjelica

Presenting author: Marija Bukvić

Tutors: Mateja Janković Makek

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Introduction: When multiple brain lesions are described in a person with lung infiltrate and hilar lymphadenopathy, cancer is high up in differential diagnoses. However, other diseases such as tuberculosis (TB) should also be considered. While the predominant form of CNS involvement is tuberculous meningitis, in rare cases, the formation of granulomas in the brain is reported.

Case report: We present a case of a 61-year-old woman with ankylosing spondylitis treated with biologics, now hospitalized for further evaluation of pneumonic infiltrate unresponsive to standard antibiotics. Thoracic MSCT revealed an expansive lesion in the upper left lung lobe with enlarged hilar and mediastinal lymph nodes. Cytological analysis of the biomicroscopically obtained material did not reveal malignant cells but instead showed granulocytes and degenerated cylindrical cells, indicative of an inflammatory process. PET-CT showed pathological fludeoxyglucose F18 (FDG) accumulation in multiple nodular lesions in both lungs, mediastinal lymph nodes, and the brain parenchyma bilaterally, raising suspicion of secondary disease spread. Under endobronchial ultrasound guidance, a needle puncture of an enlarged lymph node was performed, revealing again granulocytes and multinuclear giant cells, but no malignant cells. PCR from bronchoalveolar lavage (BAL) was positive for M. tuberculosis, and cultures from both BAL and sputum confirmed the growth of drug-sensitive M. tuberculosis. Therapy with standard quadruple first-line therapy with isoniazid, rifampicin, ethambutol, and pyrazinamide was started. Despite the therapy, at two months follow-up, the patient experienced worsening with newly developed spondylodiscitis and an increase in the number of brain lesions. Further diagnostics once again revealed no indications of other diseases. Consequently, it was decided to include meropenem for four weeks, along with linezolid for a total duration of eight weeks. Finally, at six months follow-up, significant regression of brain lesions, pulmonary infiltrate, and lymphadenopathy was noted, as well as improvement of her neurological symptoms caused by spondylodiscitis.

Conclusions: This case report outlines the complexity of diagnosing and treating a patient with atypical presentation of a long-known disease. Even though it looked like cancer, it turned out to be miliary tuberculosis, a disease that, given her history of treatment with biologics, should have been suspected upon first cytological workup.

Displacement of permanent dialysis catheter tip as a cause of severe tricuspid regurgitation and hypertensive crisis in chronic hemodialysis patient.

Marlena Radzka, Jakub Tambor

Presenting author: Marlena Radzka

Tutors: Ilona Kurnatowska, MD, PhD, Maja Nowicka, MD

Affiliations: Medical University of Łódź

Introduction: Hemodialysis (HD) is the most commonly used method of renal replacement therapy. One of the most frequent complication of HD are this associated with the dialysis access, including catheter-related infections, thrombosis or catheter dysfunction.

Case report: A 25-year old female, with end-stage renal disease due to crescentic glomerulonephritis in the course of anty-GBM disease, chronically HD for 10 months via a permanent catheter implanted into the right internal jugular vein, was admitted to the nephrology department due to hypertensive crisis, unresponsive to pharmacotherapy. The patient had a history of resistant hypertension (HA) with neurological and ophthalmic complications, which occurred after introduction of HD and was properly managed from the third month of therapy with combination of 7 different drugs. Malignant hypertension relapsed after 7 months , with symptoms of general malaise and labile blood pressure (BP) after HD session for a few weeks, despite optimal dry weight. The BP was stabilized with a continuous infusion of dihydralasine. Reno-vascular and hormonal cause of HA was excluded. In echocardiography, severe tricuspid regurgitation induced by migration of the permanent catheter tip (implanted 7 months earlier) into the interior of the right ventricle of the heart was visualized, with the tip of the catheter ballooning fixed to the wall of the ventricle (catheter pressed against the valve ring). Catheter reimplantation was performed, and BP normalization was observed with the possibility of gradual drug discontinuation; no hypertensive crises were observed in the next half-year of observation.

Conclusions: Displacement of the permanent dialysis catheter tips is a very rare complication. Single cases of heart wall perforation with subsequent tamponade are described; this phenomenon as a cause of resistant HA has not been described so far. Considering the evident correlation of symptoms, echocardiographic image, and immediate improvement after catheter reimplantation, one can assume a connection between the occurrence of resistant HA, complicated by a crisis, and hemodynamic disorders induced by the catheter’s displacement related to the supply of blood directly to the right ventricle of the heart. It's crucial for healthcare providers to be aware of the possibility of this rare complication.

JUVENES PRO MEDICINA

CASE STUDY: PEDIATRICS I

11th of May 2024

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Coordinators:

Agata Kołodziejska

Edyta Skórzyńska

Rithwik Khandelwal

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Jury:

Prof. Joanna Trelińska

Małgorzata Stańczyk MD, PhD

Duchenne muscular dystrophy accidentally detected in an infant during hospitalization due to Covid-19

Natalia Biedroń, Natalia Kopeć

Presenting author: Natalia Biedroń

Tutors: Agata Tarkowska MD, PhD

Affiliations: Student Research Group at the Department of Neonate and Infant Pathology, Medical University, Lublin, Poland; Department of Neonate and Infant Pathology, Medical University, Lublin, Poland

Introduction: Duchenne muscular dystrophy (DMD) is a rare genetic disorder that leads to progressive and irreversible muscle atrophy. It mainly affects boys, occurring once every 3500-6000 births. The first symptoms appear between 3 and 6 years of age. If left untreated, children with DMD rarely achieve complete mobility and gradually lose it as they get older. The prognosis is poor and untreated patients die of respiratory failure or cardiomyopathy early in life.

Case report: A 2-week-old male newborn with an unburdened perinatal history was admitted to the hospital due to Covid-19 pneumonia. Tests performed at admission showed an increase in transaminases (ALT 70U/l, AST 155 U/l). In subsequent tests additional increasing CK values were found to be 9667 U/l and D-dimers – 1052 ng/ml. After the infection was treated, the above parameters did not normalize but tended to decrease. The child was discharged home in good condition with a recommendation to report for follow-up examinations in 2 weeks.

After 2 weeks the patient was admitted in good condition with no deviations in the physical examination. Laboratory tests revealed an increasing activity of transaminases (ALT 161 U/I, AST 281 U/I), an increase in CK (13522 U/l), CK-MB (617 U/l) and D-dimers (5008 ng/ml) compared to the results from the previous hospitalization. Troponin I was slightly elevated. Fluctuations in CK and transaminase levels were observed during the stay. Due to the elevated concentration of Troponin I and the activity of CK and CK-MB, a cardiology consultation was requested and ECG and ECHO of the heart were performed in which no abnormalities were found. Due to elevated D-dimer values and prolonged APTT, the child was haematological consulted – low molecular weight heparin was included. In addition, transfontanelle and abdominal ultrasound were performed which showed no pathology. Based on the clinical picture and the results obtained after specialist consultations, congenital muscular dystrophy was suspected. A genetic test confirmed the presence of a mutation in the DMD gene typical of Duchenne muscular dystrophy.

Conclusions: In this case, Duchenne muscular dystrophy was detected by chance before the first symptoms of the disease appeared. Although the prognosis of DMD is not favorable, the diagnosis of the disease at such an early stage allows for the inclusion of steroid treatment and, more recently, gene therapy and the care of specialists for the child which will slow down the course of the disease and improve functioning. Doctors should be aware that a significant elevation of CK is a non-specific but always present symptom in DMD. A high CK level should prompt a quick specialist consultation to confirm the diagnosis.

Ultrasound diagnostics and treatment for pulmonary hemorrhage in a full-term infant

Gražvydas Jakumas

Presenting author: Gražvydas Jakumas

Tutors: Svetlana Dauengauer-Kirlienė MD

Affiliations: Vilnius University

Introduction: Pulmonary hemorrhage (PH) in neonates is a rare yet severe and potentially life-threatening condition, with an incidence of 1-12 per 1000 live births, and mortality in cases of PH, varies from 50% to 68%. PH is described as the discharge of blood-tinted fluid from the upper respiratory tract or the endotracheal (ET) tube. Risk factors for PH in neonates include sepsis, coagulopathy due to vitamin K deficiency, patent ductus arteriosus, restricted intrauterine growth, and surfactant administration. The limited available information on neonatal pulmonary hemorrhage consistently creates significant diagnostic and therapeutic challenges. Our objective is to demonstrate the usage of Point-of-Care Ultrasound (POCUS) for precise personalized diagnostics and treatment in critically ill neonates, illustrated through a clinical case.

Case report: We present a critically ill, 39-week gestation newborn, delivered by induced vaginal delivery due to suspected diabetic fetopathy to a febrile mother with elevated inflammatory markers. The newborn was admitted to the NICU soon after delivery because of febrile temperature, grunting, and compromised microcirculation. Initial neonatologists performed lung ultrasound (LUS) after delivery revealed no underlying pathology. The prophylactic vitamin K dose was not given by accident. Laboratory findings showed inflammatory process and respiratory acidosis with negative blood culture results. Suspecting ongoing early onset neonatal sepsis administration of broad-spectrum empiric antibacterial treatment and respiratory support therapy via high-flow-nasal-canula was provided. On the second day of life general condition worsened with gastric hemorrhage and progressive respiratory failure. Repeated LUS showed severe alveolar-interstitial syndrome (LUS score 12-13 points) indicating the need for surfactant administration. During intubation fresh blood emerged from the ET tube – PH was confirmed, so considering hemorrhagic disease differentiating with developing DIC syndrome therapeutic dose of vitamin K, fresh frozen plasma, and fluid infusion were administered along with additional cefotaxime therapy. Following the treatment on the third day of life patient's condition improved, no recurrent bleeding was observed, and LUS showed a minor positive dynamic change in both lungs. The baby was extubated on the same day and CPAP therapy was continued for 3 days. After full antibacterial therapy, blood tests showed remaining normalized inflammatory markers and anemia, although reticulocyte count and rising hemoglobin levels indicated improvement.

Conclusions: This case accentuates POCUS's effectiveness in the NICU. Repetitive LUS assessments are viable for pulmonary hemorrhage diagnostics and play a critical role in achieving appropriate pathophysiological and individualized treatment strategies.

Primrose syndrome: novel ZBTB20 mutation associated with relatively mild intellectual impairment.

Izabela Powalacz, Alexandra Ptak

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Tutors: Ewelina Preizner-Rzucidło MD

Affiliations: Jagiellonian University Medical College

Introduction: The following case report presents a patient with primarily variant of unknown significance variation of ZBTB20 gene, which is correlated with the Primrose syndrome. Primrose syndrome is a rare autosomal dominant disorder that was first described only forty years ago in 1982. It is characterized mainly by dysmorphia, deafness, psychomotor retardation, hypotonia and autism spectrum disorders. Most cases are presented as „de novo" mutations.

Case report: A 2-year old girl was admitted to the hospital in Rabka Zdrój (Poland) due to recurrent pneumonia and chronic cough, which she has suffered from since fourth months old. Due to the presence of hypotonia and macrocephaly, she was reffered to a genetic clinic. Additionally, the patient had hearing loss, excess weight, delayed psychological and speech development. A wide forehead was one of the striking features of dysmorphia as well joint hypermobility. In the course of genetic diagnostics, an analysis for the most common mutations of the GJB2 gene and cytogenetic microarrays was carried out. Both results were correct. The HPO Phenomizer tool was used to narrow the search field for monogenic entities that could be related to the Patient's phenotype. Cowden's syndrome was also considered in the differential diagnosis. However, the desired statistical significance was not achieved. It was decided to perform whole-exome sequencing (WES) testing. WES test result were received when the patient was 5 years old and revealed no pathogenic or potencially pathogenic variants related with the phenotype. However an extensive list of variants of uncertain clinical significance (VUS) was also detailed in the result. Among VUS the variants, the variant received the most attention NM_001348800.3:c.1925G>T (p.Arg642Leu) of gene ZBTB20. Gene ZBTB20 is correlated with Primrose syndrome (OMIM #259050). Family segregation of the variant was carried out, confirming its „de novo" nature. For two years now the patient's ability to speek has been precipitously improving, till now she presents slightly lowered intellectual standard.

Conclusions: Even though whole-exome or even whole-genome tests give us a great opportunity to find answers to the patient's symptoms faster, the answer is not always satisfactory and final. Sometimes many years of observation and reanalysis of data are required to make a final diagnosis. In our case the variant NM_001348800.3:c.1925G>T (p.Arg642Leu) of gene ZBTB20 undoubtedly deserves attention. Patient's fenotype is partly simmilar to manifestations described in Primrose syndrome. Proven „de novo" occurence of the variant might stands for its pathogenicity. Albeit due to her intellectual border and improvement of psychomotor development, it is impossible at the moment to make a final diagnosis. More observation needs to be made.

A life- threatening complication of arthritis in children – a case of Macrophage Activation Syndrome complicated by DIC in a 3-year-old with sJIA

Jagoda Sydor

Presenting author: Jagoda Sydor

Tutors: Justyna Roszkiewicz MD, PhD

Affiliations: Medical University of Lodz

Introduction: Juvenile Idiopathic Arthritis (JIA) is the most common arthropathy in children and teenagers and it constitutes a serious cause of both short-term and long-term disability among them. Systemic JIA (sJIA) is the most severe subtype of this disease, characterised by diverse course and numerous complications, the most dangerous of them being MAS - Macrophage Activation Syndrome. We present a case of a 3-year-old girl diagnosed with severe MAS as an onset of sJIA complicated by disseminated intravascular coagulation (DIC).

Case report: A 3-year-old girl with macular rash and fever was transferred from Department of Pediatrics, Immunology and Nephrology to our department due to suspicion of systemic Juvenile Idiopathic Arthritis. Before the admission, she had suffered from urticaria for 5 months and had had a fever reaching 40 degrees Celsius for 2 weeks. Although viral, bacterial and fungal infections were ruled out, test results indicated significantly elevated markers of inflammation (CRP, ESR, ferritin). Furthermore, anaemia was noticeable. Considerable deterioration in health occurred in the course of hospitalisation – fever, rash, exacerbation of the anaemia, decrease of the platelet count and rise of D-dimers and ferritin in blood. Thereupon the diagnosis of MAS in a course of sJIA was established on a basis of Ravelli criteria. The treatment with steroid pulses was implemented, followed by cyclosporine and anakinra. Because of the anaemia and alarming levels of INR and fibrinogen, multiple blood, frozen plasma transfusions and clotting factor administrations were necessary. As a result of the treatment, patient's condition was gradually improving and, after 21-day-long hospitalisation, she was discharged in overall good health.

Conclusions: The prevalence of fulminant MAS in patients with sJIA is 10%, and mortality has been reported in 20-53% of these cases. MAS is underdiagnosed, often confused with sepsis, adverse effects of drugs or intensified symptoms of evolving rheumatologic or infectious diseases. It all result in late diagnosis, which minimizes the chances of recovery for many patients and sometimes leads to death. Spreading awareness of this syndrome would be a particularly important step in reducing the mortality due to this pathology.

Can the open posterior fontanel mean the CNS tumor? - case report of atypical choroid tumor

Jakub Wilk, Jakub Czarny

Presenting author: Jakub Wilk

Tutors: Olga Zając-Spychała MD, PhD

Affiliations: Poznan University of Medical Sciences

Introduction: Central nervous system (CNS) tumors are the second most frequent malignancy in the pediatric population. Although CNS tumors can manifest in different manners, there is a group of alarming manifestations indicating urgent complex diagnostic process. Certain CNS tumors may be a part of hereditary cancer syndromes.

Case report: The female patient born on time was developing properly, achieving milestones corresponding to her age. At the age of 16 months, the patient started to present gait disturbances. From the following month, episodes of apnea were reported. The outpatient EEG examination result did not detect any abnormalities so the patient awaited the outpatient performance of head MRI. Due to persistent symptoms, at the age of 21 months she was examined by the pediatrician. The physical examination revealed an open posterior fontanel and increased head circumference. The ultrasound examination through the posterior fontanel led to the suspicion of a brain tumor. Therefore, she was admitted to the pediatric oncology clinic. The CT and MRI scans reported a litho-cystic tumor measuring 7,0x6,6x8,0 cm located in the right temporal lobe and adjacent areas of parietal and frontal lobes with mass effect. The patient underwent optimally radical resection of the tumor. Initially, the patient suffered from abnormal limb mobility, which improved gradually thanks to the rehabilitation process. The histopathological examination revealed the diagnosis of atypical choroid plexus papilloma WHO G2. Sanger sequencing of exons 5, 6, 7, 8 and 9 of the TP53 gene was performed from the peripheral blood sample and no pathogenic mutation was detected. The patient has head and spinal cord MRI performed regularly and remains in remission under the control of neurology outpatient clinics due to antiepileptic treatment.

Conclusions: Apnea, increased head circumference and developmental regression should be vital indications to perform urgent inpatient neurological diagnostics, which need to include a head MRI scan. The reason for a persistently open fontanel has to be examined thoroughly. Although the EEG examination is an essential part of seizure diagnostics, it is not conclusive about brain neoplastic causes. Cooperation of neurologists and oncologists is crucial since the patient requires a multidisciplinary approach. According to the current guidelines, in case of the diagnosis of an atypical choroid plexus papilloma tumor, TP53 gene sequencing should be performed as it may be a clinical manifestation of Li-Fraumeni syndrome.

Hemophagocytic lymphohistiocytosis with central nervous system involvement as a complication of acute lymphoblastic leukemia in an 11-year-old child

Jeremiasz Kożuch, Laura Chuchla, Wiktoria Maćkówka

Presenting author: Jeremiasz Kożuch

Tutors: dr Aleksandra Królak, dr hab. n. med. Tomasz Ociepa

Affiliations: Pomeranian Medical University, Pediatrics, Hematooncology & Gastroenterology Clinic

Introduction: Hemophagocytic lymphohistiocytosis (HLH) is a rare hematological disorder associated with high mortality despite intensive treatment. The incidence is estimated at 1:800,000 annually. HLH is a multifactorial condition that results from dysregulated immune activity, which may lead to malignant inflammation and multi-organ failure.

Case report: We present a case of an 11-year-old patient, after successful treatment due to a late CNS relapse of acute lymphoblastic leukemia (ALL), who was admitted to the hospital due to fever and weakness. Because of symptoms suggesting severe infection, the search for the infectious source was initiated, and broad-spectrum antibiotics were given. Despite that, her condition deteriorated, including respiratory failure and pancytopenia development. Extended diagnostics (including microscopic bone marrow (BM) and cerebrospinal fluid (CSF) examinations) ruled out leukemia relapse. However, these revealed the presence of macrophages showing erythrophagocytosis in both BM and CSF. These and other lab findings (6 out of 8 diagnostic criteria for HLH) allowed for a final diagnosis of HLH. The treatment for HLH was initiated, consisting of administering Dexamethasone, Etoposide and intrathecal Methotrexate. Despite these, the patient developed respiratory and kidney failure, which required treatment enhancement by the introduction of an IL-1 receptor antagonist (anakinra) and its continuation in the intensive care unit. The patient's condition finally improved with an evident reduction of inflammatory markers. Unfortunately, within the following days, decreased consciousness and convulsions occurred. Brain MRI showed multiple nodular FLAIR hyperintensity in the brain hemispheres with corresponding contrast enhancement. Neuroimaging findings, although not specific, were most likely suggestive of HLH. The treatment was escalated again. Despite the above active treatment, the patient's condition deteriorated progressively, and the patient died due to multi-organ failure.

Conclusions: HLH is a rare and severe disorder that may lead to death in a very short period. The low specificity of initial symptoms may delay diagnosis and proper treatment initiation. However, even though the recommended treatment, including novel agent administration, is introduced, the outcome in children with secondary HLH and CNS involvement is still challenging.

Various presentations of metabolic acidosis of newborn. Diagnostic and management approach.

Joanna Zalega, Aleksandra Grelowska

Presenting author: Joanna Zalega

Tutors: Małgorzata Stańczyk MD, PhD

Affiliations: Medical University Of Lodz

Introduction: Metabolic acidosis is a disturbance of the acid-base balance characterized by a reduced plasma bicarbonate level. Possible types of metabolic acidosis in the pediatric population are: diabetic ketoacidosis, lactic acidosis, uremic acidosis, renal tubular acidosis, temporary neonatal acidosis, dehydration and intoxication. We present 3 newborns with different types of acidosis with regard to initial treatment and further diagnostic procedures.

Case report: A female newborn with cranioectodermal dysplasia (CED, Sensenbrenner syndrome) detected in prenatal diagnosis presented with unexpectedly high level of creatinine at 5th day of life and metabolic acidosis, with significant weight loss and polyuria. To balance the metabolic acidosis intravenous fluid therapy with sodium bicarbonate was started and afterwards replaced to oral supplementation. This case shows metabolic acidosis of a newborn caused by acute kidney injury overlapping congenital chronic kidney disease.

A male newborn presented on 10th day of life with respiratory compensated metabolic acidosis and hypomagnesemia. Inborn errors of metabolism were excluded. The patient was suspected to have renal tubular acidosis and therefore was treated with high doses of sodium bicarbonate, firstly given intravenously then orally. As a result, after 33 days, the acid-base balance was permanently restored and maintained without supplementation, which eventually suggested the transient neonatal acidosis. Despite magnesium supplementation the levels dropped to 0,49 mmol/l which led to suspicion of the autosomal dominant hypomagnesemia with hyperchloremia. This case shows transient neonatal acidosis which resolved spontaneously.

A female premature newborn presented with severe metabolic acidosis with very high base deficit (BE=-12,4), hyperchloremia and normal anion gap - renal tubular acidosis was suspected. The USG revealed the increased echogenicity of kidneys. Significant albuminuria ACR=2666 mg/g was present since the first days of life. The oral supplementation of sodium bicarbonate up to 12mmol/kg/d resulted in restoring of acid-base balance. Patient showed bicarbonate supplementation dependency for years. Known genetic disorders causing renal tubular acidosis were excluded. This case shows chronic renal tubular acidosis of unknown origin.

Conclusions: Metabolic acidosis of newborn can have various causes. Initial treatment is always similar - if acidosis persists after proper hydration, the supplementation of sodium bicarbonate should be started. In case of lack of full recovery further diagnostic procedures including genetic assessment have to be implemented.

Infective endocarditis

Julia Lewańska, Wiktoria Witucka , Amanda Abramowicz

Presenting author: Julia Lewańska

Tutors: Ewa Malinowska, MD; prof.Marcin Tkaczyk MD, PhD

Affiliations: Medical University of Łódź

Introduction: Infective endocarditis is a condition affecting the inner lining of the heart due to microbial infection. Although the incidence of this condition remains low within the general population, individuals with congenital heart defects exhibit a markedly elevated susceptibility to develop infective endocarditis. Affected individuals often require extensive antibiotic treatment, resulting in prolonged hospitalization.

Case report: A 14-year-old boy was admitted to the emergency department (ED) with a history of recurring fevers for over a month. Before admission, he was prescribed a 10-day course of amoxicillin/clavulanic acid, which initially resulted in a positive response. Three weeks later, the fever returned. Clarithromycin was administered at this juncture, yet the patient showed no signs of improvement, necessitating his admission to the emergency department. The patient has a significant medical history of congenital heart defects: persistent truncus arteriosus type I and pulmonary artery stenosis diagnosed in infancy, which led to two tricuspid valve replacement surgeries among other cardiothoracic interventions. Given the patient's cardiac history, diagnostic evaluations for infective endocarditis were initiated. An echocardiogram was performed, revealing no abnormalities. Blood tests revealed elevated D-dimers (2651ng/ml) and increased inflammatory markers: ESR 16 mm/h, CRP 7,81mg/dl and leukocytosis. Serological tests identified the presence of IgG antibodies against Mycoplasma pneumoniae. Blood cultures were also obtained. During administration of ceftriaxone, there was a noted escalation in the levels of inflammatory markers and D-dimers. Subsequent blood cultures brought positive results for S. epidermidis, prompting a switch in the therapeutic regimen to vancomycin in combination with gentamicin. Advanced cardiac imaging, including positron emission tomography (PET) and echocardiography, revealed vegetations on the pulmonary valve. According to the European Society of Cardiology (ESC) guidelines, gentamicin was replaced by rifampicin after two weeks. However, this modification proved ineffective, and led to fever recurrence and an increase in CRP levels. Consequently, therapy was adjusted to meropenem, which ultimately led to an improvement in the patient's clinical symptoms and concluded the treatment course.

Conclusions: Infective endocarditis, however rare, poses significant diagnostic and therapeutic challenges. The presented case underscores the complexity of managing nonspecific symptoms and the obstacles encountered in treating patients with preexisting conditions that markedly influence the disease trajectory.

Diagnostic and treatment difficulties in 12-years-old boy with rare glomerulonephritis - what to do when nothing works?

Kacper Medyński, Gabriela Ujma

Presenting author: Kacper Medyński

Tutors: Małgorzata Stańczyk MD, PhD

Affiliations: Medical University of Łódź

Introduction: C3 glomerulopathy is an extremely rare disease (1-3/1,000,000 people) involving building-up deposits of C3 complement protein in the glomeruli and uncontrolled activation of the alternative pathway. Up to 50% of patients will develop end-stage renal failure within a decade following the diagnosis. There is evolving number of reports concerning management attempts but until now none has proven to be successful.

Case report: A 10-year-old boy was admitted to the pediatric nephrology unit due to nephrotic syndrome. with proteinuria up to 5,5 g/24 h, hypercholesterolemia, hypoalbuminemia, hematuria, decreased C3 and C4 complement as well as major IgG deficiency. Because of an atypical course (no response to steroids, hypertension) a kidney biopsy was performed, revealing membranoproliferative glomerulonephritis (MPGN). 6 pulses of methylprednisolone were administered without achieving remission. Steroid treatment was continued and second-line therapy with mycophenolate mofetil (MMF) was introduced. After 6 months due to partial remission the treatment was modified once again - cyclosporine A (CsA) along with MMF and deflazacort was introduced. Because of poor response for the treatment and constant C3 complement deficiency data were reanalysed – C3 nephropathy was diagnosed. Because of lack of complete remission along with signs of CsA toxicity (hyperuricemia, hypertension), after careful literature search patient was qualified to anticomplement biological therapy with eculizumab - an antibody binding to the complement protein C5 and inhibiting the final phase of its activation, standardly used to treat atypical hemolytic uremic syndrome.

Conclusions: In case of complete lack of efficacy of standard treatment and for sake of slowing the progression of kidney damage non-standard methods can be considered. C3 glomerulopathy is a difficult disease to treat due to its rarity and varied clinical course. It requires persistence in searching for an effective drug and openness to various methods of therapy. Eculizumab treatment may turn out beneficial in treating a patient suffering from C3 glomerulopathy, for whom conventional therapy has not brought satisfactory results.

Is asthma the only to blame?

Katarzyna Banasiak (1)

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Introduction: Asthma is the most common chronic disease in paediatric population. Symptoms are: whistling, dry cough and obturation. Very often allergy cooccurs. Patients with asthma are also more prone to respiratory viral infections, which can cause the aggravation of symptoms. Spirometry is the most useful examination to establish the diagnosis of asthma. Unfortunately it is hard to perform this procedure in children under 5 years old. In these cases the diagnosis of asthma is based on the detection of recurrent episodes of bronchial obstruction (>3–4 episodes in the last year) after exclusion of other causes.

Case report: 5 years old boy, previously diagnosed with asthma, was admitted to the hospital for diagnosis of recurrent respiratory tract infections. He also presented with external styes in both eyes and papulo-seborrheic rashes around the mouth that had lasted for 2 years. In the physical examination lymph nodes on the neck were palpable and numerous whistles above the lungs were detected. During the hospitalisation allergic skin tests were positive. The spirometry test was performed but because of technical problems the result was difficult to interpret. The boy was consulted by the laryngologist. The oral examination revealed allergic rhinitis and adenoid hypertrophy. After two months the spirometry test was performed again (due to improper technical performance of the test, the result was difficult to interpret), the measurements of airway resistance were normal. In 10 months the patient underwent the surgery. The pharyngeal tonsil was removed and the palatine tonsils were reduced. After the surgery the patient was back in the hospital only once. After five years he had a radiographic examination of the chest because the problem of recurrent infections didn't disappear after the tonsillectomy. The chest ray revealed vessel ring – the double aortic arch. After confirmation of this diagnosis anti- asthmatic drugs were discontinued without aggravation of symptoms. After more thorough investigation the history of difficulty swallowing both liquid and solid foods was revealed. The patient required grinding of food until the age of 3 years. Moreover, in the 3rd month of life, he suffered from aspiration of milk and required resuscitation measures. It turned out that he only had contact allergy to nickel. At the age of 13 he underwent a surgery of the separation of the vascular arch and was discharged home without any complications.

Conclusions: Congenital aortic arch defects affect 3% of people. Typical symptoms are caused by the pressure of vessels on esophagus and trachea. They include respiratory disorders, inspiratory stridor, paroxysmal cough or recurrent infections, usually occurring in the first year of life. Symptoms are often misdiagnosed as asthma, especially in older children. That's why it is very important to include vascular rings in the differential diagnosis in patients who do not respond to typical treatment of asthma.

Clinical manifestations and management of multisystem inflammatory syndrome in children (MIS-C): a case report

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Tutors: Liene Cupane (2)

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Introduction: Multisystem Inflammatory syndrome in children (MIS-C) is a rare but serious clinical condition that affects less than 1% children who have tested positive for respiratory syndrome coronavirus 2 (SARS-CoV-2). It was first described in late April 2020, shortly after the initial wave of COVID-19. The early reported cases in children exhibited severe systemic inflammatory response with Kawasaki disease-like symptoms and clinical features like myocarditis and cardiogenic shock. Today, MIS-C is defined by specific criteria: age persistent fever, more than two organ system involvement, elevated inflammatory markers, evidence of recent COVID-19 infection and exclusion of other possible etiologies.

Case report: This study provides a detailed case report of a 7-year-old girl diagnosed with MIS-C who demonstrated a severe manifestation including cardiovascular complications like pericardial effusion and coronary artery dilatation, abdominal symptoms, and overall critical condition. Patient had a 5-day history of high fever, skin rush that transition from few papules in to generalized maculopapular rashes just in 3 days. Patient was first treated in Regional Hospital, but giving the severeness of the condition, she was admitted to the Paediatric Intensive Care Unit (PICU) of Children's Clinical University Hospital. Timely diagnosis for MIS-C was established according to the guidelines through clinical examination, laboratory investigation and diagnostic imaging. Patient was treated with intravenous immunoglobulin (IVIG), methylprednisolone and aspirin. After achieving hemodynamic stabilization, the patient was transferred to the Infectious Diseases Department for further treatment.

Conclusions: In recent observations, the incidence of MIS-C has been decreasing but this COVID-19 complication continues to be serious yet rare condition affecting various organ systems and requiring a complex approach. Further investigation of MIS-C is crucial for a better management and overall better patient outcomes. This study gives a detailed examination of MIS-C's clinical presentation, diagnostic complexities, therapeutic strategies, and comprehensive management of this potentially life-threatening condition.

Learning how to breathe again - a case of a pediatric thymoma

Agnieszka Olejnik

Presenting author: Agnieszka Olejnik

Tutors: Filip Pierlejewski MD, PhD

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Introduction: Thymoma is a very rare malignant cancer originating in lympho-epithelial cells with a reported frequency of up to 0.2-1.5% among all malignant neoplasia. It's especially uncommon among the pediatric population. Thymoma may progress asymptomatically; however, in numerous instances, it is accompanied by paraneoplastic syndromes such as myasthenia gravis, pure red cell aplasia and hypogammaglobulinemia.

Case report: A thirteen-year-old girl was admitted to the hospital to diagnose the background of bad posture. The chest X-ray showed the presence of a tumor mass (22x19x13 cm) in the anterior mediastinum. The only disturbing clinical symptom was a decrease in exercise tolerance and mild anemia with Hb concentration of 10.6 g/dl. The core needle biopsy report suggested thymoma, which was proved by immunophenotyping which showed cell positivity for: CD3 (+), Tdt (+). She underwent a radical thymectomy (R2). In histopathology it was found that it was a combined B2+B3 thymoma (Masaoka stage IVa).A control CT scan showed a small retrosternal residual tumor mass with calcifications, which was overlying the aortic arch. After the surgery the patient developed a serious ventilation disorder: she had tachypnoe with respiratory rate up to 30/min, tachycardia with 150/min and visible respiratory effort. During the hospitalization, she had to be admitted to the ICU due to pneumothorax and sudden clinical decompensation. The patient went through a slow process of adaptation and stabilization due to use of respiratory support techniques; intermittent mandatory ventilation (IMV), synchronized intermittent mandatory ventilation (SIMV). Due to the prolonged duration and the substantial size of the lesion in the patient's body, numerous compensatory alterations occurred, facilitating her respiratory functions. Following the excision of this lesion, the organism was forced to adapt once more to the changed conditions.After stabilizing the patient's condition, she was able to undergo another surgery (VATS) to remove the residual tumor mass. After the hospitalization, she was referred to the Genetics Department because of the prevalence of the thymoma in her family. Her mother, grandfather and her uncle also had this condition in childhood.

Conclusions: Thymoma is a very rare cancer among children but because of its prevalence in the patient's family we may wonder why it was detected at such an advanced stage. Patients with a disease that occurs in every generation of the family should be prophylactically monitored by an oncologist because of a higher risk of neoplastic transformation. The supervision should be suggested by a General Practitioner in every such case. Given the dimensions of the neoplasm, it can be inferred that its development occurred over an extended period without detection.

5-year-old girl with congenital fibrosis of the extraocular muscles

Aleksandra Banach

Presenting author: Aleksandra Banach

Tutors: lek. Katarzyna Pelińska

Affiliations: Uniwersytet Medyczny w Łodzi

Introduction: Congenital fibrosis of the extraocular muscles (CFEOM) is a rare congenital syndrome caused by maldevelopment of oculomotor nuclei. This situation leads up to the abnormal innervation of extraocular muscles, that results in fibrosis and atrophy of the associated extraocular muscles. There are some phenothypes of CFEOM but the common feature is restricted ocular motility, that especially affects ocular elevation. It relates to characteristic compensatory head posture (chin up head posture). Since CFEOM is a congenital syndrome, it can be observed among pediatric patients.

Case report: A 5 years old girl presented in Ophthalmology Department with abnormal head posture and restrictions in eyes movements since birth. The patient had a significant chin up head posture, bilateral ptosis, and restriction of upgaze and horizontal gaze limitaiton in the abduction. Both her eyes were fixed in the downgaze position. The clinical picture was typical for CFEOM type 1. The goal of treatment was satisfactory gain alignment and improvement of abnormal head posture. The patient had undergone two strabismic surgeries. First - the Tutopatch elongation of the inferior rectus muscle combined with recession of medial rectus muscle in both eyes were performed. After half a year bilateral resection with anteposition of the superior rectus muscle was performed.

Conclusions: Sight is vitally important for child development so we should consider medical intervention to ease growth of pediatric patients with CFEOM. In most patients with CFEOM recession of the fibrotic muscle plays a major role in relieving restriction, among which the recession of inferior rectus muscle is the most common. Our case presents a new approach in treating CFEOM - elongation of the inferior rectus muscle using an implant Tutopatch. Tutopatch is a bovine pericardium membrane, which creates a substitute for connective tissue structures.

Chemotherapy induced Grade 4 hepatotoxicity in pediatric patient with ALL

Anna Sekunda (1), Dorota Sławińska (2)

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Introduction: Considering liver as the main organ responsible for metabolism of drugs, including chemotherapeutic agents, it is notably susceptible to damage from cytotoxic metabolites. Furthermore, due to infiltration, acute lymphoblastic leukemia (ALL) itself can induce liver harm. To standardize severity of hepatotoxicity, Common Terminology Criteria for Adverse Events (CTCAE) scale is used. Recent research has revealed two genes associated with hyperbilirubinemia (UGT1A1) and elevated alanine aminotransferase (ALT) and aspartate aminotransferase (AST) levels (PNPLA3) related to chemotherapy. This knowledge can be used in future to distinguish high alert patients, who are genetically vulnerable to hepatotoxicity and provide them with appropriate care.

Case report: An 11-year-old girl was admitted to the Department of Pediatric Hematology, Oncology and Transplantology on 29th of December 2023 with suspected hematological disease, as for the last 3 weeks she was presenting general weakness, vomiting and petechiae. Based on myelogram results she was diagnosed with ALL. On the day of admission, her lab results showed pancytopenia, high C-reactive protein (CRP) and procalcitonin (PCT) with slightly elevated AST and bilirubin and no other signs of liver damage. On 5th of January 2024, she began induction phase of chemotherapy. She received prednisolone (PRED), vincristine (VCR), daunorubicin (DNR), PEG-asparaginase (PEG-L-ASP) and methotrexate (MTX). As her response to treatment wasn't satisfactory, she was assigned to the early high-risk group. From the 33rd day of her hospitalization, severe jaundice was observed. The most distinctive values of liver function tests around that time were as follows: albumin 2.6 g/dl, ALT 167 U/l, AST 88 U/l, gamma-glutamyltransferase (GGT) 245 U/l, total protein 4.3 g/dl and bilirubin 16.06 mg/dl, which was reported as critical value. Ultrasonography exam showed enlarged liver with increased echogenicity. Hepatoprotective treatment was implemented, including L-ornithine L-aspartate, enoxaparin, spironolactone, methylprednisolone and vancomycin. Additionally, next dose of therapy was withheld for 16 days.

Conclusions: Chemotherapy is associated with high hepatotoxic potential, thus it is important to consistently monitor liver function tests and be prepared for complications. Patient's condition improved, but interruption in chemotherapy may increase the risk of relapse in the future. Prospective introduction of progenetic testing could provide new approach to prevent drug-induced hepatotoxicity or enable high alert patients to be treated before first signs of liver damage.

Management of Supernumerary Teeth in a Pediatric Patient: A Case Report

Aya Kraiz, Olena Marushko, Olesya Marushko

Presenting author: Aya Kraiz

Tutors: Katarzyna Błochowiak DDS, PhD

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Introduction: Supernumerary teeth are additional teeth that exceed the normal dental formula and can occur in various regions of the dental arch, often leading to malocclusion and discomfort, particularly in pediatric patients. Mesiodens, a type of supernumerary tooth located in the maxillary midline, is one of the most commonly encountered supernumerary teeth. They may manifest as fully formed teeth or as rudimentary structures and can have varied orientations, including vertical, horizontal, or inverted. Management of supernumerary teeth typically involves interdisciplinary collaboration between dental specialties, including oral surgery and orthodontics, to ensure comprehensive treatment planning and optimal outcomes. Prompt diagnosis through clinical examination and advanced imaging techniques such as cone-beam computed tomography (CBCT) is essential for accurate treatment planning and successful management of supernumerary teeth-related malocclusion.

Case report: A male pediatric patient born in 2017 presented with malocclusion and discomfort in the anterior region of the jaw. Clinical examination revealed two supernumerary teeth: a fully formed mesiodens adjacent to tooth 21 and another in the palatal region near tooth 11, with an abnormal orientation towards the nasal cavity. Cone-beam computed tomography (CBCT) confirmed the presence and exact positioning of the supernumerary teeth. The patient was referred to a dental/maxillofacial surgery clinic for further evaluation and treatment. Subsequent consultations recommended orthodontic intervention and surgical removal of the supernumerary teeth. The mesiodens was surgically removed, followed by a recommendation for remineralization using duraphat. However, due to the persistence of symptoms, further CBCT examinations were conducted, which revealed additional supernumerary teeth requiring extraction. Despite attempts to remove the palatal supernumerary tooth, it remained due to the patient's lack of cooperation. Under local anesthesia, the supernumerary tooth around teeth 11 was extracted. Additionally, teeth 51 and 52 were extracted to facilitate space of the permanent dentition.

Conclusions: Prompt diagnosis, interdisciplinary collaboration, and appropriate surgical intervention are crucial in managing supernumerary teeth-related malocclusion. This case demonstrates successful removal of supernumerary teeth alongside orthodontic intervention, relieving the symptoms and contributing to proper occlusion in pediatric patients. Thorough diagnostic imaging and comprehensive treatment planning are essential for optimal outcomes in such cases.

Systemic juvenile idiopathic arthritis with tocilizumab induced toxic hepatitis

Brigita Mālniece

Presenting author: Brigita Mālniece

Tutors: MD, PhD Zane Dāvidsone; MD Agita Strazdiņa

Affiliations: Rigas Stradins University

Introduction: Systemic juvenile idiopathic arthritis (sJIA, also called Still's disease) is a rare auto-inflammatory childhood disease with prevalence between 1 – 9 per 100.000. It accounts for 10-20% of all types of juvenile idiopathic arthritis and is the most severe subtype with significant morbidity. Tocilizumab (TCZ) is a monoclonal humanized anti-IL-6 receptor antibody and is used in treatment of sJIA. Mild to moderate liver enzyme elevation (1 – 3 times the upper limit of normal (ULN)) is a well-known side effect. Only in 1 – 2 % of patients, liver enzyme levels increases above 5 times the ULN, which is the reason for periodic or complete discontinuation of therapy.

Case report: A 6- year-old girl with complaints of daily spiking fevers, maculo-papular rash all over the body, sore throat, pain and movement restrictions in the left wrist and joint stiffness in the legs. Laboratory finding shows: Ferritin 2306 ng/mL (N= 20 -200); erythrocyte sedimentation rate 120 mm/h (N= 0-20); C-reactive protein 126,18 mg/L (N= 0-2,8). A diagnosis of sJIA is made and therapy with Anakinra is initiated – the patient's temperature normalizes, however, the patient develops an itchy rash and the therapy is cancelled. Therapy with glucocorticosteroids is started with improvement in symptoms. TCZ also is added to the therapy. After 1,5 months, during the outpatient visit, blood tests are ordered and results show: Alanine transaminase (ALAT) 2218 U/L (N = 0- 39). The patient is hospitalized for examination. There are no active complaints. Objective examination does not reveal jaundice or pain. Blood tests are repeated: ALAT 1370 U/L; Aspartate aminotransferase (ASAT)711,2 U/L (N= 0-51); Gamma-Glutamyl Transferase (GGT)152 U/L (N= 0-23); direct bilirubin 9,5 umol/L (N=0-5). Considering the fact that the patient is in clinical remission and due to possible TCZ induced toxic hepatitis, therapy is cancelled.

Conclusions: sJIA is a rare auto-inflammatory childhood disease that may require the use of biological drugs such as TCZ. Although TCZ induced hepatotoxicity is considered as a rare side effect, patients treated with this drug, should be closely monitored for liver adverse events.

The elusiveness of the cause of severe arterial hypertension leading to the detection of mutations in the gene associated with Bardet-Biedl Syndrome

Gabriela Zwarycz, Wiktoria Lisińska, Jagoda Sydor

Presenting author: Gabriela Zwarycz

Tutors: Małgorzata Stańczyk MD, PhD

Affiliations: Medical Univeristy of Lodz

Introduction: Hypertension (HT) in paediatric patients consists of two types: primary and secondary. Primary, known as idiopathic HT, is most common in children above 6 years of age, usually with a family history of HT, frequently associated with overweight and obesity. Secondary HT is rare and connected with underlying conditions: parenchymal and structural renal diseases, congenital heart diseases, hormonal imbalances,obstructive sleep apnea and genetic mutations. One of these mutations may be located in one of twenty known genes leading to the development of Bardet-Biedl Syndrome (BBS), which results in renal dysfunction in the course of ciliopathy that could potentially lead to hypertension.

Case report: 11 years old asymptomatic girl presented at the district hospital with significantly increased blood pressure up to 260/140 mmHg, measured incidentally. Emergency treatment was implemented. Subsequently the patient was referred to the tertiary paediatric nephrology centre. Upon admission, the patient was diagnosed with severe left ventricular hypertrophy and significant proteinuria. She underwent a comprehensive array of laboratory and imaging diagnostic procedures and consultations including nephrological, cardiological, endocrinological, neurological, and ophthalmological assessments, to determine the cause of severely high blood pressure, as such elevated values raised suspicions of secondary HT due to other pathologies. A pharmacotherapeutic regimen comprising eventually four medications (amlodipine, spironolactone, doxazosin, metoprolol) was implemented, resulting in improvement in blood pressure control. Throughout multiple hospitalizations, the child was diagnosed with stage III chronic kidney disease and insulin resistance; however, whether these findings were causally linked to the hypertension or represented its complication remained indeterminate despite extensive diagnostic investigations. Mutation in HNF1B gene was suspected due to kidney involvement and insulin resistance - it was not confirmed. Subsequently, Whole Exome Sequencing (WES) was undertaken, uncovering a mutation in the BBS20 gene implicated in the onset of Bardet-Biedl syndrome, although the patient did not fully meet the clinical diagnostic criteria for this syndrome.

Conclusions: Investigating the aetiology of severe hypertension in paediatric patients presents a formidable challenge. Despite extensive diagnostics, determining the cause may prove elusive. In select instances, genetic analysis, exemplified by the case delineated herein, may offer novel insights into the matter; however, conclusive resolution may still prove elusive.

CASE STUDY: PEDIATRICS II

10th of May 2024

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Coordinators:

Ewa Smolińska

Marie Line Chedid

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Jury:

Małgorzata Stańczyk MD, PhD

Maciej Zdunek MD

Victor Brzózka MD

Staphylococcus haemolyticus infective endocarditis in a pediatric patient presenting with multiorgan failure

Marija Doronjga (1), Tin Gabrić (2), Krunoslav Budimir (3), Petar Brlas (4)

Presenting author: Marija Doronjga

Tutors: Sandro Dessardo (5)

Affiliations: 1, 2, 3, 4 - School of Medicine, University of Zagreb,
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Introduction: Infective endocarditis (IE) in children without congenital heart disease is rare but there is an increase in the number of reported cases. Previously healthy children with IE are more prone to complications and have a worse prognosis. Those children tend to be older and more often require surgical interventions. Possible predisposing risk factors are skin lesions, dental procedures, central venous catheters, unrecognized chronic disease, systemic disease, or heart condition.

Case report: A 6-year-old girl presented with a 1-month history of decreased activity and malaise and was admitted due to cardiac decompensation and respiratory failure. Prior to admission, she was treated in another institution for presumed sepsis. On admission, her blood pressure was 98/55 mmHg, heart rate 154/min, and respiratory rate 27/min. On physical exam, she appeared cachetic, she had generalized edema and a systolic murmur 4/6. She was intubated and mechanically ventilated. Vasopressor, inotropic, and empiric antibiotic therapy were introduced. An echocardiogram revealed dilated all heart chambers, pulmonary hypertension, and severe mitral valve insufficiency with preserved ventricular contractility (on inotropic support). Due to the clinical and laboratory signs of systemic inflammatory response, she received continuous renal replacement therapy and CytoSorb therapy. Multiple studies were sent, including blood cultures, viral panels, and rheumatologic to exclude any systemic or haematologic disease and they were all negative. During the patient's stay in the pediatric intensive care unit, her clinical situation slowly improved, but frequent echocardiography showed persistent moderate to severe mitral valve insufficiency. On the 25th hospital day (HD), the results of blood cultures were positive for Staphylococcus haemolyticus, and the patient was treated with vancomycin and gentamicin for a total of 42 days. PET-CT was performed and it demonstrated punctiform septic brain emboli. A brain MRI also showed septic emboli. A repeat echocardiogram showed improvement in cardiac function, however, due to the extensive mitral valve destruction surgical repair is planned in the future. The patient was discharged on the 64th HD. She has been followed up regularly by a pediatric cardiologist, with satisfactory outcomes.

Conclusions: Diagnosis of IE in children is challenging and there is a high risk of complications. IE presentation can be nonspecific and can mimic more common conditions. The differential diagnosis should be broad and include systemic, rheumatologic, oncologic, and infectious conditions as all of them can present with cardiopulmonary failure. The median duration of symptoms before diagnosis of IE is up to 40 days, as was similarly in our patient. A high index of suspicion combined with aggressive supportive treatment is imperative.

Genetically determined hypoglycaemia with hyperinsulinaemia in the newborn

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Presenting author: Natalia Biedroń

Tutors: Agata Tarkowska MD, PhD

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Introduction: Hypoglycaemia is a common problem in neonatal practice. Glucose is the basic energy substrate necessary for the functioning of cells of the nervous system and the production of neurotransmitters when glucose concentration drops below the so-called critical value, irreversible damage to brain cells occurs. Risk factors for hypoglycaemia include prematurity, abnormal birth weight, maternal diabetes, congenital infections, perinatal hypoxia, congenital metabolic disorders and genetic diseases. Depending on the etiopathogenesis and clinical course, neonatal hypoglycaemia is divided into two basic groups: 1. transient hypoglycaemia due to maternal and/or neonatal causes and 2. persistent or recurrent hypoglycaemia. Symptoms of hypoglycaemia include apnoea, cyanosis, convulsions, flaccidity, sweating, muscle tremors, apathy, reluctance to suck, tachycardia, tachypnoea, paleness, and hypothermia. Severe or long-term hypoglycaemia leads to permanent brain damage, epilepsy, psychomotor development disorders or abnormal pancreatic function later in the child's life.

Case report: The aim of this study is to present the diagnostic and therapeutic difficulties in a male newborn with persistent hypoglycaemia based on a case report. The neonate was born by caesarean section at the term of the third pregnancy, received 10 on the Apgar score and the course of pregnancy and delivery was without complications. On the first day, the patient presented adaptation disorders such as variable muscle tone, hypersensitivity and hypoglycaemia. In addition, on days 2-3, clonic seizures were observed which no longer appeared in the following days. Due to the onset of these symptoms, the patient was transferred to a higher-referral hospital. Because of the persistence of hypoglycaemia (fluctuations of 30-100 mg/dl), intravenous glucose infusions were administered and diagnostics were expanded. Based on several tests, hyperinsulinaemic hypoglycaemia with concomitant hypocortisolaemia was diagnosed. Considering possible genetic causes, the child was referred to a genetic counselling clinic. The genetic testing results confirmed the presence of three pathogenic gene variants including the PAX6 gene associated with ocular structural abnormalities. An ophthalmological consultation was indicated. Diazoxide and cortisol supplementation were included in the treatment, eventually achieving glycaemic stabilisation. After 5 weeks of hospitalisation, the patient was discharged home in good condition with a recommendation for further multispecialty outpatient care.

Conclusions: Hypoglycaemia is a common problem in the neonatal period, usually temporary. However, it is important to remember the possibility of persistent hypoglycaemia of various etiologies.

The newborn from a street birth with polycythemia caused by delayed umbilical cord clamping

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Introduction: Neonatal polycythemia is a rare condition with a prevalence of 0.4% to 5% in healthy children. It is characterized by an increase in venous blood hematocrit (≥65%) and hemoglobin (≥ 22 g/dl). The course in most newborns is asymptomatic, but symptoms such as vomiting, decreased appetite, tachycardia, cyanosis and apnea may occur initially. Potential complications of polycythemia result from an increase in blood viscosity and microvascular hypoperfusion.

Case report: On the 6th day of life, the male newborn was transferred from the district hospital to the Neonatal Pathology Clinic due to the lack of improvement in the treatment of polycythemia and the appearance of doughy swelling on the face, hands and feet. Upon admission, the newborn was cardiopulmonary and respiratory efficient, and the overall condition of the newborn was assessed as good.

The newborn from Pregnancy III and Birth III was born at 40 weeks gestation in a car on the way to the hospital. The umbilical cord was not clamped until 15 minutes after the birth in the hospital. The child's birth weight, body length and head circumference were normal, but there were signs of carrying the baby. On the first day of life, symptoms of polycythemia appeared in laboratory tests – hemoglobin (hgb) 24.1 g/dl, hematocrit (hct) 72%. Due to the absence of clinical signs of polycythemia and the patient's stable condition, the child was only observed. On the third day of life, due to persistently high red blood cell parameters, intravenous fluid therapy with a multi-electrolyte infusion solution and 5% glucose solution in the ratio of 2 to 1-150 ml per day was introduced.

After admission to the Neonatal Pathology Clinic, laboratory tests without significant deviations from the norm hgb – 21.6 g/dl and hct – 59.5%. The patient was monitored and observed. During hospitalization, the patient's condition remained stable, with a good appetite, abundant diuresis, and no signs of jaundice. Peripheral oedema gradually subsided. Transfontanelle ultrasound of the CNS and abdominal cavity did not reveal any pathologies. On the tenth day of life, the newborn was discharged home in good condition with normal red blood cell parameters.

Conclusions: Too late umbilical cord resulting from the occurrence of sudden birth without the presence of professional medical help may contribute to the occurrence of polycythemia in the newborn. This condition requires the inclusion of increased fluid intake or partial exchange transfusion depending on red cell parameters and the patient's overall clinical picture. Patients with asymptomatic polycythemia should be monitored. It is extremely important to apply appropriate treatment to avoid severe complications of polycythemia such as respiratory and circulatory failure, cerebral ischaemia, necrotizing enterocolitis or renal failure.

Linear lesion - can it be a serious symptom?

Patryk Cegiełka, Maria Rajczak

Presenting author: Patryk Cegiełka

Tutors: Prof. Aleksandra Lesiak MD, PhD; Małgorzata Skibińska MD, PhD

Affiliations: Medical University of Łódź

Introduction: Linear scleroderma represents a subtype of localized scleroderma, also known as morphea. This rare inflammatory condition results in sclerosis of the skin and soft tissues, with potential implications for muscles and bones, often leading to growth disorders. Two main varieties of localized scleroderma exist: linear scleroderma ""en coup de sabre"" and linear scleroderma affecting the limbs. The onset of the disease typically occurs before the age of 18 and, if left untreated, can result in significant limb or facial deformities.

Case report: A 10-year-old patient presented to the dermatology clinic with linear discoloration on the forehead. Following a diagnostic process that included magnetic resonance imaging of the head, a diagnosis of linear scleroderma was established. Treatment commenced with prednisone at a dose of 20 mg/kg, along with methotrexate at 15 mg/week and folic acid supplementation. Subsequent improvements in the patient's condition facilitated a tapering of steroid dosage after six months, while maintaining methotrexate at the same dose.

Conclusions: Linear scleroderma, among other rare diseases, warrants consideration in the diagnostic evaluation of pediatric patients presenting with atypical linear skin lesions. An interdisciplinary approach is essential for early diagnosis and the implementation of appropriate treatment measures, thereby mitigating the risk of serious systemic complications in the future.

Can PIMS-TS lead to the progression from acute kidney injury to end-stage renal failure? Case report of 10-year-old boy.

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Introduction: Pediatric Inflammatory Multisystem Syndrome Temporally associated with SARS-CoV-2 (PIMS-TS) can occur in approximately 37% of patients with acute kidney injury (AKI) as a result of ischemia, toxins, or generalized inflammatory state. SARS-CoV-2 remains a significant factor in the progression of kidney diseases, due to its direct nephropathic effects leading to collapsing glomerulopathy or tubular necrosis.

Case report: A 10-year-old boy with Angelman syndrome and epilepsy was admitted in severe general condition to the clinic in December 2021 due to an infection presenting with vomiting, diarrhea, fever up to 39.4°C, dehydration and anuria. Laboratory results revealed high inflammatory markers (CRP 16.97 mg/dl, PCT 3.33 ng/ml, ESR 51 mm/h, neutrophilia with lymphopenia with normal WBC count). Additionally: thrombocytopenia, decreased red blood cell values, hyperkalemia, hypoalbuminemia, hyperferritinemia, hypertriglyceridemia, elevated coagulation parameters. Urine analysis showed ketonuria, hematuria, microalbuminuria. Lung ultrasound revealed inflammatory and atelectatic changes. Positive IgG antibodies against SARS-CoV-2 were detected in quantity of 249 U/ml.

Wide-spectrum antibiotic therapy, symptomatic treatment, renal replacement therapy (peritoneal dialysis) were initiated. STEC-HUS and TTP were ruled out in the differential diagnosis. Considering the clinical picture and additional test results (including positive SARS-CoV-2 antibodies and high IL-6 levels), the boy was diagnosed with Pediatric Inflammatory Multisystem Syndrome Temporally associated with SARS-CoV-2 (PIMS-TS), and targeted treatment was initiated (IVIG at a total dose of 2 g/kg in 2 divided doses, ASA at an antiplatelet dose).

Due to renal parameters (GFR 11.1 ml/min/1.73 m^2, creatinine 7.01 mg/dL, urea 261 mg/dL) and persistent anuria, a decision was made to perform a kidney biopsy, revealing ischemic damage to glomeruli and renal tubules. Gradually, after 4 weeks of hospitalization, diuresis returned, but renal filtration function did not improve. End-stage renal failure was diagnosed, and it was decided to continue RRT and qualify for kidney transplantation-related procedures.

Conclusions: In the described case, the pathogenesis of end-stage renal failure is multifactorial, and it is not excluded that the cause of the damage is PIMS-TS. The literature does not describe PIMS-TS syndrome as the leading cause of end-stage renal failure in similar cases.

Beck's triad without three characteristic symptoms - the case of a teenager after a traffic accident

Paulina Malon, Anna Bych

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Tutors: lek. Kacper Kroczek

Affiliations: Ludwik Rydygier Collegium Medicum in Bydgoszcz, Nicolaus Copernicus University in Toruń

Introduction: Beck's triad is a set of characteristic clinical symptoms accompanying cardiac tamponade, which includes jugular vein distention, muffled heart sounds, and hypotension. The presence of increased fluid in the pericardial sac of various etiologies can affect the hemodynamic performance of the heart. The occurrence of this condition is rare, and one of the causes can be chest trauma. Here, we present the case of a 17-year-old patient with massive chest trauma following a motor vehicle accident.

Case report: The teenage patient was admitted to the Emergency Department in the University Hospital in Bydgoszcz following a generalized injury as a passenger in a car accident. The girl was in overall good condition, with normal circulatory and respiratory function. Apart from complaining of headache and spinal pain in the chest area, vital signs were normal. No abnormalities were found in the FAST ultrasound examination. However, echocardiography revealed free fluid above the right ventricle (up to 25mm), molding its wall. Based on the whole clinical picture, the patient was qualified for urgent cardiothoracic intervention, and emergency pericardiocentesis was performed. Approximately 500ml of bloody fluid was drained, resulting in an immediate improvement in the patient's circulatory function.

Conclusions: Beck's triad is useful in diagnosis; however, not all of its components are always present, as it was in the presented case. Therefore, it serves as a helpful but not entirely reliable diagnostic criterion. A detailed assessment of the patient's condition and echocardiographic examination allow to make diagnosis of this medical condition. Delay in interventional treatment due to incorrect diagnosis can directly impact the child's life-threatening situation and the occurrence of long-term complications, including mortality.

Parasitic infection as a consequence of untreated celiac disease in a pediatric population: a case report

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Introduction: Celiac disease (CD) is a chronic autoimmune condition that consequently, if untreated, leads to damage of intestinal mucosa due to inflammation caused by inappropriate immune response to ingested gluten particles. CD presents a diagnostic challenge due to the various clinical presentations. Current pediatric diagnostic criteria are based on presence of elevated IgA transglutaminase antibodies (tTg-IgA) with or without small intestine biopsy.

Case report: An eleven 11-year-old girl presented with a history of occasional fresh blood in the stool without additional symptoms. Apart from scybala, and small anal skin tag no signs of disease were present; the patient was in good health with normal somatic development so the symptoms were attributed to constipation, and dietary measures were suggested. Considering symptoms persisted we performed laboratory work-up. Laboratory tests revealed microcytosis without anemia, increased eosinophil count (11.7, ref.0-9%), low ferritin level, and significantly elevated tTg-IgA (>4965.5, ref.<20CU). A no-biopsy approach was adopted, and diagnosis was confirmed with a positive second serum sample (tTg-IgA and IgA-endomysial antibody). The patient was put on a gluten-free diet but despite that eosinophilia persisted. Since the patient followed her diet, accompanied by decline of tTg-IgA (1299, ref.<20CU) we ordered fecal exams, and the perianal swab was positive for hookworm. A course of mebendazole therapy was followed with a complete remission of eosinophilia.

Conclusions: Patients with untreated/undiagnosed celiac disease have a higher incidence of parasitic infections due to long-lasting inflammation, and consequential intestinal mucosa damage. Therefore, in patients with CD and refractory eosinophilia parasitic infection should be kept in mind.

Different faces of growth deficiency: Gitelman syndrome and somatotropic hypopituitarism - a case report

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Introduction: Gitelman syndrome (GS) is a rare, autosomal recessive disorder caused by the mutation of the gene SLC12A3 encoding the sodium chloride cotransporter sensitive to thiazide diuretics located in the distal convoluted tubules of the kidney. Usually, the onset of the syndrome is in childhood, however the majority of cases is asymptomatic and the diagnosis is made accidentally. Few reports on GS combined with growth hormone deficiency (GHD) are available.

Case report: An 11-year-old boy was admitted to paediatric endocrinology department due to growth deceleration and deficiency (3rd percentile), Tanner stage 1, hGH<10 ng/ml. The patient was diagnosed with somatotropic hypopituitarism. Standard laboratory tests revealed hypokalaemia (2,8 mmol/L) and hypochloraemia (94 mmol/L) for the first time.

At the age of 12, he presented to the department with the further decreasing percentile position (<3rd percentile). Laboratory findings again showed hypokalaemia (2,7 mmol/L), hypochloraemia (93 mmol/L), but normal level of sodium (137 mmol/l). As a result, the medical imaging (USG and CT of abdominal cavity) was performed without findings. Plasma renin was elevated in both time points in tilt-test. Moreover, vitamin D deficiency and elevated fT4 accompanied by appropriate level of TSH were detected. On the basis of the findings, supplementation of vitamin D and potassium (0,5 mmol/kg/24h) were introduced.

Because of hypokaliemia of unknown origin the patient was admitted later on to the pediatric nephrology department. The clinical examination revealed no improvement in physical development, but no other abnormalities were found. Blood pressure was normal. The boy showed no signs of polyuria. Based on laboratory findings: persistent hypokalaemia, hypomagnesemia, hypochloremic alkalosis and hypocalciuria Gitelman syndrome was suspected, confirmed by genetic result obtained 2 months later. Potassium dose was increased (1 mmol/kg/24h) and magnesium supplementation was introduced. After throughout analysis of patient data and review of literature it was decided to start rhGH therapy.

Conclusions: Causes of short stature are not limited to somatotropic hypopituitarism. In rare cases, it may be related to tubulopathies that are seldom considered as causative, especially in poorly symptomatic cases. Abnormalities in basic laboratory results should encourage physicians to consider other diagnoses that can jeopardize the treatment success.

Choroidal rupture - a case of blunt ocular trauma caused by a champagne cork

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Introduction: Choroidal rupture is a damage to the posterior segment of the eye resulting from the rupture of Bruch's membrane along with the adjacent choroidal vessels and retinal pigment epithelium. It can be caused by a blunt eye trauma in the anteroposterior axis. As a result of the applied force, there is a compression of the eye in the equatorial plane, followed by sudden stretching. Choroidal rupture can be difficult to diagnose due to obscuration of the image by extravasated blood. We present the case of a 15-year-old patient with blunt ocular trauma, resulting in choroidal rupture due to a champagne cork hitting the right eye.

Case report: The teenage patient was admitted to the Ophthalmology Department in the University Hospital in Bydgoszcz for conservative treatment of subretinal hemorrhage in the right eye due to trauma from a champagne cork on New Year's Eve 2023. The boy was in good general condition. He complained of blurred vision and pain in the affected eye. Visual acuity in the right eye was 0.4 using Snellen chart. SOCT examination revealed damage to photoreceptors in the fovea and papillomacular bundle, as well as retinal edema and its elevation by hyperreflective fluid. Conservative treatment was initiated during hospitalization. After partial absorption of the subretinal hemorrhage, a choroidal rupture was found above the optic disc, confirmed by fluorescein angiography. Over the following weeks, complete absorption of the hemorrhage was observed, with subsequent damage to photoreceptors resulting in permanently reduced visual acuity.

Conclusions: Choroidal rupture is a rare but serious complication of blunt eye trauma. Although there is no treatment for choroidal rupture itself, immediate appropriate conservative management should be initiated to reduce the risk of associated complications and improve the patient's prognosis. Long-term observation is necessary to exclude late complications such as neovascularization at the site of injury.

Causes of spontaneous subcutaneous emphysema - a series of cases

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Tutors: Aleksandra Wojtasik-Bulanda, MD

Affiliations: Medical University of Łódź

Introduction: Subcutaneous emphysema (SE) is a presence of air in the subcutaneous tissue, which most frequently arises due to a shift of gas from pneumomediastinum or pneumothorax. Diagnosis is made based on symptoms such as edema and typical radiological image, often accompanied by coughing, dyspnea, soreness of the neck, throat and chest. Spontaneous SE occurs when the presence of gas isn't caused by traumatic or iatrogenic tears in the GI tract or airways.

Case report: We present four cases of subcutaneous emphysema - two in female patients aged 2 (Patient A) and 3 (Patient B) and two in male patients aged 13 (Patient C) and 5 (Patient D).

Patients A and B were both admitted to the clinic because of respiratory infection symptoms such as dyspnea, mild fever and coughing, and an expanding edema of the face, neck, and chest. Both tested positive for RSV. Patient A additionally tested positive for H. influenzae. In both cases, an X-ray and CT scan confirmed the diagnosis of a massive pneumomediastinum and SE which in Patient B's case spread up to her limbs. Signs of ruptures in the respiratory or GI tract were not present. Both were administered antibiotics, corticosteroids and oxygen therapy. Patient A required an overnight observation in the ICU due to worsening respiratory parameters. Patient B required surgical drainage of the emphysema due to the fast progression of the gas accumulation. Gradual improvements were observed. A check-up CT did not reveal any features of the emphysema in both cases. The patients were discharged home in good overall condition.

Patients C and D were admitted to the clinic complaining of dyspnea and chest pain with no signs of infection in overall good clinical condition. Edema of the neck and torso was present. No injuries were reported in both cases. X-ray and CT scan revealed an accumulation of gas in the subcutaneous tissue which led to diagnosing SE in both cases. Patient C didn't report any history of medical issues. Patient D reported multiple allergies and suspicion of asthma. In Patient C's case, all laboratory results were normal, while Patient D presented with eosinophilia and elevated CRP and total IgE levels. In his case, obstructive bronchitis was also diagnosed. Antibiotics and oxygen therapy were administered in both cases. Patient D additionally received a β2-mimetic, antihistamines, and inhaled corticosteroids. Check-up imaging did not reveal any signs of emphysema. Both patients were discharged home in good overall condition. In Patient D, suspicion of asthma was upheld and further care in the outpatient allergology clinic was advised.

Conclusions: Spontaneous SE is a rare complication of viral infections caused by hyperventilation and increased intraalveolar pressure, which also occur in asthma - the best-known risk factor for this condition. Young children are more likely to develop spontaneous SE, which may require surgical intervention when it can not resolve on its own.

Retrospective study of RSV infection presented by patient with hypoplastic left heart syndrome.

Katarzyna Zamarja, Karolina Lewandowska

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Tutors: Ewa Malinowska MD

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Introduction: Respiratory syncytial virus (RSV) is a contagious pathogen causing infection of respiratory system spreading through droplet transmission. Worldwide, RSV is the leading cause of bronchiolitis and pneumonia in infants and children under the age of 5 years old. Typically characterized by mild infection, but part of young patients require hospitalization due to respiratory distress. Our study is focused on RSV complications based on a case of infant diagnosed with hypoplastic left heart syndrome, which automatically falls into a high-risk group.

Case report: 7-month-old girl was admitted to the Cardiology Ward, due to decreasing saturation up to 60% measured at home. Patient was presenting the symptoms of respiratory infection, included deterioration of general condition, low-grade fever and loss of appetite. The infant was born with hypoplastic left heart syndrome, underwent the Norwood procedure and bidirectional Glenn shunt operation. In the laboratory tests conducted, moderately elevated inflammatory markers were noted, and an antigen test confirmed RSV infection. The child, in severe general condition, was initially admitted to the Cardiology Clinic but was transferred to the Intensive Care Unit due to deteriorating respiratory function. As the disease progressed, the child required intubation, and in the following days, despite the use of high-flow ventilation and comprehensive treatment, the patient's general condition rapidly worsened. The decision was made to implement Extracorporeal Membrane Oxygenation (ECMO), and the procedure was continued for the next 11 days. Following the decannulation of the ECMO system, a gradual and slow improvement in the patient's condition was observed. After 68 days of hospitalization, the girl was discharged home but requires home hospice care.

Conclusions: This case points out the seriousness of RSV infections related to patients with risk factors. RSV infections in patients with congenital heart defects can have a severe and rapid progression, significantly worsening the prognosis, especially in the cohort with functionally univentricular hearts. Prophylaxis against RSV in this patient group is of critical importance. Emphasizes how common and potentially simple to treat disease entity can be life threatening and can be found challenging for professionals.

Complicated otitis media: sigmoid sinus thrombosis and cerebellitis – a case report

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Presenting author: Katrine Kovala

Tutors: Liene Cupane (2)

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2 - Children's Clinical University Hospital, Latvia

Introduction: Otitis media (OM) is one of the most prevalent pediatric diagnosis worldwide. Over 80% of children experience acute OM once before age 3 and by age 7 over 40% have at least 6 recurrences. Complications of OM are classified as extracranial and intracranial. As the incidence of complications varies, mastoiditis is the most common extracranial complication of all cases. Even though ICCs such as meningitis, abscess and sinus thrombosis are less frequent, such complications have serious risks to overall health and neurological functions. Acute cerebellitis as a complication of OM is considered a rare inflammatory condition with a highly variable clinical course and it remains a relatively understudied aspect.

Case report: This study presents a case report of a 4-year-old girl with ICCs due to acute bilateral otitis media. Patient had a 5-day history of fever and otalgia. Patient was primarily admitted to the Department of Emergency at Regional Hospital with no specific signs of central nervous system involvement. Du to clinical suspicion CT and MRI imaging was done and diagnosis of mastoiditis, left sigmoid sinus thrombosis and cerebellitis was made. After bilateral tympanostomy was performed patient was transferred to Children's clinical university hospital for a further treatment. Patient was treated with antibacterial and anticoagulation therapy. Mastoidantrotomy was performed due to prolonged illness.

Conclusions: While OM itself is a common illness and is recognized for its potential to lead to various complications, ICCs remains a rare manifestation. Given the potential severity of sigmoid sinus thrombosis and cerebellitis and all together intracranial complications, further research is crucial for better management. This research gives a detailed report on managing complicated OM and emphasizes the importance of diagnostic imaging, close monitoring and multidisciplinary approach.

The light and dark sides of ablation

Maria Pełka, Kinga Lis

Presenting author: Maria Pełka

Tutors: Julia Kapusta, MD

Affiliations: Medical University of Łódź

Introduction: Ablation is a percutaneous, minimally invasive treatment that aims to destroy a portion of the myocardium responsible for cardiac arrhythmias. It is based on releasing energy through ablation electrodes. The procedure involves heat energy or cryoablation. Nowadays, this developing method enables treating almost every type of cardiac arrhythmias. Persistent focal atrial tachycardia is an example of arrhythmia cured with ablation.

Case report: An 8-year-old patient was admitted to the pediatric cardiology ward to undergo a planned procedure of percutaneous ablation to treat persistent focal atrial tachycardia and tachyarrhythmic cardiomyopathy. By then, the girl had been treated with propranolol. On the day of the procedure, the patient was stable and did not report any complaints. During the ablation complications occurred in the form of pericardial sac tamponade and low cardiac output syndrome after conversion to sinus rhythm, which led to cardiac arrest in PEA rhythm. CPR was performed and resulted in ROSC and stabilization of parameters. The drain was inserted into the pericardial sac. The patient in a critical state was intubated and transferred to the ICU. The girl's state has aggravated gradually. Within the department, she was provided with infusions of adrenaline and levonor due to circulatory failure associated with hypotension. The results of the ECG pointed out the sinus rhythm and lack of arrhythmia, which confirmed the effectiveness of ablation. The echocardiography confirmed left ventricular contractility and low cardiac output syndrome, thus ECMO was instituted. After nephrological consultation, hemodialysis was included due to the development of AKI - complications after cardiac arrest. During an ultrasound examination, a false aneurysm of the right femoral artery was noticed as a complication after hemodialysis and ECMO. It was treated surgically after a few days without any complications. After one and a half months the girl in severe, but stable condition was transferred to pediatric cardiology. Eventually, the patient felt better. She did not present any signs of heart failure, which resulted in her discharge from the hospital after a month. Recommendations concerning medicinal treatment and follow-up appointments were given to the patient's family.

Conclusions: The treatment of cardiac arrhythmias based on ablation is one of the most effective methods. It usually enables permanent cure by destroying the ectopic source of arrhythmia or accessory pathways. It is an effective and safe treatment, but as well as other different invasive medical procedures it has its repercussions.

CASE STUDY: SURGERY I

11th of May 2024

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Coordinators:

Filip Grzybowski

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…●●●…

Jury:

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Endoleak type 1 as a complication following the implantation of an aorto-biiliac stent graft in an 84-year-old patient

Julia Modzelewska

Presenting author: Julia Modzelewska

Tutors: Robert Modzelewski

Affiliations: Collegium Medicum, University of Warmia and Mazury

Introduction: An 84-year-old female patient was admitted to the emergency department due to progressively worsening abdominal pain over the past few days. In the scale from 1 to 10, the patient stated that the pain was about 8, worse during physical activities and didn't ease after taking painkillers.

Case report: Patient's medical history contains arterial hypertension, coronary heart disease and hypothyroidism. She is allergic to penicillins. In 2017, the patient underwent a surgery for the implantation of an aorto-biiliac stent graft due to an abdominal aortic aneurysm, which measured 8 cm in size. Additionally, she also underwent endovascular treatment for a leak from the inferior mesenteric artery in 2019. The patient was treated for UTI for a week, however, without visible improvement.

In the CT scan performed after admission, an abdominal aortic aneurysm with a diameter of approximately 15 cm was visualized, along with evident leakage into the aneurysm sac, classified as a type I endoleak. As a result, the surgical team performed a laparotomy during which the neck of the aneurysm was encircled. Following the procedure, the patient's overall condition was good, vital signs were within normal limits. Due to the existing anemia, 2 units of packed red blood cells were transfused without complications. After 10 days of careful observation, the patient was discharged.

Conclusions: Monitoring patients after aorto-biiliac stent graft implantation for the occurrence of potential complications such as endoleak type 1 is crucial. Regular surveillance imaging, typically with CT angiography or ultrasound, is essential for detecting them early on. Type 1 endoleak is often considered the most serious type of endoleak as it can lead to continued expansion of the aneurysm sac, increasing the risk of rupture, which may require immediate surgical intervention.

Chronic Patellar Ligament Rupture Reconstruction Using Contralateral Bone-Tendon-Bone Autograft

Lucija Dobrić, Hana Ćurtović

Presenting author: Lucija Dobrić

Tutors: Professor Mislav Jelić, MD, PhD

Affiliations: School of Medicine, University of Zagreb

Introduction: Chronic patellar tendon rupture is a rare but debilitating injury of the extensor mechanism, characterized by a partial or complete disruption of the patellar ligament, most often resulting from trauma. This condition poses significant challenges in clinical management and can lead to substantial functional impairment if left untreated. Our aim was to showcase the successful surgical reconstruction of chronic patellar tendon rupture using a contralateral bone-tendon-bone (BTB) autograft. This technique, aimed at restoring anatomical integrity and function of the extensor mechanism, represents a promising approach in the management of this challenging condition.

Case report: A 67-year-old female presented with complaints of persistent knee pain and difficulty in performing daily activities for the past 13 months. The patient reported a history of a traumatic fall, followed by swelling and difficulty in weight bearing of her left knee. Clinical evaluation revealed a palpable tendon defect below the inferior pole of the patella, suggestive of chronic patellar tendon rupture. Radiographic imaging confirmed the diagnosis. Given the chronic nature of the injury, surgical reconstruction was deemed necessary to restore function and alleviate symptoms. The first step involved harvesting the BTB autograft from the contralateral knee extracting the middle thirds of the corticocancellous part of the patella, patellar ligament and the tibial tuberosity. BTB segment of the contralateral knee was dissected, preserving the integrity of the graft, but also leaving sufficient extensor mechanism volume at the harvesting site. A separate incision was made over the affected knee to expose the site of the patellar tendon rupture, with subsequent release of adhesions between the patella and femoral trochlea, enabling adequate patellar mobilization. With both donor and recipient sites prepared, focus was shifted to reconstructing the patellar tendon. A nesting site for the tibial tuberosity, approximately 30-mm-long and 10-mm-wide, was created, while a similar nesting site at the patella was fashioned in its central portion. The BTB autograft was properly sized ensuring a press fit and optimal stability. Once the autograft was securely positioned, it was fixed in place using screws and a cerclage wire ensuring adequate compression and integrity.

Conclusions: Surgical reconstruction of chronic patellar tendon rupture using a contralateral BTB autograft represents a technically demanding yet effective therapeutic option. By restoring anatomical integrity and function of the extensor mechanism, this procedure offers promising results. Continued research and refinement of surgical techniques are essential to further improve long-term functional outcomes for patients with patellar ligament injuries.

Beyond flaps: Dermal matrix substitutes in reconstruction of head and neck defects

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Presenting author: Petar Brlas

Tutors: associate professor Emil Dediol, MD, PhD (7)

Affiliations: 1, 2, 3, 4, 5, 6 - School of Medicine, University of Zagreb, Zagreb, Croatia;
7 - Department of Maxillofacial Surgery at the University Hospital Dubrava, Zagreb

Introduction: When skin cancers are locally advanced, especially on the scalp, they often require wide excision with resection of the periosteum, which leaves bare calvarial bone. Due to the need for total tumor excision, the sheer size of the tumor can represent a major problem in the reconstruction of the resulting defect. Periosteum resection precludes the use of skin graft and usually requires complex free flap reconstruction. We present a case of reconstruction of scalp defect with exposed bone with a dermal-collagen-elastin-matrix (MatriDerm®) in combination with skin graft, that had an adequate long-term postoperative result.

Case report: A 70-year-old male patient was referred to our department for treatment of a recurrent basal cell skin cancer in the left temporal region. In the left frontotemporal region, a 2x2 cm ulceration with skin induration was evident. Preoperative computerized tomography revealed wide subcutaneous tissue infiltration up to the temporal bone. Due to the multiple cardiovascular comorbidities, ASA IV score, advanced atherosclerosis of the neck blood vessels and leukemia, free flap reconstruction was considered unsuitable. Under generalized anesthesia, the tumor was widely excised and in the depth all the way up to the temporal and zygomatic bone. Underlying bone was abraded with a burr until small bleeding from the bone was obtained. The resulting tissue defect was covered with a dermal-collagen-elastin-matrix and a partial-thickness skin graft. After removing the fixation, the skin graft was vital and left satisfactory long term esthetic result.

Conclusions: Our case presents a successful treatment modality for elderly, comorbid patients without the need for more complex, time-consuming surgery. With dermal matrix substitutes, defects with bare exposed bone can be adequately reconstructed in combination with skin grafts, leaving a pleasing esthetic result.

Bowel perforation due to the ingestion of dental impression material

Sandra Ćulap, Petra Knežević, Nives Bokulić, Ana-Marija Ćulap, MD

Presenting author: Sandra Ćulap

Tutors: Luka Filipović-Grčić,MD, Maja Prutki, MD, Full Proffesor

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Introduction: Accidental foreign body ingestion is very common in everyday medical and radiological practice. The most commonly ingested foreign bodies are coins, bones and dentures. On very rare occasions people may swallow dental impression material which can lead to small bowel obstruction and perforation, requiring urgent surgery. This case report demonstrates important imaging features of foreign body ingestion.

Case report: We present a 57-year-old patient admitted to the emergency department with a clinical picture of an acute abdomen. The patient complained about the intense right-sided abdominal pain radiating to the back and nausea without vomiting. The patient also reported diminished appetite and normal stool, the last one recorded yesterday. During the clinical examination, the patient was hypertensive, tachycardic and febrile (38.8°C). Abdominal examination revealed a positive Murphy's sign and lumbal succussion. Laboratory findings showed elevated CRP, suggesting inflammation. Medical history was inconspicuous, with appendectomy and cesarean section in youth. Ultrasound of the biliary tract showed an elongated gallbladder (13 cm), with thin layers of free fluid around the corpus and fundus. This far, cholecystitis was considered the most probable diagnosis and a CT scan was ordered to confirm it and exclude any other possible cause of the raised CRP level. Abdominal CT revealed an irregular, 10 cm long, hyperdense, band-like structure that connected the inferior flexure of the duodenum to the ascending colon, forming a fistula. The fat stranding was detected around the ascending colon, representing inflammatory changes. Small air bubbles were also noted around the ascending colon, suggestive of perforation. There were no signs of cholecystitis. The surgical procedure revealed free fluid in the upper and lower right quadrants, perforation of the ascending colon with a foreign body and a duodenocolic fistula. The fistula was resected, followed by right hemicolectomy and the formation of an ileocecal anastomosis. Surgery determined that the perforation of the bowel was caused by dental impression material which the patient subsequently remembered to have swallowed during a dentist appointment 6 weeks ago. The postoperative course was uneventful and the patient was discharged in good general condition.

Conclusions: Ingested dental impression material hardens over time and can lead to serious medical conditions, such as obstruction and perforation of the bowel. A detailed medical history and appropriate imaging are indispensable elements for the detection and subsequent adequate treatment of these conditions.

Advancing Cranioplasty: Selective Laser Melting and 3D Printing's Role in Treating Subdural Empyema

Alicja Witkowska, Klaudia Korona, Weronika Lusa

Presenting author: Alicja Witkowska

Tutors: Professor Maciej Radek, MD, PhD, Maciej Błaszczyk, MD, PhD

Affiliations: Department of Neurosurgery, Spine and Peripheral Nerves Surgery, Medical University of Lodz

Introduction: Subdural empyema (SDE) is a critical condition marked by infection between the dura and arachnoid mater, often escalating to increased intracranial pressure (ICP). Addressing ICP, decompressive craniectomy (DC) poses reconstruction challenges, effectively met by cranioplasty (CP) that not only repairs cranial defects but also boosts patient safety. Advances in 3D printing, especially Selective Laser Melting (SLM), have transformed CP, enabling customized implants that optimize fit, shorten surgical duration, and improve patient outcomes.

Case report: A 28-year-old male with chronic sinusitis presented with seizures and worsening neurological symptoms. A Computer Tomography (CT) scan revealed frontal sinusitis and subdural mass leasion over right hemisphere with eadema and brain shift. Patient was scheduled for emergency DC revealing acute SDE. Two weeks on, surgery was conducted to clear the paransal sinuses of infected discharge. Post-surgery, the patient's condition worsened, as revealed by a CT scan showing new brain swelling and lesions in the forehead, supraorbital, suprazygomatic, and subtemporal regions, leading to scheduling another surgery to drain these lesions. Following the 8th week period antibiticotheraphy the patient's health improved, marked by a discharge with a slight atony in left limbs. A year later, CP with a titanium plate, crafted using SLM and 3D printing from CT data, restored his skull's integrity, significantly enhancing left hand strength. Titanium was material of choice because of the low infection rates and good cosmetic results.

Conclusions: CP plays a vital role in restoring skull integrity post-surgery, facing challenges that titanium implants, customized through 3D printing and SLM from patient CT scans, adeptly overcome. These implants, notable for their strength and biocompatibility, not only ensure robust cranial protection but also significantly bolster neurological recovery and patient outcomes. This advancement underscores the importance of timely intervention in SDE management and highlights the transformative impact of cutting-edge technologies on neurosurgical precision and effectiveness.

Case Report Of Multiple Supernumerary Teeth in Patient with Ehlers-Danlos Syndrome

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Tutors: Dr hab. n. med. Błochowiak Katarzyna

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Introduction: Supernumerary teeth are a rare odontogenic anomaly characterized by the existence of an excessive number of teeth in relation to the normal dental formula. Prior studies have shown supernumerary dentition to be correlated with congenital genetic disorders such as cleidocranial dysplasia, cleft lip and palate, Gardner's syndrome, and Fabry-Anderson's syndrome. One of the more atypical conditions reported with increased risk of supernumerary teeth is Ehlers-Danlos syndrome. Ehlers-Danlos syndrome is a group of inherited disorders affecting connective tissue; primarily skin, joints, and walls of blood vessels as a result of a disturbance in collagen synthesis. Some of the most common symptoms include excessive skin elasticity, hypermobility of joints, easy bruising, muscle and joint pain. Generally, patients with Ehlers-Danlos syndrome are prone to dental complications such as gingivitis and periodontitis, as well as tooth anomalies like multiple supernumerary teeth. The presence of supernumerary teeth may lead to crowding, retained teeth, displacements and other anomalies.

Case report: This study presents an 18-year-old patient with Ehlers-Danlos syndrome who has three asymptomatic supernumerary distomolars. Diagnosis of Ehlers-Danlos syndrome was confirmed based on clinical symptoms by a specialist, in addition to molecular testing and genetic sequencing, to which the specific results are pending. Patient presents with symptoms typical of Ehlers-Danlos syndrome; increased skin elasticity especially on the face, neck and upper limbs, hypermobility of joints and complaints of periodic muscle and joint pain. Patient's dental history consists of a narrow maxillary arch, distocclusion, excessive overbite and dental crowding. Distomolars and their development were confirmed by four consecutive orthopantomograms and dental examinations. The patient was initially treated with a Schwarz appliance from age seven to twelve years old, followed by fixed appliances for a 34-month period. Orthodontic treatment revealed the presence of three asymptomatic supernumerary distomolars; two bilateral fourth molars in the maxilla and one unilateral mandibular fourth molar on the right side. At the age of 18 years old tooth 28 was extracted due to an incorrect eruption. To maintain the effects of orthodontic treatment, extraction of the asymptomatic supernumerary teeth is recommended.

Conclusions: The occurrence of multiple supernumerary teeth could be a common clinical manifestation of genetically determined syndromes including Ehlers-Danlos syndrome. The dentist is an important member of the multidisciplinary team in Ehlers-Danlos syndrome. The patients with Ehlers-Danlos syndrome require constant and thorough dental monitoring.

Embolization of splenic artery aneurysm in a 28-year-old patient prior to planned pregnancy

Dawid Staniak, Małgorzata Zgodzińska

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Tutors: Mateusz Cheda MD, Krzysztof Pyra, M.D., PhD

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Introduction: Splenic artery aneurysms (SAAs) are rare but potentially dangerous pathologies that can arise due to trauma, inflammation, or congenital vascular defects. SAAs are often asymptomatic, with only discomfort presenting as upper abdominal pain, and they are incidentally detected during imaging studies. Splenic artery aneurysms account for approximately 60% of all intra-abdominal aneurysms. Increased prevalence of SAAs is observed among pregnant women, which is attributed to elevated levels of progesterone and estrogen leading to arterial wall degeneration. Although rupture of a splenic artery aneurysm is a rare event, it carries high mortality rates for both the mother and fetus due to hypotensive shock, most commonly occurring in the third trimester.

Case report: A 28 year old patient with incidentally diagnosed asymptomatic splenic artery aneurysm located at the splenic hilum. On follow-up ultrasound examinations performed every 6 months, the aneurysm image remained stable. Prior to planned pregnancy, the patient was qualified for endovascular treatment via embolization. The procedure was technically successful, achieving effective embolization of the aneurysm. Subsequent ultrasound examinations during pregnancy and after delivery revealed no changes associated with the splenic arteries.

Conclusions: Follow up ultrasound examinations demonstrated that the performed procedure was effective, indicating that embolization is an effective method for treating splenic artery aneurysms. It should be particularly considered and performed in women before planned pregnancy to prevent complications following aneurysm rupture.

Juvenile xanthogranuloma of the sacrum in a 20-year-old patient

Dominik Dulak, Karolina Sujka, Weronika Lusa

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Tutors: Dr n.med. Maciej Radek, Dr n.med. Marek Grochal

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Introduction: Histiocytosis is a rare, heterogenous group of disorders, characterized by infiltration possibility of almost any organ with a predilection to skin. Diagnosis of histiocytosis may cause difficulties because of variability in its clinical presentation. Due to the proliferation of the phagocytic cells, the histiocytosis could be ranked as neoplasm. It mainly occurs in the infancy and early childhood. According to the WHO classification of histiocytosis disorders distinguished among others are Langerhans cell histiocytosis (LCH), Juvenile Xanthogranuloma (JXG), or Erdheim-Chester Disease (ECD).

Case report: The 20-year-old woman was admitted to the Department of Neurosurgery with the diagnosis of a pelvis tumor that arose from sacral bone bodies. The lesion was detected during gynecological diagnostics. It was decided to perform a surgical biopsy by the left hemilaminectomy on the S2 level for getting material to histopathological examination from the tumor. The patient was discharged from the hospital without any neurological deterioration. The initial histopathological examination pointed to the giant-cell tumor. The patient was qualified for tumor resection via laminectomy access on S1-S3 levels. During the surgery, a greyish-yellow mass which compressed and surrounded nerve roots bilaterally, was exposed. The tumor has been resected with preservation of all neural structures. The tissue was subjected again to histological evaluation which revealed histiocytosis of the sacrum with suspicion of two subtypes – JXG and ECD. The genetic examination excluded the presence of the typical mutation to ECD and allowed for confirmation of the final diagnosis – Juvenile xanthogranuloma. The patient was discharged from the hospital in overall good condition. Currently, she is qualified for further treatment considering systemic therapy.

Conclusions: The epidemiology of sacral tumors indicates that chondroma (malignant neoplasm) and giant-cell tumor (benign neoplasm) are much more frequent lesions in this localization than histiocytosis. Moreover, unspecific clinical manifestations and symptoms may make it difficult to confirm the diagnosis of the proper histiocytosis subtype. The prognosis and clinical process of juvenile xanthogranuloma are mainly well. It is necessary to differentiate JXG from LCH because LCH is more aggressive and has a worse course. Adiuvant therapy; chemo- and radiotherapy should be administered according to the tumor type, extent of resection and patient's sex and age.

Endovascular treatment as a method of ischaemic stroke prevention - carotid artery stenting

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Introduction: Atherosclerosis is the most common reason for arterial obstruction and stenosis. Stenosis involving carotid arteries may lead to ischaemic stroke in 20% of patients. In order to reduce the risk of ischaemic stroke patients should undergo endovascular treatment.

Case report: A 68-year-old male patient suffering from hypertension and diabetes came to the ER with symptoms of TIA, which occured for the third time in the past 12 months. Doppler Ultrasound stated obstruction of the left internal carotid artery and significant stenosis of the right internal carotid artery. A CT scan of the head revealed quite multiple, diffuse ischaemic lesions in both cerebral hemispheres with a clear predominance of the left side. Patient was qualified for endovascular treatment. The procedure of stent implantation resulted in technical success and restoration of the lumen of the narrowed right internal carotid artery. The follow-up ultrasound examination performed 6 months, 12 months and 24 monhts after the procedure confirmed correct patency of the stent.

Conclusions: Carotid artery stenting is an effective and safe method of treating stenosis. When performed correctly, the risk of ischaemic stroke in patients with carotid artery stenosis might be significantly reduced.

Management of Chondroblastoma in the Knee Joint: A Case Report of Fresh Osteochondral Allograft Transplantation

Hana Ćurtović, Lucija Dobrić

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Tutors: Professor Mislav Jelić, MD, PhD

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Introduction: Chondroblastoma, a benign bone tumor predominantly affecting adolescents and young adults, poses diagnostic and therapeutic challenges for clinicians. Surgical resection is the mainstay of treatment, but sometimes, the defect is too large for complete joint rehabilitation. We aimed to showcase the patient's initial presentation, subsequent surgical intervention and results following fresh osteochondral allograft (OCA) transplantation.

Case report: A 15-year-old male presented with a history of persistent right knee pain over the past several months. The pain gradually worsened and was localized to the medial aspect of the knee joint.

There was no history of trauma, but the pain was aggravated by weightbearing activities. Physical examination revealed swelling over the medial femoral condyle, with limited range of motion due to pain. X-ray of the right knee revealed a well-defined lytic lesion in the medial condyle of the femur, suggestive of a bone tumor. Magnetic resonance imaging (MRI) showed a focal, low-signal lesion within the subarticular bone of the medial femoral condyle, consistent with chondroblastoma. The patient underwent surgical resection of the tumor as the initial treatment approach with pathohistological confirmation of chondroblastoma. However, despite the tumor removal, the patient experienced persistent pain and movement disability. Given the extent of the osteochondral defect and the unsatisfactory initial management, fresh OCA transplantation was deemed necessary to address the residual symptoms and restore joint function. The patient underwent fresh OCA transplantation 10 days post harvesting. Preoperative measurements were taken and the graft itself was cut intraoperatively to ensure precise matching of the allograft donor and recipient. The procedure involved additional removal of the affected area followed by transplantation of the fresh osteochondral allograft to restore the integrity of the medial femoral condyle.

Conclusions: Postoperatively, the patient demonstrated significant improvement in knee pain and function compared to preoperative status. Radiographic evaluation showed integration of the allograft with evidence of bone trabeculae crossing the interface, and the patient reported satisfaction with the outcome of the surgery, expressing relief from symptoms. This case underscores the efficacy of fresh osteochondral allograft transplantation as a promising surgical technique, particularly in cases with extensive osteochondral involvement. Further studies and long-term follow-up are warranted to validate the durability and long-term outcomes of this approach in the management of chondroblastoma.

Case report: A giant abdominal mass in a 74-year-old female with elevated Ca-125 level

Ieva Evelīna Štolcere

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Tutors: M.D. Evita Biseniece

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Introduction: Uterine leiomyomas are benign growths of the smooth muscle of the uterus. It is a common condition in the female population with the highest incidence in the age group of 40 to 60 years and affects one in three women of this population. Nevertheless giant uterine leiomyomas are very rare neoplasms. The size of leiomyomas usually ranges from microscopic to tens of centimetres. CA-125 is a biomarker used for ovarian cancer detection and for monitoring respond to treatment, the cut-off value indicating potential malignancy being 35 U/mL. However, it has limited specificity and can be elevated in other types of cancer and in conditions such as endometriosis, pregnancy, menstruation, and uterine leiomyomas.

Case report: A 74-year-old female was admitted to the hospital with shortness of breath and an increase in the size of the abdomen during the last 17 years. Blood tests showed severe anaemia- haemoglobin being 37g/L therefore red blood cell transfusion was required. CT thoracis and abdomen showed heterogenous septate mass seemingly coming from the right ovary and measuring 25x32x36 cm. Due to its size it was compressing abdominal aorta and vena cava inferior. CA-125 was 176,2 U/mL and ovarian cancer was suspected. The patient was operated for exploratory laparotomy followed by total hysterectomy and bilateral salpingo-oopherectomy. During surgery 8-to-10-week size, cyanotic uterine torsion was visualised. Moreover, the mass that seemed to be emerging from the right ovary turned out to be uterine origin. Right uterine appendages were also in torsion, left appendages- without pathology. During surgery umbilical hernia was also found and repaired. Surgery went without complications. There were some challenges during postoperative period mostly related to impaired wound healing post-surgery. Histology later revealed no malignancy and conclusion was torsion of uterus (including leiomyoma) and right appendages along with necrosis in all above-mentioned structures. Patient was discharged one month later in satisfactory condition.

Conclusions: Giant uterine leiomyomas are uncommon benign neoplasms and can present with variable clinical manifestations. The uterine leiomyomas have remarkable potential for growth due to the relatively large volume of the abdominal cavity. Since they can take up majority of the abdominal cavity correct diagnosis may be challenging. It is also important to mention that even considerably elevated CA-125 is not always a sign of malignancy.

Prevention of Revision Amputation Surgery with the Use of Copper Dressings - a paradigm change - Case Report

Ithamar Cheyne, Eyal A. Melamed MD, Jihad Dabbah MD

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Introduction: Lower limb amputations carry high rates of surgical wound complications, including infection, tissue necrosis, and wound dehiscence, which often lead to repeated surgery(ies), lengthy or repeated hospitalization, and high costs to the health care system. Copper oxide dressings (COD) have broad-spectrum microbicidal effects and, in addition, induce angiogenesis, granulation tissue formation, and epithelization, as well as lysis of necrotic tissue due to their effect on metalloproteinases. We manage to take advantage of the combined effects of COD to heal amputation stump necrotic wounds of diabetic patients in an outpatient setting in cases hitherto needed surgeries. We describe the first six cases.

Case report: Six patients with wound complications after a major limb amputation (5 transtibial). Three patients were seen during hospitalization, and three in the clinic at a follow-up visit. The complication etiology was pressure necrosis, stump ischemia, tension of the sutures, and obliteration of a femoral artery bypass graft in a trans-femoral amputee. Wound measurements were done by an artificial intelligence program (Tissue Analytics). The average wound size was 19.6 cm2 (SD = 10.5cm2).

Copper dressings were used through all phases of wound healing and were changed once or twice weekly in an outpatient setting. Strips of bilayer copper dressing were applied to the deep parts and tunnels in the wounds to achieve antibacterial and necrolysis effects. An adhesive copper dressing was laid on top to reduce tension and width and for convenience (allow bathing, etc.). Antibiotics were not prescribed as a rule (only one patient received oral antibiotics for two weeks). Slow-release locally applied Tobramycin beads were used occasionally. All the stump wounds healed uneventfully with an average of 84.6 days (SD = 25.4 days).

Conclusions: The combination of the necrolytic effect of the COD with angiogenesis, granulation tissue formation, and epithelization allows us to perform a paradigm shift towards a non-surgical treatment in many amputation stump failures. The demonstrated treatment is in line with the continuum of care concept of copper dressing through all stages of wound healing. We assess that saving to the health care system is at least 90% more than the hitherto surgical approach. The suggested low-cost treatment is convenient and safe.

Case Presentation: Prevalence of Miescher syndrome (isolated form of Melkersson-Rosenthal syndrome)

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Presenting author: Jakub Pressello

Tutors: Dr. Katarzyna Błochowiak

Affiliations: Poznań University of Medical Science

Introduction: Miescher's cheilitis, also referred to as granulomatous cheilitis (GC), is a rare, chronic inflammatory condition affecting the lips. Initially identified in 1945 by Alfred Guido Miescher, it manifests as swelling, firmness, and occasional discoloration in one or both lips. While the precise cause of Miescher's cheilitis remains elusive, current understanding is attributing it to an abnormal immune response.

Case report: We hereby report a case of a 58-year-old male patient referred from the dermatology department who presented with a primary complaint of upper and lower lip swelling accompanied by a firm nasolabial fold lasting for one month. The patient was suspected to suffer from Melkersson-Rosenthal syndrome or indurated erythema of the face. The initial episode of swelling lasted approximately one week before subsiding. After 2–3 weeks, another episode of swelling occurred and persisted continuously until hospitalization. The patient reported feeling as if the swelling was increasing in size; however, he did not report any of the following symptoms usually associated with this disorder: shortness of breath, throat obstruction, or hives associated with the swelling. No prior lip biopsy had been performed, and the family history of Melkersson-Rosenthal syndrome or angioedema was negative. The patient had not taken any medication to manage the swelling and refused to undergo any surgeries in the affected region. During hospitalization, laboratory tests were done, a lip sample was obtained for histopathological examination, specialist consultations were sought, and imaging tests were performed. Treatment included triamcinolone steroid injections with plain lidocaine at verily doses, resulting in lesion reduction with only minor residual swelling remaining on the left side.

Conclusions: Miescher’s cheilitis typically lacks a genetic association, and its etiology remains uncertain. Nonetheless, the primary symptomatology of swelling can be decreased through the administration of a specific corticosteroid treatment adjusted to individual patient requirements.

The Hidden Dangers of Wheelbarrows: A Multi-fragmentary Zygomatic Fracture Case Study

Joseph Koch BSc, Olesya Marushko HBSc, Patryk Kowal

Presenting author: Joseph Koch BSc

Tutors: Aleksy Nowak MD, Łukasz Słowik DDS , Kryzysztof Osmola DDS, MD, PhD

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Introduction: Multi-fragmentary zygomatic bone fracture is a rare trauma manifestation frequently correlated with facial deformity and functional deficits. Utmost precision in surgical modality is warranted for such fractures, particularly in patients with concurrent medical conditions, as observed in this case.

Case report: A patient aged 54 with controlled Type 2 diabetes presented to the maxillofacial surgery department from tertiary hospital with a multi-fragmentary Henderson class 7 zygomatic bone fracture following a fall into a wheelbarrow. Although there was no loss of consciousness or eye injury, the patient exhibited cheek edema, impaired function of the temporal branch of the facial nerve, and reduced sensation in the V2 branch on the right side. CT scans confirmed multi-fragmentary zygomatic bone fracture and fractures of the zygomatic arch and the anterior, superior (orbital floor), and lateral walls of the maxillary sinus. Due to the orbital wall fracture, consultation with an ophthalmologist was sought at the tertiary hospital, revealing no eyeball-related injuries or double vision. Surgical intervention at the maxillofacial ward, which included meticulous debridement, removal of foreign bodies, and osteosynthesis using eight plates and 36 screws, was successfully performed. The old wound was utilized as the access site to the fracture to minimize new scar formation. Postoperative recovery was favorable, resulting in improved facial symmetry and ocular function, although minor complications with eyelid closure persisted. Subsequent CT scans confirmed optimal bone positioning. The patient was discharged two days post-operation with instructions to follow a soft diet and to avoid blowing through the nose. At the three-month follow-up appointment, the patient expressed satisfaction with facial symmetry, reported no double vision, and noted significant improvement in right eye closure since the surgery.

Conclusions: A multidisciplinary approach to a diabetic patient's complex zygomatic fracture due to high-force trauma led to a successful outcome without the need for additional corrective surgery. The risk associated with foreign bodies, such as wood fragments left behind in a patient with type 2 diabetes, is high and can deter wound healing and lead to abscess formation. The case highlights the importance of individualized treatment plans and the potential for favorable outcomes despite comorbidities and postoperative complications such as minor eyelid closure issues.

Multidisciplinary treatment of severe Graves' orbitopathy

Aleksandra Nowak, Gabriela Luba

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Tutors: Katarzyna Pelińska, MD

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Introduction: Graves' orbitopathy is a chronic autoimmune disease most often connected with hyperthyroidism, in 30% caused by Graves' disease. The key role in pathogenesis is played by thyreotropin receptors and thyroid stimulating antibodies which are responsible for most ocular changes and lead to immunological inflammation. The disease affects the ocular connective and fat tissues as well as extraocular muscles leading to oedema and exophthalmos. Furthermore, depending on its severity, the disease may be even sight-threatening due to compressive optic neuropathy (CON) and keratitis. The main goal of treatment is to restore the patient to an euthyroid state and minimize the extrathyroidal manifestations, mainly ophthalmopathy. We present a case study of severe Graves' orbitopathy and describe all surgical procedures which were performed.

Case report: A 35-year-old female patient presented to our Clinical Opthalmology Department with double vision, exophthalmos, retraction and oedema of the upper left eyelid. The patient's medical history revealed that she was diagnosed with Graves' disease and orbitopathy 7 years earlier. She underwent thyroidectomy followed by oral and intraorbital injections of steroids. As the symptoms recurred, the patient underwent osseous and adipose decompression of both orbits followed by binocular strabismus surgical treatment. Three years after the surgery the patient presented to our department with a described complaint resulting from soft-tissue inflammation of the left orbit and secondary glaucoma with CON in the left eye. A third orbital decompression with osteotomy and stabilization using microplates was performed. After a month, diplopia and elevation deficit in both eyes occurred. The patient underwent a strabismus eye examination and was prescribed prism correction. Due to discomfort in the left eye and recurrence of the symptoms, the patient underwent a fourth orbital decompression on the left side.

Conclusions: This case aims to present a severe form of Graves' disease and possible treatment methods. One of the most debilitating component of this disease is ophthalmopathy, which can be extremely distressing for the patient. Multidisciplinary cooperation between ophthalmologist, endocrinologist, surgeon and psychologist is required to achieve satisfying results.

Referring to the European Group of Graves' Orbitopathy guidelines, standard management options at the prime stage include anti-inflammatory and immunosuppressive therapy. Other methods such as radiotherapy of an ocular orbit and surgical treatment are also possible, provided the disease has entered the phase of fibrosis. The proper order of surgical procedures should consist of optical decompression followed by strabismus surgery and blepharoplasty, if necessary. Our patient current clinical state requires further medical observation and if euthyreosis is maintained, she will be qualified for the strabismus surgical correction.

Imaging diagnostics can end a person's long-standing problem – a case report of chronic involuntary miction

Aleksandra Skórka

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Tutors: PhD Bartosz Kotkowicz, MD

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Introduction: Duplication of the renal pelvis and calyceal system is a congenital anomaly that involves the presence of an additional kidney, pelvis, and ureter. It occurs in 0.7% of the population. Although it is considered an anatomical variant, it may be complicated by vesicoureteral reflux, hydronephrosis, or dysplasia of the upper tract.

Case report: A 15-year-old girl was admitted to the pediatric surgery department for the diagnostics of involuntary, constant wetting, which has been occurring since birth and requires the continuous use of sanitary pads or diapers. She had previously been hospitalized at the Child Health Center, where a series of examinations did not lead to a diagnosis. Upon admission, she was in good general condition. A magnetic resonance imaging of the urinary system was performed: left kidney: the upper pole was irregular, on its outline one of the lobes better delineates/becomes rounded with a size of about 2.5x1.5cm (cor), with a small rounded fluid space that may correspond to a deformed calyx - the image of upper pole dysplasia of the left kidney. From the above-mentioned altered part of the organ, an additional ureter emerges, expanded in the upper part (near the kidney) to about 8 mm in diameter and about 4 cm in length, narrowing in the further course. Based on the clinical picture and imaging studies, a duplex of collecting system of the left kidney was diagnosed, and the patient was qualified for surgical treatment.

Conclusions: In cases of involuntary urination in children, it is very important to collect a detailed history and perform imaging studies of the upper part of the urinary system, because anomalies such as the duplex of collecting system may manifest as persistent, continuous wetting.

CASE STUDY: SURGERY II

11th of May 2024

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Coordinators:

Joanna Kempa

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Jury:

Prof. Anna Kasielska-Trojan

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Hungry bone syndrome - navigating the complications of parathyroidectomy in a dialyzed patient

Michał Motyl, Julia Parkolap, Patryk Adamczyk, Kinga Katańska

Presenting author: Michał Motyl

Tutors: dr n. med. Agnieszka Makówka

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Introduction: Hungry Bone Syndrome (HBS) is a common complication of parathyroidectomy and thyroidectomy, especially in patients diagnosed with hyperparathyroidism. It is usually defined as hypocalcemia and hypophosphatemia lasting for more than four days after the surgery, which is accompanied by increased calcium uptake by the bones and reduced calcium absorption in the renal tubules. HBS presents a clinical challenge due to its potential for severe and prolonged electrolyte disturbances, leading to significant morbidity if it is not promptly recognized and treated.

Case report: A 39-year-old man was admitted to the General Surgery Department with a longstanding hyperparathyroidism secondary to chronic kidney disease (CKD) and stage IV kidney failure. He undergoes regular peritoneal dialysis sessions. The patient presented with a parathormone (PTH) concentration of 223.2 mmol/l and a total calcium concentration of 2.59 mmol/l. Ultrasonography revealed a focal lesion in the projection of the right lobe of the thyroid gland. Histopathological examination identified an adenoma of the right lower parathyroid gland, and the patient was qualified for a subtotal parathyroidectomy. Intraoperatively, a 3 cm tumor was visualized and the entire gland was removed along with a contralateral lower gland and one upper parathyroid gland. In the first 30 minutes following the procedure, PTH concentration decreased significantly, thus fulfilling the Miami criteria. However, the patient developed hypocalcemia and hypophosphatemia, with a total calcium concentration decreasing down to 1.58 mmol/l five days after the surgical intervention. Additionally, inflammatory parameters began to increase. Oral calcium and calcitriol supplementation was initiated, and metronidazole was administered prophylactically. Over the course of several weeks, calcium and phosphate levels normalized.

Conclusions: Due to early detection of hypercalcemia and prophylaxis in patients with primary and secondary hyperparathyroidism, HBS is becoming increasingly rare. Nevertheless, in cases of tertiary hyperparathyroidism caused by chronic kidney failure, the prevalence of HBS remains high. The use of standardized prognostic factors prior to parathyroidectomy increases the likelihood of predicting HBS, allowing for the implementation of preventive measures such as bisphosphonates and calcitriol, as well as prompt postoperative treatment.

Investigating Mandibular Fracture Nonunion – A Unique Case Report

Author and co-authors: Olena Marushko RDH, Olesya Marushko HBSc; Aya Kraiz

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Introduction: Nonunion of a mandibular fracture followed by further resorption of bone is a rare postoperative complication that may cause significant functional and aesthetic impairments. Timely recognition and appropriate management are crucial to restore normal jaw function and prevent long-term problems.

Case report: This case report details the admission of a 32-year-old male with malocclusion of the mandible to the maxillofacial surgery ward. Patient was diagnosed with a mandibular fracture six years ago and treated with maxillomandibular fixation. Two years after diagnosis, the patient underwent an open reduction and internal fixation (ORIF) with miniplates. Additional miniplates were purchased by the patient. Four years after ORIF, the patient was again admitted; a physical examination revealed symmetrical facial features, and no lymph node enlargement. However, malocclusion and abnormal sensation in the vicinity of V3 on the patient's left side were noted. OPG and CT scans confirmed nonunion in the left angle of the mandibular fracture. Consequently, the patient was hospitalized and scheduled for surgery. Submandibular access was utilized to remove the mini plates; the necrotic and inflamed bone was cut, and healthy bone ends connected, achieving correct occlusion. A single load-bearing plate was then fixed. Subsequent OPG examination revealed the apex of the second premolar, indicating the need for a second surgery. Following the second surgery, the patient was discharged in good condition, with prescribed antibiotic prophylaxis and a soft diet for six weeks. During a two-month post-surgery follow-up appointment, the patient reported normal occlusion, no pain, and abnormal sensations, which persisted in the area of V3 on the left side. Control OPG indicated a stable connection of bone fragments. Currently, the patient is considering reconstructive surgery.

Conclusions: Nonunion of a mandibular fracture with further complications post-treatment is an uncommon event necessitating swift corrective intervention. The described surgical modality effectively established a stable connection between bone fragments and reinstated proper occlusion, enhancing functional outcomes. The option of reconstructive surgery involving a bone flap holds promise for patients with mandibular fracture nonunion, aiming to improve further functional and aesthetic results. Therefore, comprehensive care is imperative, focusing on long-term follow-up to ensure optimal outcomes and manage abnormal sensations.

Evaluating the necessity for Maxillomandibular Fixation (MMF). Conservative Management of a Condylar Fracture - Case Report

Olesya Marushko HBSc; Olena Marushko RDH; Halina De Wit

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Tutors: Aleksy Nowak MD, and Łukasz Słowik DDS

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Introduction: The management and classification of condylar fractures remain controversial in maxillofacial surgery. Literature reports mandibular condyle fractures account for 25% to 35% of all mandible fractures. The attributed anatomical intricacies of the condyle and its extensive attachments warrant the consideration of a conservative modality producing optimum results while minimizing plausible surgical complications and patient discomfort.

Case report: Herein, we present a case study documenting a male patient 22, admitted to the emergency department following a violent encounter the night prior. The patient reported no loss of consciousness. Upon admission an x-ray diagnosis was issued and revealed a fracture of the left condyle. The patient was referred to a maxillofacial surgeon for consultation. Physical examination was within normal limits; it revealed no neurological defects, no trismus, normal occlusion and no associated pain with mouth opening. A CT scan of the facial skeleton was performed, which showed no additional fractures. The reported patient was cooperative during the examination. Hence, the on-call maxillofacial surgeon provided the patient with two treatment modalities: conservative approach without MMF or with. The patient decided on a conservative treatment approach with no MMF, regular follow-up visits, and only a soft diet and rehabilitation of the jaw. The first follow-up occurred one week after the injury, a control CT scan and x-ray were taken on the second follow up a week later to confirm the correct position of the left condyle; the patient reported decreased pain while opening his mouth, and no other complications were noted.The patient attended all his biweekly follow-ups up to seven weeks post-admission. OPG and CT scans were done on the last follow-up appointment and showed sound bone healing. The patient reported normal occlusion, no problems with mouth opening and no associated pain. The patient reintegrated into his work as a teacher two weeks after admission.

Conclusions: The prescribed modalities for condylar fractures vary, with some lobbying for observation, closed reduction, open reduction or intraoral approaches. This case argues for a conservative treatment method for patients with sub-condylar fracture with no displacement and sound cooperation. Rigorous follow-up appointments are critical for monitoring proper bone healing and can replace unwanted pain, TMJ problems and six-week muscle immobilization associated with MMF.

Urgent Thyroidectomy in the Course of Acute Respiratory Failure - Case Report

Patrycja Rusin, Agnieszka Mariowska

Presenting author: Patrycja Rusin

Tutors: prof. Małgorzata Leszczyńska MD, PhD

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Introduction: Non-toxic nodular goiter usually develops slowly and is not accompanied by symptoms of thyroid dysfunction. Typically, the only symptom is the enlargement of the neck circumference. Patients rarely complain of shortness of breath, cough, or swallowing disorders caused by the compression of the goiter on adjacent tissues.

Case report: A 65-year-old female patient was admitted to the Department of Otolaryngology due to progressive shortness of breath caused by the compression of a giant retrosternal goiter on the trachea. A chest Computer Tomography (CT) scan revealed a mass in the neck and upper mediastinum compressing the organ bilaterally and displacing it anteriorly, simultaneously shifting it to the left by approximately 13mm. An emergency tracheostomy was performed, but unfortunately, it did not improve the patient's respiratory capacity. A bedside of chest scan showed an endotracheal tube directed towards the right bronchus. This was accompanied by right-sided pleural effusion and numerous inflammatory consolidations located in the left middle and lower lung fields. Thoracic drainage was performed, and in the follow-up CT scan, the pleural effusion was still visible but smaller than before the procedure. The patient was consulted by a general surgeon who decided to perform an urgent thyroidectomy. The procedure went smoothly, and after a few days of observation, the patient was discharged home. Levothyroxine therapy, endocrinological follow-up, and laryngological check-ups were recommended. Histopathological examination confirmed the diagnosis of colloid nodular goiter.

Conclusions: Total thyroidectomy is usually performed electively; however, due to the acute respiratory failure in our patient caused by the compression of the goiter on the trachea, it posed an immediate life-threatening situation. Therefore, the procedure was performed urgently. Additionally, endocrinological consultation was recommended due to the potential complication of hypoparathyroidism.

Is Bosniak I cyst always a benign renal cyst? A case report.

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Introduction: The Bosniak classification is a system used for categorizing renal cystic lesions based on imaging features, typically using contrast-enhanced computed tomography (CT) or magnetic resonance imaging (MRI). Bosniak type I cysts are considered benign and usually do not require further follow-up, whereas Bosniak type IV lesions have a high risk of malignant alteration and require further evaluation and surgical intervention. Around 20% of renal cell carcinomas (RCC) are predominantly cystic.

Case report: A 67-year-old patient presented to the emergency department with pain in the right upper abdominal quadrant after a larger meal, followed by nausea and vomiting. The initial laboratory results revealed leukocytosis and elevated CRP and liver enzyme levels (AST, ALT, and GGT). Her symptoms were typical clinical features of acute cholecystitis. The patient was referred for an abdominal ultrasound (US) evaluation, confirming acute cholecystitis with dilation of the common bile duct. The US also revealed an atypical conglomerate of anechoic cystic lesions with internal septa in the lower pole of the left kidney and parapelvic region. Contrast-enhanced abdominal and pelvic CT revealed a macrolobulated cystic lesion in the lower pole of the left kidney, measuring 65x63x44 mm, with thick internal septa and solid components. The septa and solid part showed contrast enhancement, indicative of a Bosniak type IV lesion. Retrospectively, 7 years ago the patient had performed a CT and was diagnosed with a Bosniak type I lesion at the same location in the left kidney, measuring up to 80 mm. It was assumed that the Bosniak type I lesion had malignantly altered into a Bosniak type IV lesion. Due to the urgency, it was decided to first perform cholecystectomy, while radical nephrectomy was scheduled four months later. Pathohistological analysis confirmed the presence of predominantly cystic clear cell RCC (WHO grade 3, pTNM, pT2a, pNx, pMx), which, on a macroscopic level, did not penetrate the kidney capsule and did not infiltrate the surrounding fatty tissue. The renal parenchyma outside the tumor appeared to be normal, such as the renal artery, vein, and ureter. The patient was discharged home in good general condition. The follow-up US and CT scans revealed no recurrence of the disease.

Conclusions: Bosniak type I cysts are typically considered benign and usually do not require additional monitoring. However, in this case, alteration into cystic RCC was described, prompting the question of whether additional surveillance is necessary for simple cysts, even though they rarely transform into malignancies.

Accidental Removal of a Vocal Cord Polyp During Intubation And Bronchoscopic Retrieval

Tina Čukman, Borna Barić, Borna Bregović, Maro Bjelica, Sandra Ćulap

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Tutors: Siniša Stevanović, MD, PhD, Prof. Davor Vagić, MD, PhD

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Introduction: Vocal cord polyps are one of the most common benign lesions of the larynx. The diagnosis is made early owing to symptoms of hoarseness and voice changes. The treatment of choice is transoral laser microsurgery (TOLMS), which effectively provides disease control and good functional outcomes. Unfortunately, unavoidable shortcomings in laryngomicroscopy may occur, including those during patient anesthesia procedures. This case report focuses on accidental removal of a right vocal cord polyp during endotracheal intubation, followed by the laryngomicroscopic excision of the polyp residue and successful bronchoscopic retrieval.

Case report: The 66-year-old patient presented to the ENT department with hoarseness and vocal fatigue over the past 6 months. The patient was otherwise healthy and a non-smoker. Indirect laryngoscopy and fiberoptic laryngoscopy showed a teleangiectatic polypoid lesion in the anterior third of the right vocal cord. No malignancy was suspected. Laryngomicroscopy with TOLMS under general endotracheal anesthesia was indicated as a treatment option. A Storz endoscope was used to place a breathing tube and check for the polyp on the right vocal cord, followed by a breathing tube insertion. Following the intubation, direct laryngomicroscopy was performed to remove the polyp, but unexpectedly revealed the absence of the lesion with minor bleeding at the previously identified site. This prompted the resection of the residual polypoid lesion on the right vocal cord using TOLMS procedure, followed by fiber-optic bronchoscopic removal of the torn off polyp that reached up to the main right bronchus. The tissue was subsequently sent for histopathological analysis which showed the 5 mm polyp with thinned, regular, stratified squamous epithelium, along with a mxyomatously altered underlying stroma filled with fibrin and dilated vascular spaces. Residues, measuring 1 mm in diameter, showed artificially altered stratified squamous epithelium. There were no complications observed prior to and following the surgical treatment. The patient's voice has fully recovered, and subsequent follow-up examinations have indicated no signs of polyp recurrence and normal function of the vocal cords.

Conclusions: This case represents a highly rare phenomenon, although more common than covered in the literature due to the specific localization of the polyp and patient general anesthesia required for this procedure. Direct laryngomicroscopy proved to be a safe and preferred method for removing the residual vocal cord lesion, followed by the fiberoptic bronchoscopy applied for the removal of the torn off polyp in the right mail bronchus. Comprehensive preoperative diagnostics enabled making such a proper treatment decision on the removal of the whole polyp and restoring a normal vocal cord function. It is essential to have guidelines to be followed in cases of injury during intubation, however lacking them, the right treatment option was found which resulted in successful outcome.

Extreme case of facial arterio-venous malformation in 5 year old boy

Bartosz Golis

Presenting author: Bartosz Golis

Tutors: Przemysław Przewratil MD, PhD, Prof. UM

Affiliations: Medical University of Łódź

Introduction: Arteriovenous malformations (AVMs) are abnormal tangles of blood vessels in the body that connect arteries and veins directly, bypassing the capillary system. AVMs can occur anywhere in the body. The exact cause of AVMs is not recognized but they are believed to develop during fetal development or shortly after birth. AVMs can cause a variety of symptoms depending on their location and size. In the brain, symptoms may include headaches, seizures, neurological deficits, or bleeding in the brain (hemorrhage). In other locations, symptoms may include pain, swelling, bleeding or organ dysfunction. Treatment for AVMs depends on the location, size, and symptoms. Treatment options include observation, medications, embolization or surgery to remove the AVM. Recently systemic therapy based on molecular genotyping is developing. The goal of treatment is to prevent complications such as bleeding, deformations or neurological deficits while minimizing the risk of therapy side effects.

Case report: 5-year old boy has been treated in Department of Pediatric Surgery and Oncology since infancy because of congenital arteriovenous malformation on his left cheek. Initially malformation was discrete swelling below the lips, but it has been growing fast. Child experienced massive bleedings which occurred very often and the malformation started growing inside the oral cavity. The first diagnosis was misdiagnosed as hemangioma. During first 5 months of his life he underwent 3 procedures of embolization using onyx and also the propranolol treatment was applied in Warsaw. Due to continuous growth of lesion he underwent a surgery in Gdansk in 2022 which reduced the size of malformation significantly. Then every 3 months the embolization using ethanol is being applied which brings positive effects of treatment. Currently patient doesn’t feel any pain or any other symptoms of his disease. His speech is in good condition, he doesn’t report any problems with eating, and hemorrhages don’t occur nowadays. In genetic study likely pathogenic variant was identified in the MAP2K1 gene that creates an option of molecular driven systemic therapy.

Conclusions: Diagnosis of arteriovenous malformation is not always obvious on the begining. Sometimes it takes months or even years of stress and incorrect treatment or no treatment. Currently there are well known options of professional therapy combining interventional radiology, surgery and medical treatment to improve patient’s condition.

Rotational Atherectomy and Orbital Atherectomy as Effective and Safe Techniques for Modifying Severely Calcified Coronary Artery Stenoses in High-Risk Patient.

Jonasz Osiecki

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Introduction: Patients with massively calcified coronary artery stenoses, often burdened with multiple comorbidities, present a challenge for modern interventional cardiology. In cases where percutaneous coronary intervention (PCI) using a balloon is either impossible or ineffective, rotational atherectomy (RA) and orbital atherectomy (OA) become effective and safe alternatives, enabling modification of calcified atherosclerotic plaques.

Case report: A 70-year-old patient with abnormal SPECT results of the heart was admitted to the 3rd Department of Cardiology in Katowice with anginal symptoms. Coronary angiography revealed multivessel coronary artery disease. Echocardiography showed reduced left ventricular systolic function (LVEF: 25%). After cardiothoracic consultation, the patient was scheduled for coronary artery bypass grafting (CABG). On the day before the planned procedure, the patient was readmitted urgently due to a non-ST elevation myocardial infarction. Due to massive calcifications, RA of the left anterior descending artery (LAD) was performed, followed by lesion predilatation with a NC 3.0 balloon and implantation of a drug-eluting stent (DES), achieving angiographically optimal results. Considering the patient's clinical condition, intervention on the left circumflex artery (Cx) was postponed. One month later, another stage of PCI was performed. Optical coherence tomography (OCT) examination of the LAD revealed an underexpanded stent with 65% expansion (despite optimal angiographic result) with adherent thrombus. Simultaneously, balloon angioplasty using a NC 4.0mm balloon was performed, achieving >90% stent expansion. Subsequently, strongly calcified neoatherosclerosis in the Cx was visualized on OCT. Due to the large takeoff angle of the Cx, proximity to bifurcation, and previously implanted stent, OA was performed. Lesion predilatation was done with a NC 4.0mm balloon and drug-eluting balloon (DEB), achieving optimal angiographic effect. OCT confirmed an increase in minimal lumen area from 1.08mm² to 5.92mm².

Conclusions: Rotational and orbital atherectomy are significant adjuncts to procedures in interventional cardiology. They are effective and safe methods that should be considered when planning an individual therapeutic strategy. Additionally, if the final angiographic result is satisfactory, this should not preclude the use of intracoronary imaging for detailed assessment of the final angioplasty effect.

The axillobifemoral bypass graft – is it worth the risk?

Mabell Kowalewska

Presenting author: Mabell Kowalewska

Tutors: Piotr Malinowski MD, PhD

Affiliations: University of Warmia and Mazury in Olsztyn

Introduction: The axillobifemoral bypass graft (AFBG), first described in 1966 by Sauvage and Wood, is now considered a surgical technique with low morbidity and mortality rates, utilized for revascularization of the lower limb. The most common complications associated with this procedure include thrombosis, infection, and pseudoaneurysm. In this case study, we present the case of a 62-year-old man who underwent AFBG and experienced severe complications.

Case report: A 62-year-old man with a history of endarterectomy in the right femoral artery and the right iliac artery, atherosclerosis in the lower limb arteries, surgical treatment of a pseudoaneurysm located in the right inguinal area, COPD and 44 years of smoking, was admitted to the vascular surgery department due to acute ischemia of the left lower limb. The decision to implant an AFBG had been made. After surgery, the blood flow in the lower limbs' arteries increased. A few days later, strong abdominal pain and signs of acute abdomen appeared. CT revealed superior mesenteric artery stenosis, so an embolectomy was performed. After surgery, the patient was transferred to the intensive care unit due to ischemic stroke and respiratory failure; a tracheostomy and intragastric tube were necessary. In less than a year, lower limb amputation in the continuity of the left hip joint was performed.

Conclusions: AFBG has many advantages, but it also involves certain risks. It is crucial to adopt an individualized approach when selecting this method, and to remain mindful of the possible consequences. This case study illustrates that AFBG could not prevent the patient from undergoing amputation and contributed to the deterioration of the patient's condition.

Advancing Varicocele Treatment: A Case Report on Intravascular Embolization and Clinical Implications

Małgorzata Dokurno

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Tutors: lek. Bartosz Kotkowicz

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Introduction: Varicocele is a condition characterized by the enlargement of veins located in the upper pole of the testicle. This disease affects up to 15% of the male population and is often asymptomatic, although testicular pain may occasionally occur. It has been proven to decrease fertility. In Poland, the most popular method of surgical treatment is the Palomo laparoscopic procedure, although it is associated with complications such as hydrocele, injury to the testicular artery, or recurrence of varicoceles due to inadequate preparation of lymphatic vessels.

Case report: A patient aged 17 was admitted to the ward for surgical treatment of varicocele. On admission, there were no complaints of pain, varicocele grade III, and the left testicle was 2.3 ml smaller than the right. Abdominal ultrasound showed no obvious signs of nutcracker syndrome. The patient was qualified for surgical treatment using a new method of intravascular closure of the testicular vein. Three embolic coils were inserted into the distal segment of the enlarged left testicular vein measuring 5-6 mm, and 2% Aethoxysklerol was injected to fill half of the vein's length. In the follow-up, the vein was closed with contrast retention above the coils. At the urology clinic visit 2 weeks after the surgery, clinical improvement and absence of visible varicoceles were observed.

Conclusions: Intravascular embolization of the testicular vein is a new, innovative method for treating varicoceles, which is less invasive than the laparoscopic approach and preserves lymphatic vessels, thereby reducing the risk of hydrocele.

Age in Extreme Sports: Risk or Experience? - case report

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Introduction: Participation in sport is possible after adequate preparation of the body, especially when the patient is older. Physical activity plays an important role in the functioning of the body which is also important when it comes to older people. Taking care of flexibility, strength and coordination is taking care key, so it is important that the training program is tailored to their specific physical and health conditions. Properly adjusted exercises will help avoid injury.

Case report: A 72 years old male patient, after an 8-year break from sports, undertook an one-time intensive ski training, which resulted in musculoskeletal damage. Clinical examination revealed soreness of the medial compartment, especially in the case of valgus, features of instability in the anterior drawer test and significant widening of the joint contours. With suspected damage to the anterior cruciate ligament, medial collateral ligament and medial meniscus, the patient was referred for an ultrasound and MR examination. The ultrasound examination confirmed medial collateral ligament damage with extensive hematoma and missing part of the shaft and posterior horn of the medial meniscus suggesting a bucket handle type injury. MR imaging revealed significant effusion and complete rupture of anterior cruciate ligament, furthermore a bucket handle type medial meniscus lesion was confirmed. In addition, MR examination revealed swelling and a fracture of the medial condyle of the tibia.

Conclusions: As the body ages, the flexibility and compensatory capacity of the tissues of the osteoarticular system decreases, so that relatively low-energy injuries can cause significantly greater and more serious ligamentous damage and fractures compared to similar injuries in younger people.

A Multidisciplinary Surgical Approach to Schwannoma Treatment

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8 - Department of Traumatology, University Hospital Dubrava, Zagreb

Introduction: A schwannoma is a rare type of benign nerve sheath tumor that originates from Schwann cells. They can form in any part of the nervous system, and their clinical manifestations vary depending on anatomical location. While occurrences within the brachial plexus are uncommon, they exemplify the diverse sites of schwannoma development. In this case, it is an asymptomatic tumor that appears at the root of the C7 nerve.

Case report: A 43-year-old patient was hospitalized after a traffic accident, sustaining a traumatic brain injury. As part of the examination, an MRI of the cervical and thoracic spine was performed, revealing an incidental finding of a tumor consistent with a schwannoma arising from the left C7 nerve root with caudal extension towards the mediastinum. The patient had a normal neurological status. Surgery was scheduled and performed by a team of three surgeons due to the complexity of the pathology. The team included a neurosurgeon, a maxillofacial surgeon, and an orthopaedic surgeon. A low incision towards the jugulum was made, accompanied by the dissection of the platysma and partial resection of the left sternocleidomastoid muscle. This revealed a tumor formation adhering to the vertebral artery. Careful dissection of the surrounding tissue and vertebral artery was conducted, followed by en bloc resection of the tumor. Spongostan, Surgicell, and tissue adhesive were applied at the root of C7 where the tumor originated. The patient had no neurological deficits or other complications postoperatively and was discharged home. A follow-up MRI was scheduled for 3 months after the surgery.

Conclusions: The successful surgical removal of the tumor, facilitated by collaboration among different surgery teams, exemplifies the effectiveness of a comprehensive treatment strategy. The patient's uneventful recovery further emphasizes the importance of coordinated efforts among specialists in achieving optimal outcomes in complex cases. This underscores the significance of multidisciplinary approaches in addressing rare and challenging medical conditions, ultimately improving patient care and prognosis.

CASE STUDY: ONCOLOGY

11th of May 2024

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Coordinators:

Olga Racińska

Krystian Włodarczyk

Yara Zakko

…●●●…

Jury:

Prof. Agnieszka Pluta

Michał Poznański MD, PhD

Diagnosis of latent, slow processes within adrenal tumor

Paweł Szajewski (1)

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Tutors: Agnieszka Żyłka MD, PhD (2)

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Introduction: Increasingly widespread use of imaging studies and biochemical tests is leading to the diagnosis of adrenal lesions at an early stage. Such lesions include rare neuroendocrine tumors called pheochromocytomas. Many of them are clinically silent. However, even asymptomatic tumors require an adrenalectomy since they can become clinically apparent and lead to a hypertension crisis if they are provoked to secrete catecholamines.

Case report: The case presents a 68-year-old patient with multiple health conditions who underwent subcutaneous mastectomy due to right breast cancer. In 2011, the patient developed septic shock, transient acute adrenal insufficiency, and imaging tests revealed a haemorrhage into a focal lesion located in the right adrenal gland. The tumor has been regularly monitored using ultrasound examination (US). Over time, a gradual, slow growth of the lesion was observed. Due to a significant oncological background, a magnetic resonance imaging (MRI) was performed, which showed the phenotype of either a pheochromocytoma or an atypical adrenal adenoma. Hormone studies were then performed. There were elevated metanephrine and chromogranin A concentrations in plasma, which prompted a pheochromocytoma. Right-sided adrenalectomy was carried out, and histopathological examination verified that the lesion was, in fact, a pheochromocytoma. Due to a high Pheochromocytoma of Adrenal Gland Scaled Score, the patient was qualified for functional imaging tests to assess presence of distant metastases. (131)I-meta-iodobenzylguanidine scintigraphy and (68)Ga-DOTATATE positron emission tomography-computed tomography were carried out. No metastases were found in both studies. Hormonal tests performed after the adrenalectomy showed a significant decrease in metanephrine concentration and normal chromogranin A level.

Conclusions: Every focal lesion in adrenals found in US requires confirmation by a computed tomography or MRI to differentiate between adenomas and “non-adenomas”. Secondly, hormonal tests are crucial because sometimes imaging studies may give ambiguous results. It is also important to remember that in all adrenal tumors, regardless of the clinical picture and other conditions, evaluation for a pheochromocytoma and hypercortisolemia is recommended. This case shows that pheochromocytomas are known for their insidious, very slow growth. They can be asymptomatic despite catecholamine excess. Moreover, a haemorrhage could’ve masked the tumor’s phenotype and its hormonal activity.

Subcutaneous Panniculitis-like T-cell Lymphoma in a Young Patient: A Case Report of Diagnostic Challenge

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Introduction: Subcutaneous panniculitis-like T-cell lymphoma (SPTCL) is a rare subset of cutaneous T-cell lymphoma characterized by infiltration of the subcutaneous tissue by atypical lymphocytes. Typically observed in middle-aged adults, SPTCL presents with subcutaneous nodules and painful erythematous plaques, often mimicking rheumatologic diseases. Differential diagnosis is crucial due to the poor prognosis associated with SPTCL.

Case report: A 22-year-old female presented to the hospital for the first time with bilateral periorbital edema, acne rosacea, and a light form of COVID-19 infection. She had a history of maculopapular rashes on her forehead, unsuccessfully treated with locally prescribed fusidic acid cream and clotrimazole. Later, she developed fever, periorbital edema, and infiltrative formations in the anterior abdominal wall, accompanied by swelling and weight loss. Subsequent hospitalizations revealed hard, painful subcutaneous nodules on her upper extremities, abdomen, and lower extremities. Diagnostic investigations, including biopsy, esophagogastroduodenoscopy, echocardiography, and imaging studies such as computed tomography (CT), ultrasonography (USG), magnetic resonance imaging (MRI), and positron emission tomography/computed tomography (PET/CT), confirmed the diagnosis of panniculitis-like T-cell lymphoma. Blood analysis indicated pancytopenia, hyperferritinemia, positive Coombs test, and increased inflammatory markers. The patient is currently undergoing chemotherapy treatment with the CHOEP protocol.

Conclusions: Panniculitis-like T cell lymphoma is a rare form of non-Hodgkin lymphoma that primarily involves the subcutaneous tissue. The disease can present with a wide range of symptoms. Early recognition, accurate diagnosis, and comprehensive treatment are crucial for improving outcomes in panniculitis-like T-cell lymphoma. Successful chemotherapy underscores the importance of timely intervention in managing this aggressive lymphoma subtype. Further studies are essential to enhance understanding and management strategies for SPTCL.

A rare case of intravascular leiomyomatosis in 48-year-old female

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Introduction: Lipoleiomyoma (LPL) with intravascular leiomyomatosis (IVL) is a very rare benign tumor which may spread through the pelvic veins and, in rare cases, through the IVC to the right atrium of the heart or pulmonary arteries, forming nodular formations with a histopathological pattern of LPL. The exact cause of IVL is not yet known, but it is believed to be related to coexisting uterine leiomyomas.

Case report: A 48-year-old female was admitted to the hospital due to a pathological lesion in the IVC detected during echocardiography. The patient's medical history includes venous thromboembolism and chronic venous insufficiency. The patient underwent partial supracervical hysterectomy for uterine leiomyomas, saphenectomy and cholecystectomy. During the physical examination, the patient was conscious with symptoms of orthostatic hypotension, paroxysmal tachycardia and general weakness. CT angiogram revealed hypodense embolic material at the bifurcation of the right pulmonary artery. In the IVC ostium area a hypodense structure and lack of contrast of the IVC lumen were visible. The veno-CT showed dilatation of the IVC and the right iliac veins, with the presence of a heterogeneous, hypodense structure. A fragment of the described tumor was resectioned. The postoperative material macroscopically resembled myxoma, but was characterized by unusual cohesion. The patient was readmitted to the hospital where diagnostic imaging has been expanded. A CT scan revealed progression of changes. Moreover, well-circumscribed, oval, hypodense structures were visible in the pouch of Douglas. MRI of the pelvis revealed a polycyclic mass showing contrast enhancement in this area. The patient was qualified for surgical treatment. Firstly, embolization of the right internal iliac branch supplying the tumor was performed using the Seldinger puncture method. Secondly, the surgeons dissected the material occupying the IVC and right iliac vessels. After suturing the vessels and obtaining blood flow, the tumor was removed. The final histopathological diagnosis was LPL with IVL. Currently, the patient is in good condition, she undergoes regular follow-up CT scans with contrast every 6 months without signs of recurrence.

Conclusions: In most cases reported in the literature, IVL was diagnosed in patients after hysterectomy for uterine leiomyomas. Early diagnosis may be difficult due to the late presentation of symptoms and the similarity to other entities on imaging. The example shows how appropriate selection of protocols of medical imaging, as well as the experience and knowledge of a medical team can significantly accelerate the diagnosis of the disease while a wide differentiation can help in making a preliminary diagnosis, taking into account rare entities. This case also emphasizes the importance of communication and cooperation of an interdisciplinary team, because due to them the patient received comprehensive care and an accurate diagnosis, appropriately selected treatment and follow-up.

The management of Waldenström macroglobulinemia and concurrent cold agglutinin disease – a case report

Anna Kozub, Aleksandra Nasiek

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Introduction: Waldenström macroglobulinemia (WM) or hypergammaglobulinemic purpura of Waldenström is an incurable non-Hodgkin lymphoplasmocytic lymphoma (LBL) with concurrent monoclonal immunoglobulin M (IgM) gammapathy in serum. It is a rare disorder, approximately 1000 to 1500 adults are said to begin therapy every year in the US. Suggested pathogenesis covers the vast amounts of plasma cells, small lymphocytes, autoantibodies and low-grade LBL infiltrations that involve the bone marrow, lymph nodes, spleen or liver and lead to progressive anaemia.

Case report: We present a 55-year-old patient with WM and concurrent cold agglutinin disease (CAD) who did not present with any skin lesions despite life-threatening normoblastic anaemia (haemoglobin 3.90 g/dl) in the beginning of the diagnostics. He reported weakness, deterioration of effort tolerance and approximately 6 kg weight loss in eight months. CAD was suspected during the cross-matching test with multiple blood clots and the cold agglutinins were confirmed several days later. Blood examination showed an elevated IgM level (up to 12.60 g/l), the declines in C3 component of the compartment system (37.30 mg/dl) and in the immunoglobulin G and A levels. Immunofixation displayed an isotype of IgM kappa. He was diagnosed with WM after some examinations, like imaging, serum protein electrophoresis, multiparametric flow cytometry and bone marrow trephine biopsy that detected some typical features of WM. The result of the test for L265P MYD88- mutation, which is very common in some lymphoid malignancies (in >90% of all the WM cases), was positive. The patient underwent the transfusion in total of 8 units of packed erythrocytes with a heater. Moreover, he was firstly treated with rituximab 700 mg intravenously in monotherapy and then with rituximab and bendamustyna in the cycles of combined treatment. After several months his general condition is assessed as good and the immunoglobulin levels in the blood have decreased.

Conclusions: The first signs of WM noticed often by patients include fatigue, lymphadenopathy, oedema and petechiae located mainly on lower extremities. The management of both WM and CAD has developed in recent years. There are few case reports found on the issue of WM concealed due to cold-reactive autoimmune hemolytic anemia. Therefore, the first patient with combined WM and CAD disorders was described by Suzuki et al. in 1986. It is reported that sequential treatment escalation influences survivorship rates in WM. However, there is no established treatment scheme due to deficiency of prospective trials.

Rosai-Dorfman disease - a case presentation of challenging diagnostic process

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Introduction: Rosai-Dorfman Disease (RDD) is a rare type of sinus histiocytosis known for causing large, painless swellings in the lymph nodes, often affecting the neck's bilateral cervical lymph nodes. It can also appear outside of the lymph nodes in many cases. RDD can occur at any age but is most common in children and adolescents. This report covers a case of RDD diagnosed after extensive testing and ruling out many other conditions. The diagnosis was complicated by the likely presence of prostate cancer alongside RDD.

Case report: A 73-year-old man underwent extensive diagnostic tests over two years across multiple centers in Poland for symptoms including generalized weakness, weight loss, intermittent fevers, high CRP levels, and generalized lymphadenopathy. In March 2023, PET-CT imaging revealed numerous metabolically active lymph nodes and multiple metabolically active foci in the skeleton. In April 2023, biopsies of the bone marrow and cervical lymph node ruled out cancer but indicated reactive sinus histiocytosis. Despite consultations at infectious and rare disease clinics, a diagnosis remained elusive until elevated IgG4 levels suggested IgG4-related disease. Further evaluation at a Rheumatology Clinic, considering both histiocytosis and a high likelihood of prostate cancer, led to additional biopsies. In the detailed examination, the presence of metastasis from an extranodal tumor was excluded, indicated by negative CKAE1/AE3 staining. The biopsy revealed sinus histiocytosis, characterized by unusually large histiocytes displaying a specific immunophenotype: variable CD68 expression, positive S100, and negative CD1a and CD30. Notably, emperipolesis—a process where intact cells are found within another cell—was observed. Although plasma cell infiltrates were detected, they lacked the features associated with IgG4-related disease. The absence of CD1a staining was crucial in ruling out Langerhans Cell Histiocytosis (LCH), helping to clarify the diagnosis. This histological profile, combined with clinical findings, supported the diagnosis of Rosai-Dorfman Disease. In the additional stains, histiocytes were cyclin D1+ and oct2+, which confirmed RDD. Ongoing investigations aim to ascertain if the metabolically active foci identified in the bones represent manifestations of Rosai-Dorfman Disease or are indicative of metastases from prostate cancer.

Conclusions: In this case, diagnosing Rosai-Dorfman Disease (RDD) was particularly challenging. It involved an elderly man who underwent a two-year diagnostic process, complicated by the possibility of other cancerous conditions, including concerns about IgG4-related disease. The necessity of lymph node biopsy, along with histopathological and immunohistochemical studies, was critical for reaching a diagnosis.

Four rare cases of laryngeal lesions mimicking malignant tumours.

Katie Vaughan-Lane

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Introduction: This case study explores the intricate and uncommon presentations of laryngeal pathologies in four individual patients, Each facing unique obstacles posed by extramedullary plasmacytoma, laryngeal amyloidosis, laryngeal mass suspected to be caused by IgG4+ related-disease and a salivary tissue mimicking a tumor in the field of laryngeal pathology. Distinguishing between these benign pathologies is critical for appropriate treatment. These cases shed light on the diagnostic intricacies encountered in clinical practice. In this case study we will explore the rare manifestations of laryngeal pathologies observed in these patients. By examining the subtle details within each case, our aim is to contribute to the evolving comprehension of these unusual disorders, ultimately enhancing diagnostic proficiency and optimising patient care in similar clinical scenarios.

Case report: The first case involves a 64 year old female diagnosed with extramedullary plasmacytoma of the larynx, presented with a lesion seen on laryngoscope initially suspected as a malignant tumour of the larynx. The second case was a 45 year old male presented with a suspected tumour of right vestibular fold seen on directoscope, histopathology samples were collected during microlaryngoscope and amyloid deposits were found corresponding to a diagnosis of amyloidosis. The third case describes a 73 year old male with a left laryngeal mass suspected to be a tumour of larynx which is presumed to be caused by IgG4+ related disease, presenting with pharyngitis for the last 4 months and constriction of the throat. The fourth case involves a 56 year old female diagnosed with ectopic salivary tissue in the larynx, initially mistaken for laryngeal tumour, presenting with foreign body sensation in the larynx.

Conclusions: The exploration of extramedullary plasmacytoma, laryngeal amyloidosis, laryngeal mass suspected to be caused by IgG4+ related-disease and laryngeal tumour emulating salivary tissue in our four patients illuminates the multifaceted challenges inherent in diagnosing and managing rare laryngeal pathologies. Histopathological examination is crucial for tailoring treatment of laryngeal lesions, enabling precise management based on specific pathologies. Given the diverse origins of these lesions, including rare diseases, such awareness is essential for effective and personalized patient care. We have highlighted the critical importance of thorough assessment and collaboration in navigating these challenging clinical scenarios. Our findings emphasise the need for continued research and clinical vigilance to optimise patient outcomes and enhance diagnostic acumen in the realm of rare laryngeal findings.

Pyometra as an atypical symptom of serous endometrial carcinoma-case study.

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Introduction: The serous endometrial cancer is a type of endometrial cancer which is a less common variant but a more aggressive one. The most common symptom reported by patients with endometrial cancer is a vaginal bleeding, but the absence of it in the medical history should not diminish the oncological vigilance of physicians. In the described case report, the presence of fluid-filled spaces containing dense material directed suspicion towards pyometra, whereas the ultimate diagnosis was serous endometrial cancer.

Case report: An 82-year-old patient was admitted to the clinic with lower abdominal pain. On admission a transvaginal ultrasound revealed two fluid-filled spaces within the uterus. The first one measured 67x50 mm with dense content and singular vascularization, while the second one performed papillary growth and measured 75x59 mm. Upon speculum examination, a prominently dilated cervix was observed. Furthermore, yellow discoloration and petechiae were noticed on the ectocervix. A two-phase Computed Tomography scan of the abdomen and pelvis revealed an enlarged uterus with nodular lesions. The patient was scheduled for a midline laparotomy, hysterectomy and adnexectomy. The vagina discharge specimen was collected before the surgery and the microbiological test was ordered. The negative result of the microbiological culture was received after the surgery. During the surgery, a rupture of the uterine cavity and the cervix occurred, that resulted in emptying of the uterine cavity and releasing approximately 500 ml of yellow, dense material, which was aspirated and then the peritoneal cavity lavage was carried out. The frozen section was performed and revealed the presence of high-grade G3 serous endometrial cancer, what was confirmed in the surgical pathology report. Moreover, the p53 mutation and lack of estrogen receptors were discovered.

Conclusions: The presence of fluid-filled spaces containing material resembling the pus is an atypical symptom of endometrial cancer. Even if the foregoing clinical features direct doctors to infection as a diagnosis, it is essential to maintain an oncological vigilance.

Solid Pseudopapillary Neoplasm of the Pancreas in an 18-Year-Old Female

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Introduction: Neoplastic diseases are one of the greatest challenges of modern medicine. They are most often accompanied by nonspecific symptoms such as pain, fever, weakness or weight loss. Most often they affect elderly and middle-aged people, but sometimes they can also occur in relatively healthy young individuals. Therefore, special diagnostic care should be taken when diagnosing young patients. This problem is perfectly illustrated by the case of an 18-year-old female patient diagnosed with pancreatic tumor described in the following report.

Case report: An 18-year-old female patient, who had been under investigation for fevers of unknown origin for nearly two months, presented to the oncology clinic with a tumorous mass identified in the tail of the pancreas. Detected during the diagnostic workup for her persistent fevers, the patient's condition was stable with a consistent weight, good appetite, and a normal CA 19-9. Physical examination revealed a soft and non-tender abdomen without pathological resistance. Her physiological functions were normal, and she had no significant past medical or surgical history. The family history was notable for pancreatic cancer in a grand-aunt. She was diagnosed with a pancreatic tail tumor and referred for an ultrasound-guided biopsy upon consultation. The diagnostic process confirmed the presence of a rare solid pseudopapillary neoplasm of the pancreas. Following the diagnosis, the patient underwent a peripheral pancreatectomy with splenectomy. Intraoperative findings confirmed the involvement of splenic vessels. Histopathological analysisshowed a solid pseudopapillary neoplasm with perineural invasion, classified as pT3 pN0 LVI(-) PNI(+). The tumor, measuring 5 x 4.5 x 6 cm, exhibited monomorphic cells with minimal nuclear atypia and an immunophenotype consistent with solid pseudopapillary neoplasm. The neoplasm was excised with clear margins, and subsequent histopathological examination confirmed the diagnosis, illustrating a low proliferative index (Ki67<5%), and absence of metastatic nodes in the examined lymph nodes. The patient maintains a good performance status and is currently under observation at the outpatient clinic.

Conclusions: This case underscores the importance of considering solid pseudopapillary neoplasms in young female patients presenting with non-specific symptoms like fevers of unknown origin, highlighting the significance of comprehensive diagnostic evaluation and the potential for favorable outcomes with surgical intervention. The successful surgical management of SPN with favorable outcomes highlights the significance of early diagnosis and intervention. This report adds to the existing literature on SPN, contributing to a better understanding of its clinical presentation, diagnostic approach, and treatment outcomes.

A rare case of subpleural hibernoma with multiple primary lung adenocarcinomas

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Introduction: Hibernomas are rare tumors arising in brown fat tissue. They account for 1.1% of all adipocytic tumors. By far the most common localization is thigh, and the thorax accounts for less than 0.1% of cases. They present as painless and slow, which makes them especially challenging diagnostically. Novel diagnostic methods allow for better chest screening and with it, multiple primary lung cancers (MLPCs) are becoming a growing challenge. The most frequent MLPC is adenocarcinoma. Up to 15% of patients diagnosed with lung cancer will present a second primary lung cancer. In diagnostics, histopathology is the gold standard. For both hibernoma and MLPC the treatment of choice is surgery.

Case report: A 79-year-old Caucasian woman with a history of hypertension and dyslipidemia was referred to the Department of Thoracic Surgery because of the progression of ground glass opacities in the right bronchopulmonary segment 6 demonstrated in computed tomography (CT). Additionally metabolically active mass lateral to the third intercostal space and N2 lymph nodes were found in positron emission tomography (PET). The endobronchial ultrasound-guided transbronchial biopsy and mediastinoscopy rendered lymph nodes 4L and 7 negative. A video-assisted thoracoscopic (VATS) segmentectomy of right segment 6 with lymphadenectomy was performed. The resected nodule was a lung adenocarcinoma G1 pT1bN0Mx, stage IA2. Two months later a CT revealed additional ground-glass opacities in right segments 4 and 8. During a diagnostic VATS white nodules were found on the lingula and the parietal pleura. A biopsy of the subpleural mass and the parietal pleura and wedge resection of the lingula were performed. A histopathological exam revealed the subpleural mass as hibernoma. The lesions found on the pleura proved to be another primary lung adenocarcinoma G3 cTxN2, pM1a. Postoperative recovery was uneventful after both procedures. The patient was referred to the Department of Oncology. Because of major histopathological differences in the differentiation of adenocarcinomas, both were diagnosed as primary.

Conclusions: Chest hibernomas and MLPCs separately provide diagnostic challenges. Combined in this case they emphasize that each patient warrants particular clinical attention. Even a patient with three simultaneous tumors may not present any distinguishable symptoms. Additionally, we present a case of intrathoracic subpleural hibernoma, out of which only a dozen have been reported.

Management of advanced gastric MALT lymphoma with chemotherapy - a case report

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Introduction: Primary gastric lymphoma (PGL) is a rare malignant neoplasm. It represents approximately 5% of all primary gastric tumors. 90% of PGL is either mucosa associated lymphoid tissue (MALT) gastric lymphoma or diffuse large B-cell lymphoma (DLBCL). MALT lymphoma is most common among patients between the ages of 50. and 60. The development of gastric MALToma is in the vast majority associated with chronic H. pylori infection. Therefore, early-stage tumors can regress with eradication therapy only. Nevertheless, in advanced cases, when antibiotic therapy fails, chemotherapy consisting of cyclophosphamide, doxorubicin, vincristine, prednisone (CHOP) and/or rituximab is provided as a second-line treatment. The gold standard for diagnosing gastric lymphomas is upper gastrointestinal endoscopy with biopsy.

Case report: A 28-years-old female patient was admitted to the Internal Medicine Department in serious condition with life-threatening anemia, extreme weakness, hyperhidrosis and loss of more than 60. kilograms of body weight in a year. Examinations revealed a large hard-textured tumor visible through the abdominal integuments occupying the supra- and mediastinum on the left side. On USG, the dimensions of the tumor were determined to be 18. cm in the long axis transversely through the body shells. CT scan additionally showed thickening of the wall of the fundus and the body of the stomach with malignant infiltration. Metastasis to the mesentery, liver, splenic vein, both kidneys and pancreas were also present. Histopathological examination of biopsy specimens showed no ongoing H. pylori infection, although it revealed the presence of CD20+ MALT lymphoma. The tumor compressed and modeled the adjacent structures causing obstruction of the gastrointestinal tract, as a result of which the patient remained on parenteral nutrition. Resting dyspnea caused by the presence of a large amount of fluid in the pleural cavity and atelectasis resulted in implementation of support with passive oxygen. Because of the advanced stage of tumor treatment with R-CHOP therapy was initiated. Due to the high risk of tumor lysis syndrome (TLS), profuse gastric bleeding and cardiovascular instability, the patient was transferred to the ICU. The chemotherapy was continued and prophylactic treatment against TLS was started. After a few days the patient was transferred to the Oncology Department, where, as a result of ongoing treatment, her condition improved significantly. Another CT scan was performed and the regression of the tumor was noticed. Currently, the risk of TLS is slim to none.

Conclusions: Although gastric MALToma is a rare condition, it's crucial for clinicians to be aware of it. Due to unspecific symptoms it can be easily misdiagnosed. Delayed diagnosis and initiation of treatment can result in life-threatening circumstances. Therefore, it is also essential to educate patients about the severity of symptoms such as unintentional and significant weight loss.

Low-grade serous ovarian cancer with BRAFV600E mutation treated with metronomic chemotherapy — a case report and literature review

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Introduction: Ovarian cancer (OC) is one of the leading causes of cancer-related morbidity and mortality worldwide. OC is the fifth most common cancer and the fourth cause of death from neoplasms in Polish women. OC is a heterogeneous disease with low-grade cases (approximately 6% of ovarian neoplasms) characterized by different biological features, better prognosis, and poorer chemosensitivity than high-grade ones. Metronomic chemotherapy (MC) is an anticancer treatment based on the administration of cytotoxic agents more frequently and at lower doses compared to standard chemotherapy dosing. MC may be a beneficial approach in low-grade serous ovarian cancer (LGSOC).

Case report: We present a patient with LGSOC with long-term disease control achieved with MC. The patient was first diagnosed in 2005 with a borderline tumor of the left ovary. She underwent hysterectomy and bilateral adnexectomy and remained disease-free for more than 10 years. Cancer recurred as massive dissemination in the pelvis and abdomen in 2016, at the age of 67. Cytoreductive surgery was performed. The postoperative histopathological examination revealed LGSOC. The patient was resistant to standard-dose adjuvant chemotherapy with paclitaxel and carboplatin. Taking into account the good general condition of the patient and the lack of cancer symptoms, it was decided to use MC. MC was an optimal therapeutic option to achieve disease control and maintain the patient's high quality of life. Between February 2017 and April 2021, the patient was treated with two metronomic regimens: topotecan plus cyclophosphamide and vinorelbine plus methotrexate, both in combination with hormone therapy. Tolerance to MC was good. The patient reported only benign symptoms, such as weakness and abdominal pain. She died due to cancer progression in December 2021. The patient lived for 65 months after the diagnosis of metastatic cancer. MC was administered for most of the duration of treatment. Cancer was found to harbor the BRAFV600E mutation, but this did not affect treatment. However, if the patient was alive today, she could potentially be treated with dabrafenib and trametinib. These drugs inhibit MAPK signaling-related enzymes and were approved in solid tumors with BRAF mutations in 2022.

Conclusions: LGSOC has distinct characteristics of high-grade serous ovarian cancer (HGSOC). MC may be a valuable option in LGSOC despite being understudied. The overall survival (OS) of the patient exceeds the median OS in this population of patients. The BRAFV600E mutation occurs in 2 to 33% of low-grade serous ovarian tumors. It is a more common finding in LGSOC than in HGSOC. Inhibition of BRAF in OC may be a new therapeutic option. Preclinical data highlighted the potential efficacy of vinorelbine in BRAF-mutated cancer cells, but clinical trials did not confirm this observation. Some new BRAF inhibitors have already been registered for solid tumors with this mutation.

Traversing Diagnostic Labyrinths: Lymphangioleiomyomatosis Mimicking Paraganglioma - Clinical Enigma and Therapeutic Crossroads

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Introduction: Lymphangioleiomyomatosis (LAM) is a rare genetic condition primarily affecting young women, characterized by the formation of tumors and cysts in the lungs, kidneys, and pelvic areas, resulting in symptoms due to pressure effects. It can occur sporadically or in association with tuberous sclerosis complex (TSC-LAM). These tumors exhibit characteristics of low-grade neoplasms and can potentially metastasize.

Case report: A 27-year-old female was admitted to the hospital due to painless enlargement of the right inguinal lymph nodes. A computed tomography (CT) scan revealed a consolidated infiltration circumferentially around the aorta, retroperitoneally along the left perirenal and iliac spaces (90x45x150mm), and bilateral nodal masses around the right external iliac vessels (85x60x80mm). Suspecting lymphoma, a positron emission tomography-computed tomography (PET-CT) with fluorodeoxyglocose (FDG) was performed, confirming proliferative activity within the tumor-nodal masses with moderately increased metabolic activity. Pathologies within the reproductive organs were ruled out. Concurrently, an inguinal lymph node was taken, yielding a histopathological diagnosis of paraganglioma. Further investigations included plasma levels of methoxylated catecholamines, which returned negative results. Additionally, a scintigraphy using 131-I labeled MIBG was conducted, producing negative results within the observed tumor-nodal lesions. Given the uncertain clinical presentation resembling paraganglioma, a CT-guided core needle biopsy was performed. Histopathological examination of the biopsy material excluded the presence of paraganglioma but led to a new diagnosis of lymphangioleiomyomatosis (LAM). Due to the advanced proliferative process, surgical resection was deemed unfeasible, prompting the initiation of mTOR kinase inhibitor therapy. Genetic tests were done and they excluded mutations in TSC genes which are associated with development of LAM.

Conclusions: LAM is a rare genetic disease of women which mostly affects the lungs. Extrapulmonary involvement is very rare, and currently, its treatment has been ineffective. Although the efficacy of mTOR inhibitors in treating pulmonary and renal LAM is well established, very few studies have demonstrated their use in extrapulmonary abdomino-pelvic LAM tumors. This case underscores the importance of thorough diagnostic evaluation and highlights the challenges in distinguishing rare entities with overlapping clinical presentations.

Modern therapeutic approaches to colorectal and rectal cancer with BRAF V600E mutation - series of cases

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Introduction: Evaluation of the predictive and prognostic value of colorectal cancer (CRC) and rectal cancer includes molecular testing of the BRAF, NRAS and KRAS genes. The V600E mutation in the BRAF gene affects about 10% of patients with metastatic CRC. It is associated with poor prognosis with a median overall survival of 4 to 6 months after failure of initial therapy. Nevertheless, it represents a target for a new therapeutic strategy for CRC - BRAF inhibitors such as encorafenib. In 2019, the results of the BEACON trial were published, confirming the high efficacy of the triplet regimen consisting of encorafenib in combination with binimetinib (MEK inhibitor) and cetuximab (IgG1 monoclonal antibody) in CRC therapy.

Case report: We present a case series of two female patients aged 50. and 52. Due to gastrointestinal bleeding, a colonoscopy with biopsy was performed. In both cases histopathological examination of the biopsy specimens revealed G2 stage colorectal cancer. Molecular analysis showed NRAS-, KRAS-, BRAF+. Subsequently, they underwent surgical treatment via right-sided hemicolectomy. Due to the presence of metastasis, one of the patients received follow-up treatment with the FOLFIRI regimen consisting of irinotecam, fluorouracil and calcium folinate. After completion of therapy, a CT scan was performed. It showed a progression of metastatic lesions in the liver, both lungs and lymph nodes. Therefore, she was qualified for treatment with the FOLFOX regimen, consisting of fluorouracil, calcium folinate and oxaliplatin. The anti-angiogenic agent - bevacizumab was also attached. She was provided with 10. cycles of treatment, without achieving disease regression. The second patient was directly treated with the FOLFOX regimen also combined with bevacizumab. She underwent only 5. cycles because of further progression of CRC. Due to the presence of the V600E mutation in the BRAF gene, patients were treated with triplet-therapy consisting of binimetinib, encorafenib and cetuximab. Regression of tumor lesions was observed in both cases, which determined the continuation of treatment.

Conclusions: The presence of gene mutations is not only a prognostic factor, but also a determinant of treatment management. The presented cases confirm the high efficacy of the combination of binimetinib, encorafenib and cetuximab in the treatment of colorectal and rectal cancer with V600E mutation in the BRAF gene. Targeted therapy indicates that the molecular characteristics of the tumor are one of the major determinants of the oncological regimen.