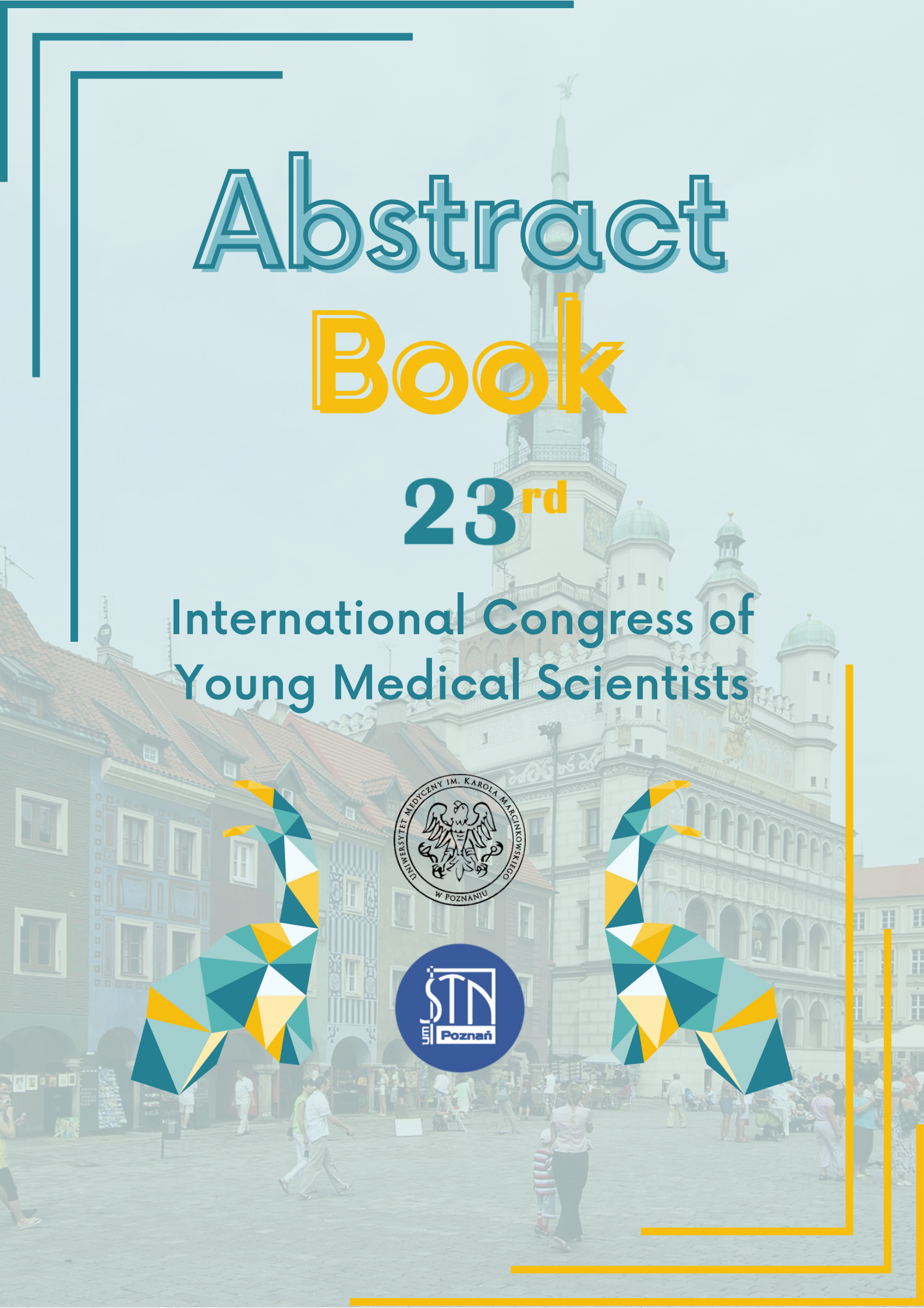
Abstract Book

23rd International Congress of Young Medical Scientists



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The role of mir-21-5p and mir-145-5p in the expression regulation of estrogen receptors genes in ovarian cancer.

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Tutor: Mirosław Andrusiewicz PhD, DSc, Prof., Małgorzata Tokłowicz PhD

Introduction: Ovarian cancer is the leading cause of death among all gynecologic cancers. Over 70% of ovarian cancers are diagnosed in the late stages (III or IV), which results in a worse prognosis. Current data show that the onset and development of the disease are related to estrogen exposure. miRNAs are small non-coding RNAs involved in gene expression regulation. miR-21-5p and miR-145-5p are known to regulate molecular pathways in many diseases, including breast and colon cancers.

The aim of the study: Evaluating the expression level of selected miRNAs in the control group and patient group diagnosed with ovarian cancer and investigating interactions between estrogen receptors genes and miRNAs.

Methods: 30 ovarian samples were collected (15 control samples, 15 tumor samples). Then we performed RNA isolation using the column-based method. Reverse transcription was conducted, and we used qPCR with molecular probes for differential expression analysis.

Results: We found a difference in miRNAs expression levels between groups. miR-21-5p was significantly upregulated in the patient's group ($p = 0.03$). There was a difference in expression levels between miR-21-5p and miR-145-5p in the patient's group, which was not present in the control group ($p = 0.003$). The expression of miR-145-5p was significantly lower than that of miR-21-5p in the patient's group. Moreover, in the patient's group, miR-145-5p was significantly, strongly, and positively correlated with CA125 ($r = 0.75$, $p = 0.003$), a well-known ovarian cancer marker. There was no significant correlation between the expression of selected miRNAs and the expression of *ESR1* and *ESR2* genes.

Conclusions: miR-21-5p and miR-145-5p are differentially expressed in ovarian cancer. Further investigation of their role in the pathogenesis and development of the disease is important for understating the molecular basis of ovarian cancer and designing better therapies.

Adar1 expression in different cancer cell lines and its change under heat shock

Authors: Adamczak Dominika, Fornalik Michał, Małkiewicz Anna, Pestka Julia
Affiliation: Poznan University of Medical Sciences - Department of Biochemistry and Molecular Biology
Tutor: Bartosz Słowikowski PhD

Introduction: Proteins from the ADAR family play a significant role in the neoplastic process, as their functions can affect gene expression - increase the activity of oncogenes or impair the function of anti-oncogenes. ADAR1 silencing can decrease the aggressiveness of tumors and enhance the efficiency of cancer treatment. ADAR1 activities can be divided into three categories: RNA editing, IFN pathways and response to cellular stress factors. Stress conditions like UV radiation or heat shock result in the change of ADAR1p110 isoform localization from the nucleus to the cytoplasm where it inhibits mRNA degradation and prevents cell apoptosis.

The aim of the study: In our experiment, we wanted to assess the differences in ADAR1 expression among various cancer cell lines and determine how cellular stress factors affect it.

Methods: We used eight different cell lines to identify differences in ADAR1 expression among them. Cultures were grown for 24h in standard conditions. In order to investigate the heat shock influence, cells were subjected to a temperature of 43°C for 2 hours. Every experiment was performed in three biological repeats and included a control sample. To assess the ADAR1 RNA and protein level we performed Real-Time qPCR and Western Blot analysis.

Results: We report significant differences in ADAR1 expression - the highest was demonstrated in HCT116 and the lowest in HGC. The highest ADAR1 protein level was in MCF-7 and the lowest was in HGC. Our study showed no significant difference in ADAR1 expression between Calu-1 and A549 under normal conditions and heat shock.

Conclusions: ADAR1 total expression varies among different cancer cell lines and its high mRNA level does not always imply a high protein level. Moreover, level of ADAR1 does not change under heat shock. It indicates that the location of ADAR1 inside the cell, rather than its amount, determines how it prevents apoptosis under stress.

Analysis of fkbp5 gene expression and its changes under lithium treatment in animal model of depression

Authors: Kubiak Mikołaj, Dola Antonina, Kachel Maria , Majewska Wiktoria, Koga Weronika, Nowakowska Joanna
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Tutor: Prof. Szczepankiewicz A.

Introduction: Major Depressive Disorder (MDD) is one of the most burdensome mental diseases. It is important to assess the molecular pathways that underlie MDD, particularly in response to stress. The hypothalamic-pituitary-adrenal axis (HPA axis) and the hippocampus play an important role in stress regulation and pathogenesis of MDD, and underlie resistance to the treatment. Studies showed that changes in the expression of genes, such as *FKBP5*, influence HPA axis regulation. They are also associated with MDD and may affect the action of mood stabilizers, such as lithium used in treatment-resistant depression.

The aim of the study: We aimed to assess if stress influences the expression levels of FKBP5 in brain regions involved in mood regulation in an animal depression model and if lithium can modulate *FKBP5* expression in depressive-like rats.

Methods: To assess the *FKBP5* expression, we used RNA isolated from rat hypothalamus, pituitary gland and hippocampus. Rats that underwent the chronic mild stress protocol (n=5) were used as a model of depression. The control group included rats not exposed to stress (n=5). The brain regions from depressive-like rats receiving lithium were collected at 7 days (n=10) and 42 days (n=10) after lithium treatment. The control group were receiving water instead. The expression levels were analyzed using RT-qPCR. The statistical analysis was done in Statistica package.

Results: We had not found any significant differences in FKBP5 expression levels between the control and experimental groups, in all of the analyzed brain regions ($p > 0.05$). However, after chronic lithium treatment the *FKBP5* expression tended to decrease, particularly in hypothalamus after 42 days of treatment ($p = 0.072$).

Conclusions: These results show that stress-induced depression did not influence FKBP5 expression, but chronic lithium treatment may relate to lower *FKBP5* expression. Further studies are needed to assess the role of FKBP5 in MDD and its treatment.

Circulating tumor cells as a marker of ovarian cancers

Authors: Krzystańska Dagmara, Urban Wiktoria
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Introduction: Ovarian cancer (OC) is one of the most common and lethal cancer affecting women. The main way of OC spread is the transcoelomic route. Still it can also spread via circulating tumor cells (CTCs). CTCs break away from the primary tumor mass, undergo epithelial-mesenchymal transition (EMT) and after getting into the bloodstream are transferred to distant organs, where they cause metastasis.

The aim of the study: The aim of the study was to identify CTCs in the blood of OC patients.

Methods: To identify CTCs the panel of genes consist of: (i) human chorionic gonadotropin beta subunit (hCGβ) encoding genes' analyzed in two groups: *CGB1-2* and *CGB3-9*, (ii) cancer stem cell markers (CSCs): aldehyde dehydrogenase 1A1 (*ALDH1A1*), CD133 antigen (*PROM1*), CD44 antigen (*CD44*) as well as (iii) EMT markers: E-cadherin (CDH1), SNAI2 transcription factor (SNAI2), metalloproteinase 9 (MMP9) was used. RT-qPCR with sequence-specific primers was performed using archival RNA isolated from OC patients' blood (n=15). Statistical analysis was performed using Statistica 13 software.

Results: All analyzed samples exhibited expression of *CGB3-9* genes. Transcripts of *CGB1-2* were found in 75% of samples. Relative expression of stemness, and EMT markers varied for each marker. 87% of samples expressed *ALDH1A1*, 75% showed *CD44* transcripts, and 50% expressed *CD133*. 50% of samples were characterized by *CDH1* and *SNAI2* expression, and in 37% *MMP9* transcripts were detected. Statistically significant correlation of *MMP9* and *CDH1* (0,773333) as well as for *CD44* and *SNAI2* (-0,718156) was found. The association of higher expression of *ALDH1A1* and *CD44* with lower cancer stage (I) was revealed.

Conclusions: The results of the study showed that the expression of genes encoding hCGβ may identify CTCs in blood of OC patients. Selected CSCs and EMT markers may also help to detected these cells. The correlation of CD44 and SNAI2 imply that stem cell properties and changing epithelial cells to mesenchymal phenotype affect cancer cells phenotype result in metastasis. Overexpression of *ALDH1A1* and *CD44* in OC patients' blood correlated with lower stage of cancer indicate that these genes analysis may be markers of undifferentiated cancers with poor prognosis.

Reconstruction of the bladder wall and tree-dimensional tumor microenvironment

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Introduction: Immunotherapy is a powerful tool in the fight against cancer, but more than half of patients do not respond to the treatment. This is due to the tumor microenvironment, which allows tumor cells to develop resistance mechanisms to immunotherapies. These are inextricably tied to the tumor microenvironment's architecture and cellular structure.
Traditional two-dimensional (2D) cell culture and animal models have been found to be beneficial in describing malignant cell activity and evaluating ideas of probable causes. Unfortunately, standard 2D culture techniques cannot duplicate the tumor microenvironment's richness, variety, and dynamic nature. Cancer cell spheroids are an increasingly popular model for drug screening and research of tumor growth and proliferation, invasion, matrix remodeling, and angiogenesis. Spheroids imitate cell-cell and cell-matrix interactions, as well as transport aspects between tumor cells and the microenvironment.

The aim of the study: Aim of our study was to reconstruct a hybrid of cancer cell spheroids with the bladder wall milieu by tissue engineering techniques as an in vitro model that provides regulated microenvironments for studying cancer growth.

Methods: In the research, we combined SV40LT-SMC cells (normal smooth muscle) and SV-HUC-1 cells (normal urothelial epithelium) to reconstruct the bladder wall, along with HTB-9 and T-24 invasive bladder cancer cells cultivated as compact spheroids and put on a previously created bladder wall model. An immunocytochemical examination was done using antibodies against type I collagen, alpha-myosin, and pancytokeratin to validate the efficiency of rebuilding the artificial tumor microenvironment.

Results: As a result of our research, we were able to recreate a model of the tumor microenvironment consisting of a multilayer bladder wall with attached spheroids of cancer cells.

Conclusions: Our three-dimensional (3D) model might be utilized as a credible model to measure medication response, perhaps lowering or partially replacing animal tests, and so could be useful in determining the efficacy of novel pharmaceuticals as well as the toxicological evaluation of anti-cancer therapy.
Furthermore, the use of patient-derived tumor cells has the potential to advance customized therapy. As a result, analyzing and modeling the complexity of the microenvironment is an

essential parameter to consider not only in the search for novel treatments, but also in the identification and classification of patients who are likely to react to immunotherapy.

Comparison of ciprofloxacin effect on the bladder cancer cells in 2D and 3D cultures

Authors: Ratajek Aleksander, Ławkowska Karolina, Fekner Zuzanna, Durślewicz Justyna, Kloskowski Tomasz, Grzanka Dariusz, Drewa Tomasz, Pokrywczyńska Marta
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Introduction: Ciprofloxacin is one of the fluoroquinolones, its anti-cancer properties were confirmed in many in vitro studies, conducted mainly in 2D conditions.

The aim of the study: The aim of this study was to analyze the effect of ciprofloxacin on the growth of human bladder carcinoma cell lines (HTB-9 and T24) and normal uroepithelialcell line (SV-HUC-1) in 2D and 3D cell culture.

Methods: In the first phase, cells were established as a 2D model on 96 plates to determine the lethal concentration values (LC10, LC50, and LC90) of ciprofloxacin. Cells were incubated with the drug for 24 and 48 hours. MTT and xCELLiegence system was performed which allowed us to calculate LC values for 3D culture. In the second phase, spheroids were created using low-attachment cell plates, viability was measured using luminescence and fluorescence assays. Cells actin cytoskeleton in spheroids was visualized and analyzed by confocal microscopy. Cell morphology in spheroids was analyzed by hematoxylin and eosin staining. Cell's ability to proliferate was measured using the Ki67 immunohistochemistry staining.

Results: Ciprofloxacin reduced cells viability in a time and concentration dependent manner. All cell lines were able to form spheroids using low-attachment plates (diameter between 350-500 μm). Higher concentrations of the drug produced a significant cytotoxic effect on the cancer cell lines compared to the normal uroepithelium cell line. The results obtained by luminescent assay remained consistent with the decrease of cell viability, compared to 2D experiment, only in the highest tested concentration. Actin cytoskeleton was degraded in the highest tested concentration. Analysis of Ki67 showed expression of this marker in the outer areas of spheroids in control and low concentration groups (LC10). In a higher ciprofloxacin concentration (LC50) expression in the center of the structure started to appear.

Intracellular and exofacial globotriaozilceramide accumulation in circulating lymphocytes of Fabry patients

Authors: Li Luca Kamilla
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Tutor: Kovács Árpád Ferenc, MD, PhD

Introduction: The lysosomal alpha-galactosidase(AGAL) functional enzymatic deficiency leads to Fabry-disease. Due to the lack or dysfunction of AGAL globotriaosyl-ceramide (Gb3) accumulates in key organs. A subclinical inflammation can be observed in patients.

The aim of the study: Assessment of Gb3 deposition in circulating lymphocytes and correlation analysis with inflammatory biomarkers.

Methods:In the circulating peripheral immune cells of Fabry patients (N=15) and healthy controls (N=10) followed up and treated at Semmelweis University Department of Pediatrics Tűzoltó utcai Unit, we determined the Gb3 substrate accumulation on the cell surface and intracellularly with flow cytometer. The inflammatory C-reactive protein, ferritin and lyso-Gb3 biomarker parameters were also correlated.

Results: In Fabry patients, we detected a significantly increased scale of plasma membrane Gb3 positive CD19+ B-cells, CD3+CD4+ T-cells, and CD3+CD8+ T-cells compared to the control group. In Fabry patients, who receive enzyme replacement therapy, intracellular Gb3 accumulation showed a decreasing trend in CD3+CD4+ T cells and CD3+CD8+ T cells.

Conclusions: Substrate specific accumulation at the single-cell level can be detected in circulating lymphocytes of Fabry patients. The distinct substrate accumulation pattern suggests a key role of T-cell mediated dysfunction in chronic inflammatory pathway.

Lysosomal biomass is responsible for acquired resistance to CDK4/6 inhibitors in estrogen-positive breast cancer models

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Affiliation: Department of Biotechnology, Poznan University of Medical Sciences
Cancer Biology, Harvard Medical School

Introduction: Since February 2015 (USA) selective CDK4/6 inhibitors (CDK4/6i) have been approved for the treatment of metastatic HR+/HER2- breast cancers in combination with anti-estrogen therapy. CDK4/6i efficiently blocks cyclin D- CDK4/6-mediated retinoblastoma (RB1) phosphorylation and therefore prevents cell cycle progression from G1 into S-phase. Clinical trials showed that the addition of CDK4/6i to anti-estrogen therapy doubled progression-free survival in women with metastatic HR+/HER2- breast cancer. However, resistance is inevitable in the vast majority of patients.

The aim of the study: We are studying the mechanisms of resistance to CDK4/6 inhibitors. In addition, we aimed to identify treatment combinations to inhibit the development of resistance or target pre-existing and acquired resistance to CDK4/6i.

Methods: We use ER-positive and negative cell lines in our model as well as the following techniques: quantitative PCR, immunoblotting, immunoprecipitation, immunofluorescence staining, microscopy, flow cytometry (BrdU incorporation assays and Annexin-V apoptosis assays), cell growth assays, senescence assays, molecular cloning, lentiviral overexpression of cloned vectors, CRISPR/CAS9 mediated knock-out, shRNA mediated knock-dow.

Results: We proved that enhanced lysosomal biogenesis and increased lysosomal mass are responsible for acquired resistance in ER-positive cells. We also showed that the coadministration of lysosomotropic or lysosome-destabilizing compounds renders resistant tumor cells sensitive to currently used CDK4/6 inhibitors.

Conclusions: CDK4/6 inhibition in conjunction with endocrine therapy represents the standard of care for advanced, hormone receptor–positive breast cancers. We found that the resistant tumors display markedly elevated levels of nuclear (active) TFEB, the master regulator of lysosomal biogenesis. Consequently, resistant tumors contain elevated numbers of lysosomes.

The role of HIF-1 in the BDNF and proBDNF signaling pathways among obstructive sleep apnea patients

Authors:Turkiewicz Szymon, Ditmer Marta, Jaromirska Julia, Grzybowski Filip, Sochal Marcin, Gabryelska Agata
Affiliation: Department of Sleep Medicine and Metabolic Disorders, Medical University of Lodz

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Introduction: Obstructive Sleep Apnea (OSA) is a chronic condition characterized by intermittent hypoxia associated with multiple comorbidities, including psychiatric disorders. The brain-derived neurotrophic factor (BDNF) and proBDNF singling pathways have been shown to be involved in this group of diseases. Furthermore, their expression might be affected by hypoxia-inducible factor 1 (HIF-1), which is an oxygen sensitive transcription factor due to its alpha subunit.

The aim of the study: The study aimed to evaluate the association between HIF-1α, BDNF, and proBDNF protein levels among OSA patients.

Methods: The study included 40 individuals who underwent polysomnography (PSG) and were divided into the OSA group (n=20; AHI≥30) and healthy control (n=20; AHI<5) based on the apnea−hypopnea index (AHI). All participants had their peripheral blood collected in the evening before and the morning after the PSG. BDNF, proBDNF, and HIF-1α protein concertation measurements were performed using ELISA.

Results: No differences were found in BDNF, proBDNF, and HIF-1α protein levels between OSA and the control group, both in the evening and in the morning. In the OSA group, i.e., the linear regression model, the morning BDNF protein level was predicted by age (ß=−0.389, p=0.023) and the mean SpO2 of desaturations during sleep (ß=−0.577, p=0.002). This model accounted for 63.3% of the variability in the morning BDNF protein level (F=14.639, p<0.001). The morning proBDNF protein level was predicted by age (ß=−0.395, p=0.033) and HIF-1α morning protein level (ß=−3.192, p=0.005). This model accounted for 52.4% of the variability in the morning BDNF protein level (F=9.355, p=0.002).

Conclusions: The obtained results suggest that the HIF-1 transcription factor might be involved in the pathway activated by proBDNF, which may have protective properties from hypoxia in OSA patients.

KSR2 as a novel potential oncogene in T-cell acute lymphoblastic leukemia

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Affiliation: Department of Molecular and Clinical Genetics, Institute of Human Genetics, Polish Academy of Sciences, Faculty of Medicine, Poznań University od Medical Sciences, Department of Pediatric Oncology, Hematology and Transplantology, Poznań University od Medical Sciences

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Introduction: T-cell acute lymphoblastic leukemia (T-ALL) is an aggressive malignancy arising from T-cell precursors, occurring mostly in children and adolescents/young adults. It characterizes with the heterogeneous biology, including numerous various genetic defects, along with gene expression deregulation. miRNAs, as well as abnormal gene promoter methylation are implicated in negative regulation of gene expression. miRNAs, when aberrantly expressed, contribute to various neoplasm types, including T-ALL. Previously, we identified *KSR2* as a target of miR-143-3p, which is downregulated in T-ALL and is a novel tumor suppressor miRNA in this leukemia. *KSR2* is a positive regulator of RAS pathway, which is overactivated in many neoplasms and related to oncogenic transformation. *KSR2* gene is overexpressed in a subgroup of T-ALL patients.

The aim of the study: We aimed to present the potential oncogenic activity of *KSR2* in 2 T-ALL cell lines. Thus, we intended to test the hypothesis if repression of *KSR2* negativelly affects the growth of T-ALL cells in vitro.

Methods: We applied CRISPR inhibition approach utilizing dead Cas9 fused with KRAB domain to repress *KSR2* expression. We used 2 sgRNAs targeting *KSR2* transcription start site in JURKAT and ALL-SIL cell lines. For both sgRNAs in both cell lines we confirmed the effective downregulation of *KSR2* on mRNA and protein level with RT-qPCR and Western Blot. To assess its functional effect in T-ALL, we performed GFP growth competition assay.

Results: We observed a significant loss of growth advantage of the cells with *KSR2* repression compared to wild type cells in both cell lines. However, the difference was more profound in ALL-SIL than in JURKAT.

Conclusions: We conclude that *KSR2* exerts oncogenic activity in T-ALL in vitro. Its upregulation in T-ALL may result from decreased miR-143-3p expression and/or aberrant promoter methylation. It can exhibit a potential importance for T-ALL biology.

Acknowledgments: Student Research Grant no. 113/2022, Poznań University of Medical Sciences

Unveiling a Novel Player in Retinal Development: The Important Role of ATAD3

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Tutor: Adi Inbal DMD, PhD

Introduction: Mutations in human *ATAD3A*, which encodes a mitochondrial inner membrane-bound ATPase, result in a phenotypic spectrum including cardiomyopathy, corneal opacities, cataract, and optic atrophy. To better understand the roles *ATAD3A* plays in eye development, we created a KO mutation in the zebrafish homolog, *atad3*.

The aim of the study: The aim of this research is to create a KO model for *atad3* in zebrafish which will allow us to uncover the importance of atad3 in the retinal development, thus providing us clues about the connection between a mutation in the *ATAD3* genes and occular dysfunction phenotypes.

Methods: *Atad3* KO zebrafish lines were created using the CRISPR method. Gross phenotyping was acquired by live imaging with and without transgenes and quantified using FIJI. Gene expression was analyzed by performing In Situ Hybridization. Sections of embryos' eyes were either imaged under a Transmission Electron Microscope, or stained with protein-specific antibodies.

Results: *Atad3-/-* eyes stopped growing during a crucial period of development, while normal eyes continued to grow. We uncovered that the reduced eye size was due to a lack of cell proliferation, while apoptosis didn't change. Histological examinations revealed that although layer formation appeared mostly normal, there was a reduction in all retinal cell types. Expression analysis found that atad3 was highly expressed in the ciliary marginal zone (CMZ), the only proliferating cell population in the retina from three days post-fertilization onwards. Transmission electron microscopy further showed abnormal mitochondria in photoreceptors and CMZ. Additionally, we showed that the mTOR pathway activity was lacking from the CMZ in mutants, providing an explanation for the reduced proliferation.

Conclusions: We reveal a new role for atad3 in cell proliferation in the developing eye. Hence, zebrafish *atad3-/-* can serve as a research model for a better understanding of the pathophysiology of the disease caused by mutations in human *ATAD3A* and might help in the search for potential treatments.

Acknowledgments: Student Research Grant no. 113/2022, Poznań University of Medical Sciences

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The impact of physical activity during sleep deprivation on mood and reaction speed to visual and auditory stimuli

Authors: Turkiewicz S, Ditmer M, Karuga F, Gabryelska A, Strzelecki D, Sochal M
Affiliation: Department of Sleep Medicine and Metabolic Disorders, Medical University of Lodz

Introduction: Sleep deprivation (SD) is being examined in the treatment of depression and other affective disorders for years. However, studies' outcomes remain ambiguous, with varying levels of clinical improvement and its ephemeral character. Thus, it is necessary to find new factors accounting for the variability of results to develop new therapeutic protocols.

The Aim of the Study: The study aimed to assess the influence of physical activity on mood and reaction speed following SD.

Methods: The study includes 71 participants. SD lasted about 24 hours. Physical activity (PA) was controlled using actigraphy given to each participant. Participants underwent the reaction speed test and filled out a questionnaire assessing depression symptoms- Beck Depression Inventory (BDI), in the evening of the SD day, and the following morning. Based on the percentage of sedentary time (gravity-subtracted sum of vector magnitudes<386) participants were classified as inactive (≥70% of SD duration spent sedentary, n= 43) or active (n= 28).

Results: There were no significant differences between the active and the inactive participants regarding pre/post SD BDI score, reaction speed, and demographic data (all $p>0.05$). The inactive group had a significantly lower BDI score following SD in comparison with their baseline parameters (5, IQR 1-12 vs. 3, IQR 0-12, $p=0.024$) than the active group ($p=0.408$). Reaction speed after SD was impaired in both active ($p<0.001$) and inactive group ($p<0.001$). However, the difference between pre/post SD response time was slightly higher in the active individuals ($p=0.047$).

Conclusions: This study shows, that a sedentary behavior during SD might improve mood and slightly less impair the response time to auditory or visual stimuli than a higher activity level. Thus, PA could be an important modulator of clinical outcomes observed in individuals with affective disorders subjected to SD. PA should be included in the SD protocols designed for future studies.

Serum protein levels of BDNF and proBDNF in obstructive sleep apnea patients and their involvement in insomnia and depression symptoms

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Introduction: Obstructive sleep apnea (OSA) is a disorder that, apart from somatic sequelae, increases the risk of developing psychiatric conditions. Brain-derived neurotrophic factor (BDNF) signaling pathway is involved in the pathophysiology of depression and insomnia.

The Aim of the Study: Therefore, the study aimed to investigate differences in concentrations of BDNF and proBDNF in patients with OSA and healthy individuals, to evaluate diurnal changes of these proteins, and to assess the correlations with psychiatric symptoms.

Methods: Sixty individuals following polysomnography (PSG) were divided into two groups based on the apnea-hypopnea index (AHI): OSA patients (AHI ≥ 30; n = 30) and control group (AHI < 5; n = 30). Participants filled out questionnaires: Beck Depression Inventory (BDI), Athens Insomnia Scale (AIS), and Pittsburgh Sleep Quality Index (PSQI). Peripheral blood was collected before and after PSG. Protein concentrations were measured using ELISA. OSA group was divided into subgroups: AIS (−)/AIS (+) (AIS > 5), PSQI (−)/PSQI (+) (PSQI > 5), and BDI (−)/BDI (+) (BDI > 19).

Results: No differences in BDNF and proBDNF protein levels were observed between OSA and the control groups. However, BDNF and proBDNF evening protein concentrations were higher in the AIS (+) and PSQI (+) groups ($p < 0.001$ for all). The BDI (+) group was characterized by lower morning levels of both proteins ($p = 0.047$ and $p = 0.003$, respectively).

Conclusions: BDNF signaling pathway might be involved in the pathophysiology of depression and insomnia in patients with OSA. BDNF and proBDNF protein levels might be useful in defining OSA phenotypes.

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Endoscopic Endonasal Repair of Transsphenoidal/Transethmoidal Meningoencephalocele and Meningocele - Surgical Outcomes and Complications Analysis

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Introduction: Transsphenoidal/transethmoidal meningoencephalocele (or meningocele) are rare entities most commonly presenting as spontaneous CSF leaks. The defects of the lateral wall of the sphenoidal sinus for meningocencephalocele are considered congenital lesions, but some factors (increased ICP) may lead to acquired secondary skull base defects.

The Aim of the Study: The purpose of the study was to analyze the surgical outcomes, incidence and evolution of complications in cases of endoscopic endonasal repair (EEN) of meningoencephalocele/meningocele of the sphenoid sinus.

Methods: The study is a retrospective clinical case series analysis. 11 consecutive cases of meningoencephalocele and meningocele of the sphenoid sinus operated on using an endoscopic endonasal approach from 2011 to 2022 at the National Research Institute of Oncology in Warsaw, Poland, were reviewed. All patients have undergone reconstructions of skull base defects through extended transnasal transsphenoidal/ transpterygoid endoscopic approaches.

Results: The series includes 11 patients (three men, and eight women). All patients in this series presented with CSF rhinorrhea, which was associated with meningitis in three cases. There were no severe complications associated with surgery. There was no CSF leak postoperatively. Two patients complained of transitional hypoaesthesia of the V2 dermatome of the face, and there were four cases with sinusitis and one case of prolonged intranasal crusting.

Conclusions: Endoscopic endonasal surgery is a safe and effective approach for meningocele and meningoencephalocele of the sphenoid sinus. This minimally invasive method allows the resection of the meningeal hernia and repair of the skull base defect with favourable clinical outcomes and fewer complications.

The detection of atrial fibrillation and its risk evaluation in patients undergoing neurorehabilitation

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Introduction: Atrial fibrillation (AF) is a well-defined risk factor for ischemic stroke. It is a common arrhythmia increasing in incidence with age. However, in about 1/3 of patients, its detection remains a challenge. In stroke patients, AF may hinder the prognosis. It affects early post-stroke rehabilitation and stroke outcome. There is increasing interest in more efficient strategies for early AF detection.

The aim of the study: The study aimed to evaluate the usefulness of mobile ECG evaluation in stroke patients during neurorehabilitation.

Methods: The study included 40 ischemic stroke patients (20 females, 20 males, aged 69+/-14 years) from the Stroke Unit at University Hospital in Poznan. Each patient underwent an ECG examination before and after neurorehabilitation. ECG was recorded using Kardia 6L system. CHAD2Vasc score, CHARGE-AF, CHARGE-5y risk, and CHARGE-PROBABILITY were evaluated based on clinical data.

Results: We detected AF in 20% of ischemic stroke patients. Two more patients already had a history of AF. We have not found differences in CHAD2Vasc score, CHARGE-AF, CHARGE-5y risk, and CHARGE-PROBABILITY between patients diagnosed with AF using Kardia system and the persons without AF detected. Using cluster analysis, we identified 5 clusters of patients. The cluster with the highest detection AF using Kardia system contained patients with the highest hypertension incidence (P=0.0140), highest reperfusion treatment (P=0.0053), without tachycardia (P=0.0005), and non-smokers (P=0.0390). Those patients were older (P=0.000024; 84; 70-96 years;median;min-max), tended to have higher systolic blood pressure (P=0.0516), had highest CHARGE-AF (P=0,000018), high CHARGE-5y risk (P=0.000018) and CHARGE-PROBABILITY (P=0.000018).

Conclusions: ECG valuation in stroke patients during neurorehabilitation might improve AF detection. The complex evaluation, including CHAD2Vasc score, CHARGE-AF, CHARGE-5y risk, and CHARGE-PROBABILITY, is helpful in the identification of patients at the highest risk for AF and in preventing complications.

The usefulness of autonomic function tests in patients undergoing neurorehabilitation

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Introduction: Autonomic and cardiac dysfunction may occur during acute stroke without evidence of primary heart disease. In stroke patients, autonomic dysfunction, like increased arterial blood pressure, arrhythmia, and ischemic cardiac damage, may hinder the prognosis. Moreover, dysautonomia affects early post-stroke rehabilitation and, as a result – stroke outcome.

The Aim of the Study: The study aimed to evaluate the usefulness of autonomic function tests in stroke and non-stroke patients during neurorehabilitation.

Methods: The study included 33 patients (16 females, 17 males, aged 58+/-19 years) from the Department of Neurology and the Department of Neurosurgery and Neurotraumatology. Fifteen stroke patients and 18 non-stroke patients underwent examination using a battery of autonomic functions tests: deep breathing (DB), Valsalva maneuver (VM), heart rate variability (HRV) with the orthostatic test, and handgrip test. ECG was recorded using Kardia 6L system.

Results: Pathological decrease in Systolic Blood Pressure (SBP) during the orthostatic test was observed twice as frequently in patients with stroke localization in central autonomic areas (P=0.0157) compared to patients without such localization of brain lesions. Using cluster analysis, we identified a group of patients with the most severe dysautonomic features: smaller drop in SBP (P=0.0309) and lowest 30/15 HRV ratio during the orthostatic test (P=0.0372), lowest Valsalva ratio (P=0.0026) and lowest DBP in handgrip test (P=0.0029). Those patients were older (73; 61-96 years; median; min-max), tended to have a more frequent stroke (53%) (P=0.0518), and had more frequent stroke localization in central autonomic areas (P=0.0136) than patients classified in other two clusters.

Conclusions: Autonomic tests might be helpful for the identification of older stroke patients with ischemic lesions localized in central autonomic areas who are at risk for severe dysautonomia. Such an evaluation may prevent complications during the rehabilitation process.

Use of Tubular Retractors in the Management of Deep Brain Lesions: a Single Centre Experience

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Introduction: An adequate visualization of deep intracranial lesions requires aggressive retraction of the brain parenchyma, which leads to ischemia due to significant focal pressure and collapse of the cerebral microvasculature. ViewSite Brain Access System (VBAS) is a tubular retractor which minimizes this risk by exerting radial force on the surrounding tissue, resulting in more even force distribution and lesser damage.

The Aim of the Study: To characterize the group of patients treated using VBAS and evaluate its safety and efficacy.

Methods: Retrospective analysis of 19 patients (mean age 48,42±15,36, 58% female) operated with VBAS between 2021-2023 in a single center. MRI images were analyzed using 3D Slicer (ver.5.2.1). Statistical analysis was carried out with Statistica (ver.13, StatSoft).

Results: 15 (79%) lesions were intraparenchymal and 4 (21%) intraventricular. The mean distance from the cortical surface to the nearest lesion point was 2.70±0.78 cm, and to the farthest point was 6.46±1.6 cm. The most common pathology was glioblastoma multiforme (47%), and the mean lesion volume was 24,87±19,99 cm3. Gross total resection (GTR) was achieved in 7(37%) and near total in 5 (26%) cases. In 8 patients we were able to perform a volumetric analysis. The mean increase of post-op edema (hyperintensity on T2-weighted images) was 0,75 cm3, yet variability was high (SD=32,14). In 2 cases we observed a decrease in post-op edema, while intraventricular tumors were not associated with pre-op edema. The median Karnofsky performance score (KPS) value on pre-op day was 85 [60;95] and 80 [60;95] on discharge, while the median KPS change due to the surgery itself was estimated to be 0 [0;10].

Conclusions: VBAS is a safe and effective device enabling treatment of deep-seated brain tumors, with a positive rate of GTR, no significant impact on performance status, and variable impact on post-op brain edema.

The efficacy of Deep Brain Stimulation of the subthalamic nucleus in the treatment of Parkinson's disease

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Introduction: Parkinson's disease (PD) is one of the most commonly diagnosed movement disorder. Patients with PD experience many disturbing physical symptoms such as resting tremor, rigidity and slowness of movement. They also have emotional disorders like anxiety, depression or apathy. Deep Brain Stimulation of the subthalamic nucleus (DBS STN) is a gold-standard surgical therapy, which may reduce many motor and non-motor symptoms of PD.

The Aim of the Study: The study was conducted to assess the efficacy of DBS STN in the treatment of non-motor symptoms in PD patients.

Methods: The study group consisted of 29 patients (8 women and 21 men, mean age 58.4±10years), with idiopathic PD, who underwent the DBS STN implantation procedure. The scales assessing quality of life (PDQ8, PDQ-39) and non-motor symptoms of PD (PDSS, Epworth, TAS-20, HADS, AES, SRMI) were evaluated two times in each case (before and 24 months after DBS STN surgery).

Results: After the DBS STN implantation, the patients' mean PDQ-39 score decreased by 41% (from nearly 56 points to 33 points, p=0,002). The mean PDQ-8 score decreased by 33% (from approximately 12 to 8 points, p=0,01) and the mean PDSS score increased by 12% (from nearly 91 to 108 points, p=0,02). The remaining non-motor scales were not significantly altered (p>0,05).

Conclusions: DBS STN implantation may significantly improve PD patients' quality of life and such non-motor functions like sleepiness, but tends not to severely impact on mania, apathy and emotional problems in this group of patients.

The inflammatory and coagulation parameters predict outcome in cervical artery dissection

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Introduction: Although relatively uncommon in the community, cervical artery dissection (CeAD) is a major cause of ischemic stroke in young and middle-aged adults. Inflammation plays an important role in the initiation and progression of CeAD. Also, hypercoagulable state was identified as a significant contributor to CeAD.

The Aim of the Study: To assess the utility of inflammation and coagulation parameters in the prediction of treatment outcome in CeAD.

Methods: We have retrospectively collected data of 31 patients (mean age 49.00 ± 13.5 years, 52% female) treated in a single centre for CeAD in years 2020-2023. Demographic data, clinical parameters at admission [i.e. National Institutes of Health Stroke Scale (NIHSS)]; inflammation and hypercoagulation parameters at admission [leukocyte (WBC), neutrophil, monocyte, lymphocyte counts, C-reactive protein (CRP), fibrinogen, prothrombin time (PT)] were extracted from medical records. Lymphocyte-to-monocyte ratio (LMR) and neutrophil-to-lymphocyte ratio (NLR) were calculated. Statistica ver. 13.0 (StatSoft) was used to compare good [modified Rankin scale (mRS) score 0–2] and poor (mRS 3-6) outcome patients as well as to investigate the correlation with mRS.

Results: Poor outcome CeAD patients were significantly older (57,0 vs 44,6 years; p=0.01), had higher NIHSS score (18 vs 1; p=0.001), higher CRP level (16.58 vs 4,98 mg/l; p=0.02), lower fibrinogen level (186,5 vs 314,0 mg/dl; p=0.02), longer PT (13,59 vs 12,07 sec; p=0.02), higher NLR (6,54 vs 3,74; p=0.02), lower LMR (1,99 vs 3,14). The closes Spearman correlation with mRS was observed for fibrinogen level (cc=-0,670), NIHSS score (cc=0,622), neutrophil count (cc=0,621), and NLR (cc=0,590).

Conclusions: Various inflammatory and coagulation parameters accurately predict outcome in CeAD. This confirms the significant role of both inflammation and hypercoagulation in the pathophysiology of CeAD.

Analysis of influence of prenatal exposition to testosterone and serum testosterone level in patients with multiple sclerosis treated with natalizumab and fingolimod

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Introduction: Multiple sclerosis (MS) is a chronic inflammatory demyelinating disease of the central nervous system (CNS). Many studies show a role of androgens in pathogenesis of MS. Women are more often affected by MS than men. Exposition to low levels of testosterone (T) during the prenatal period as well as hypogonadism represent risk factors for developing MS. Whereas high serum T levels in adult patients can be a protective factor in terms of MS. Androgens are known modulators of peripheral immune response but T plays also a role in formation and repair of myelin in the CNS suggesting its neuroprotective role.

The Aim of the Study: In this work we studied a link between prenatal exposition to T, serum T levels and clinical progression of patients treated for relapsing-remitting form of MS (RRMS).

Methods: We enrolled 33 patients with RRMS treated with natalizumab (NTZ) and fingolimod (FDG). Digit Ratio (DR) was measured using a digital scanner. Serum T concentration was measured with electrochemiluminescence. Neurological outcome was determined using standard Expanded Disability Status Scale (EDSS). For assessment of cognitive functions we used Symbol Digit Modalities Test (SDMT), Montreal Cognitive Assessment (MoCA), Fatigue Scale for Motor and Cognitive Function (FSMC) and Modified Fatigue Impact Scale (MFIS). Since patients suffering from MS frequently cope with depressive disorders we measured its severity with Beck Depression Inventory (BDI).

Results: We found a correlation in female patients treated with FNG between serum T level and progression in MFIS psychosocial and also a correlation in female patients treated with NTZ between DR and FSMC cognitive. In male patients treated with NTZ we observed an association between serum T level and progression in SDMT and also between T and progression in MFIS cognitive. There is also a relation in all male patients between DR and progression in BDI. The obtained results reached statistical significance.

Conclusions: Our observations indicate an existing link between prenatal exposition to T, serum T level and outcome of patients with RRMS treated with NTZ and FDG. The data may provide useful information for the use of DR and serum T level as a marker for response to different MS therapies.

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RELATIONSHIP BETWEEN LIPID METABOLISM GENES AND RESIDUAL DISEASE IN HIGH-GRADE SEROUS OVARIAN CANCER

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Introduction : Surgery in ovarian cancer is performed with the aim of removing all macroscopic tumors and achieving no residual disease. The abnormalities in genes encoding lipid metabolism in HGSOC patients have been described. It remains unclear whether their expression is associated with the incidence of residual disease.

Aim of the study: To investigate expression of genes involved in lipid metabolism and their relationship to residual disease following ovarian cancer surgery.

Material & Methods: 551 ovarian cancer tumors deposited in The Cancer Genome Atlas (TCGA) were analyzed in terms of mRNA expression of 32 genes involved in lipid metabolism. The expression was measured by microarray. The analysis included clinical (overall survival – OS; disease-free survival – DFS) and pathological data (grade, stage, and tumor residual disease) retrieved from TCGA.

Results : In comparison to patients with no remaining cancer implants, patients with residual disease had higher expression of ABCA1 and CD36 genes (Anova, p=2e−04; Kruskal–Wallis, p=4.6e−05, respectively). Interestingly, the increase in mean expression of ABCA1 was most significant in patients with residual disease greater than 20mm. Consistently, the expression of ABCA1 and CD36 was related to shorter progression-free survival (Cox regression model, HR=1.14, p=0.015 and HR=1.14, p=0.015, respectively) and worse overall survival (Cox regression model, HR=1.20, p=0.001 and HR=1.16, p=0.01, respectively). Conversely, higher expression of PCSK9 was shown in a group of patients without residual disease in comparison to patients with visible postoperative residual disease (Kruskal–Wallis, p=0.0016).

Conclusions: Higher expression of ABCA1 and CD36 genes was associated with increased chance of residual disease and worse prognosis, whereas high expression of PCSK9 was observed in samples with lower incidence of residual disease.

EXPRESSION OF LIPID METABOLISM GENES INCREASES IN HIGH-GRADE SEROUS OVARIAN CANCER WITH LYMPHOVASCULAR AND VASCULAR INVASION BASED ON TCGA DATA

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Introduction : High-grade serous ovarian cancer (HGSOC) is one of the leading causes of death in patients with gynecological tumors. Metastases in HGSOC are common and are often associated with vascular and lymphovascular invasion. HGSOC cells have several metabolic abnormalities, including disturbed lipid pathways . Exploration of associations between genes taking part in lipid metabolism and lymphovascular and vascular invasion may indicate new mechanisms of HGSOC progression.

Aim of the study: To investigate expression of the genes involved in lipid metabolism in tumor tissue and determine their relationship to vascular and lymphovascular invasion in HGSOC.

Material & Methods: 551 ovarian cancer tumors deposited in The Cancer Genome Atlas (TCGA) were analyzed in terms of 32 genes correlated with lipid metabolism selected based on literature search. We analyzed data of mRNA expression measured by microarray. The analysis included correlation to clinical and pathological data (grade, stage, vascular invasion) retrieved from TCGA. Tissues with lymphovascular and vascular invasion were compared to those without these features by two-group statistics (U-Mann Whitney, t-test) depending on the presence of normal distribution.

Results : Lymphovascular invasion was detected in HGSOC tissues with higher expression of the following lipid enzyme genes: DGAT1, ALOX5, MGLL ABCA1, ABCG1 (U-Mann Whitney p=0.04; p=0.034, p=0.034, p=0.00042, p=0.0026, respectively). The vascular invasion was present in tissues with higher expression of DGAT1, CD36, FDFT1, FABP4, ABCG1, ABCA1 enzyme genes (U-Mann Whitney, p=0.00084; p=0.0029, p=0.0016, p=0.0054, p=0.019, p=0.0031 , respectively).

Conclusions: Higher expression of lipid enzyme genes is associated with increased incidence of lymphovascular and vascular invasion in HGSOC tumor tissue . These markers can be used potentially in further research on metabolism-directed HGSOC treatment strategies.

COMPLETE BLOOD COUNT PARAMETERS AS PROGNOSTIC MARKERS OF OVARIAN CANCER RECURRENCE

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Introduction : Although significant efforts have been made in the treatment of ovarian cancer (OC), it is still the leading cause of death among all gynecological malignancies. Multiple biomarkers can estimate the prognosis of the disease. In this context, attention is being paid to the role of peripheral blood components, including platelets, lymphocytes, and neutrophils as they may play a protumoral role in early metastases in *in vitro* studies. Thrombocytosis has been reported in ovarian cancer patients, however, its predictive potential, especially in combination with other parameters, remains unclear.

Aim of the study: We aimed to determine the relationship between the neutrophils, lymphocytes, and platelets and the prognosis of OC among patients treated at the Department of Gynecology, Obstetrics, and Gynecologic Oncology.

Material & Methods: We collected patients' data treated in our clinic between 2013 and 2022 and randomly selected 100 cases for analysis. The survival analysis was performed using the Kaplan-Meyer method and a double-sided Mantel–Cox (Log-Rank) test on patient groups with normal and high platelets, lymphocytes, and neutrophils counts. The disease recurrence hazard was estimated with Cox proportional-hazards model applied with single and multiple factors. Further, the differences between FIGO stage I/II and III/IV were investigated with the U-Mann-Whitney test.

Results : We demonstrated decreased progression-free survival (PFS) in OC patients with elevated total platelets and neutrophil count at the time of diagnosis (Cox multiple regression p=0.0006 ; p=0.02, respectively). Patients with high platelets had shorter PFS than those with normal values (log rank test, p=0.0004). Patients with more advanced disease (FIGO III/IV) had higher platelets than those with malignancy confined to the pelvis (FIGO I/II, Mann Whitney test, p=0.0008).

Conclusions: Collectively, platelet and neutrophil count can serve as indicators of an increased risk of disease progression and more advanced disease.

Ovarian cyst sclerotherapy: a new innovative way of treatment.

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Introduction : Whenever benign ovarian cysts, such as endometriomas, start to cause symptoms or greatly increase in size; a golden standard of surgery is a laparoscopic cystectomy. However, a new method has entered the surgery room – ovarian cyst sclerotherapy, which can be performed with various sclerosing agents, mostly with ethanol.

Aim of the study: To review whether ovarian cyst sclerotherapy with ethanol can be as effective as laparoscopic cystectomy in endometriomas treatment.

Material & Methods: A systematic review was based on the PRISMA guideline. Electronic literature search was carried out using keywords: "ovarian cyst sclerotherapy", "endometriomas ethanol sclerotherapy". Inclusion criteria: published less than 5 years ago, studies of ethanol sclerotherapy treatment of endometriomas under ultrasound control, meta-analysis, systematic reviews. Analysis of 225 articles was performed and 14 were included in this study.

Results : One of the ways this procedure can be done consists of cyst aspiration and sclerosing agent injection under transvaginal sonography (TVS) control. Magnetic resonance imaging (MRI) of pelvis is strongly recommended before the procedure to eliminate any suspicion of malignancy. Some authors compared antral follicular count (AFC) and antimüllerian hormone (AMH) concentration in blood after the ethanol sclerotherapy procedure and laparoscopic cystectomy. The results showed significantly higher AFC and lower concentration of AMH afterwards. Some studies also came with higher pregnancy rates after cyst sclerotherapy compared to underwent laparoscopic surgery. The cyst recurrence rate was quite high and one of the reasons could have been not fully aspired content. Performed ovarian sclerotherapy shows higher effectiveness in pain syndrome management and it is a low-cost procedure as it does not require anaesthesia or any special equipment. One of the most serious but rare complications after the procedure is abscess caused by sclerosing agent leakage into the peritoneal cavity. Most likely women can experience not dangerous short-term pain in the abdomen or fever. Any unsuccessful ovarian sclerotherapy should be continued with urgent laparoscopic surgery.

Conclusions: Ovarian cyst sclerotherapy under TVS is a low-cost and less technically complicated procedure with better pain syndrome management and preservation of ovarian

reserve. However, higher recurrence rate and lack of evidence are the some of the few reasons why this procedure has not replaced the golden standard of laparoscopic cystectomy.

HORMONALLY-MEDIATED VESTIBULODYNIA: A CHART REVIEW

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Introduction : Provoked vestibulodynia (PVD) specifically associated with hormonal changes in pre-menopausal women has been termed hormonally mediated vestibulodynia (HMV). In patients with HMV, the main reason for PVD is a low calculated free testosterone level that is the result of treatments or conditions that lower androgen levels.

Objective: We describe the variation in etiologies for HMV and emphasize the importance of measuring total testosterone and SHBG to monitor calculated free testosterone levels in patients with HMV.

Methods: This is a retrospective chart review of the last four years of premenopausal patients presenting to our clinic with entrance dyspareunia who were diagnosed with HMV and whose symptoms were alleviated by treatment.

Results : Nine patients met inclusion criteria. Presenting complaints in addition to dyspareunia included recurrent irritative bladder symptoms without positive urine culture and pelvic pain. Vulvoscopic examination revealed signs of vestibular hypersensitivity with pain ranging from 1 to 9 in all 7 regions of the vestibule tested. Patients had histories of hormonal contraceptive use, spironolactone use and/or were actively breastfeeding, all which can decrease calculated free testosterone. All patients were treated with systemic testosterone and estradiol/testosterone cream applied daily to the vestibule. On follow-up blood testing, all patients had calculated free testosterone values approaching 0.6-0.8 ng/dl, established by Guay et al as the optimum range. All patients reported significantly decreased dyspareunia and significant relief of other bothersome symptoms.

Conclusions: This chart review of premenopausal women with entrance dyspareunia illustrates a variety of etiologies associated with low calculated free testosterone and the diagnosis of HMV. In pre-menopausal patients presenting with entrance dyspareunia, these data emphasize the importance of calculating free testosterone and performing vulvoscopy to establish the diagnosis. Additionally, this chart review demonstrates the efficacy of systemic testosterone and local vestibular androgen/estradiol therapies in ameliorating vestibular pain and associated symptoms in patients with HMV.

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Comparison of histopathological characteristics of breast cancer between a group of women under 35 and a group of women aged 35-50.

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Introduction: Breast cancer is the most common cancer globally in women. Its incidence increases proportionally with age. However, some cases of breast cancer may occur in patients below the age of 35. Although these cases are rare, they cannot be marginalised.

The aim of the study: This study aimed to compare the histopathological characteristics of breast cancer between extremely young patients (<35) and patients aged 35-50.

Methods: In this survey, a restrospective analysis was performed using the analysis software system Statistica(version13.TIBCOSoftwareInc.(2017)). The patients were selected due to procedure code for removal of sentinel nodes in years 2017-2020. This procedure was an inclusion criterion because all nodes and lumps belonging to these patients got tested by pathomorphologists at the University Hospital in Krakow after the surgery was performed. The exclusion criteria were absence of postoperative histopathological results in database, age of over 50 years

Results: The study included 404 subjects - 42 women under the age of 35 at the time of the surgical procedure and 362 women aged 35-50. The most common lesions in postoperative histopathology were: NST - carcinoma of no special type (64.2% - including NST with DCIS (ductal carcinoma in situ) (54.9%), isolated NST (6.3%) and NST with LCIS (lobular carcinoma in situ) (3.0%)). When comparing the types of tumors, one statistically significant results was obtained between analysed groups - for LOB (invasive lobular carcinoma)($p<0,05$,chi2-test). LOB was not detected in a single patient in the younger group, while it was detected in 42(11.7%) patients in the older group.

Conclusions: LOB is more likely to appear in the group 35-50 than in group <35 years. DCIS and NST are the most common types of breast cancer regardless of age.

Differences between lung adenocarcinoma or squamous cell lung carcinoma patients in tumor characteristics, the incidence of comorbidities, and the 5-year survival depending on tobacco smoking status.

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Introduction: Recent worldwide data report changes in the incidence of non-small cell lung cancer (NSCLC) among never-smokers. This specific group of patients, depending on the sources, may concern 10 to 25% of all patients suffering from lung cancer. The literature shows differences in the course of the disease and survival of patients with lung cancer depending on smoking status.

The aim of the study: The study aimed to investigate the differences between the incidence of the comorbidities, neoplastic diseases other than lung cancer, and survival of patients with lung adenocarcinoma (LUAD) and lung squamous cell carcinoma (LSCC) depending on smoking status.

Methods: The study included 923 patients who underwent radical lung resection due to lung cancer, and with histopathologically confirmed LUAD or LSCC. Chi2 Pearson's test, t-test, Mann-Whitney U test, The Kaplan Meier method, the Log-rank test with Mantel correction, and the Cox proportional hazard model were used for data analysis.

Results: 22% of patients in the examined cohort were lifetime non-smokers. The median age of smokers at diagnosis was significantly higher compared to the median age of non-smokers. We did not observe differences in tumor stage and grade in smoking and non-smoking groups. Lung adenocarcinoma was more common in non-smokers than in smokers. Non-smokers were more likely to suffer from neoplastic diseases other than lung cancer compared to smokers. We observed no significant differences in patient 5-year survival according to smoking status. We observed an extended survival time in a group of female non-smokers compared to a group of male non-smokers.

Conclusions: Investigating the differences in the characteristics of patients with NSCLC depending on smoking status may allow to better matching of lung cancer screening programs in the future. In patients with LUAD or LSCC, we did not observe significant differences in stage at diagnosis and overall survival, depending on smoking status.

Comparison of PD-1/PD-L1 expression on monocyte subpopulations in CLL patients

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Introduction: Chronic lymphocytic leukemia (CLL) is characterized by numerous tumor-induced changes that impact both the innate and adaptive arms of the immune response. Monocytes in CLL display altered subset compositions: classical (CD14+CD16−SLAN−), intermediate (CD14+ CD16+ SLAN−) and non-classical (CD14low/− CD16+SLAN+). Moreover, the latest studies suggest their propensity for immunosuppressive phenotypes, like an upregulation of PD-L1.

The aim of the study: This study aimed to compare the expression of PD-1/PD-L1 in monocyte subtypes between CLL patients and healthy controls and within the CLL group depending on whether the patient is ZAP70+ (cut off 20%) and CD38+ (cut off 30%).

Methods: PBMCs were isolated from 24 patients diagnosed with CLL. The following monoclonal antibodies were used: anti-CD14 V450, anti-CD16 FITC, anti-SLAN APC, anti-PD-1 Alexa Fluor 700, anti-PD-L1 PE. Prognostic markers ZAP-70 and CD38 were determined on leukemic B cells (CD19+CD5+). The cytometer used was CytoFlex LX, Beckman Coulter. The statistical analysis was performed in GraphPad Prism9 using the U Mann-Whitney test or unpaired t-test and Kruskal-Wallis test for comparison between three groups.

Results: The study group had a higher percentage of intermediate and nonclassical monocytes compared to the control group ($p<0.01$). The significantly higher expression of PD-L1 was noted on intermediate and non-classical monocytes compared to classical ones ($p<0.01$). The CD38-negative CLL group had a significantly higher percentage of classical and intermediate monocytes with PD-1 expression than CD38+ patients ($p<0.05$).

Conclusions: PD-1/PD-L1 expression varies between monocyte subpopulations. In CLL patients, immunosuppressive monocytes with higher expression of PD-L1 are most numerous among non-classical monocytes.

Substances of natural origin in the chemoprevention of breast cancer.

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Introduction: Breast cancer is a major epidemiological problem in most countries. The process of cancer formation has many stages, and the task of natural chemopreventive compounds is to slow down, block or reverse this process. Polyphenols are among the most studied chemopreventive compounds that modify the human epigenome. The chemopreventive potential of polyphenols may be due in part to their ability to modulate epigenetic changes in cancer cells.

The aim of the study: Polyphenols have been shown to modify the activity of DNA methyltransferases, histone acetyltransferases and deacetylases. Transcriptional silencing of the tumor suppressor gene, which is induced by hypermethylation, is often an epigenetic defect in many cancers. Reversing the hypermethylation of genes, which can be achieved by inhibiting DNMT (DNA methyltransfer) activity in cancer cells, is one potential route for the development of epigenetic drugs. Polyphenols have the ability to reverse methylation-induced gene silencing and restore tumor suppressor gene expression. Their health-promoting effects are attributed to their strong antioxidant potential, ability to capture free radicals, thus delaying or avoiding the oxidation of lipids and proteins. Chicory contains polyphenols and has a strong antioxidant potential, antioxidant, antiparasitic, anticancer, antihepatotoxic, antibiotic and anti-inflammatory effects.

Methods: An MTT test was performed to assess viability on MCF-7 and MDA MB 231 breast cancer cells using 3 chicory leaf extracts.

Results: The test gives promising results. The MTT test showed damage to cancer cells treated with chicory leaf extract. Which means that it reduced the viability of cancer cells.

Conclusions: Summing up the characteristics of anticancer properties of chicory, it can be concluded that it has potential and it's worth considering their use in oncological therapy. An important challenge is therefore to implement into practice natural substances that would be able to overcome resistance to chemotherapy and induce apoptosis in cancer cell

Comparison of diagnostic and treatment processes among pediatric and adolescents and young adults' populations suffering from acute lymphoblastic leukemia and lymphomas

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Introduction: Acute lymphoblastic leukemia (ALL) and lymphomas affect both pediatric and adult populations, therefore, they might be treated by pediatric or adult centers. It has been proven that the prognosis among adolescents and young adults (AYA) is poorer than among children, which remains a subject of research. Many factors are suspected to affect the diagnostic and treatment processes in adolescents and young adults, one of them being the organization of the healthcare system.

The aim of the study: The aim of the study was to compare the time intervals between different events on disease trajectory in pediatric and AYA groups suffering from ALL and lymphomas.

Methods: We collected data on 81 patients diagnosed with ALL (50 children and 31 AYAs) and 100 patients diagnosed with lymphomas (50 children and 50 AYAs). Statistical analysis was performed in order to compare the groups.

Results: The results confirmed the hypothesis that the duration of the diagnostic process differs significantly between groups. For patients with ALL, the analyzed time intervals were significantly shorter in the pediatric group than in the AYA group: first contact with a GP - admission to Hematology Department (2 vs. 5 days; pvalue= 0.004), first contact with a GP - treatment (6 vs. 12 days, p-value=0.001), diagnosis - treatment (1 vs. 3 days, p-value=0.003). In the case of patients suffering from lymphomas, the results were similar. The analyzed time intervals were significantly shorter in the pediatric group than in the AYA group: first contact with a GP- diagnosis (21 vs. 40.5 days, p-value<0.0001), first contact with a GP - treatment (27 vs. 65 days, p-value<0.0001). Trend analysis showed that the longer patients had presented symptoms before contacting the primary care physician, the longer they waited for the beginning of treatment both in ALL and lymphomas groups (p-values=0.0129 and 0.0038 respectively).

Conclusions: As the diagnostic and treatment processes are longer for AYA patients, actions must be undertaken in order to ensure equality and improve the healthcare system in Poland and possibly other countries.

Pharmacy

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COMPATIBILITY OF TIGECYCLINE AND COTRIMOXAZOLE WITH PARENTERAL NUTRITION ADMIXTURES

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Introduction: Tigecycline belongs to a class of antibiotics called glycylcyclines. It is used to treat severe bacterial infections such as complicated skin and soft tissue infections, pneumonia, and osteomyelitis. Intravenous cotrimoxazole is used in severe urinary tract infections, pneumonia, toxoplasmosis, and nocardiosis. There is no information in the available literature on the compatibility of these products with total parenteral nutrition (TPN).

The aim of the study: The studies allowed us to determine if commercial parenteral nutrition admixtures with tigecycline or cotrimoxazole can be administered simultaneously via one infusion line using Y-site.

Methods: The selected drugs were dissolved/diluted in 0.9% sodium chloride solution and 5% glucose solution to obtain solutions used in clinical practice. Parenteral nutrition admixtures (Omegaflex Special, Omegaflex Special without electrolytes, Lipoflex Special, Omegaflex Plus, and Omegaflex Peri) were activated, mixed, and appropriate doses of vitamins and microelements were added. Then, drug solutions were combined with TPN in various proportions resulting from the minimum and maximum administration rates. Subsequently, the analysis of pH, osmolality, the particle size of the lipid emulsion, and zeta potential was carried out immediately after sample preparation. Models of lipid-free admixtures were also made to observe whether a precipitate formed, which may be masked by the presence of a lipid emulsion. These admixtures were mixed with the drug in the appropriate proportions, and the turbidity degree was measured by nephelometry. All measurements were repeated after 4 hours of storage at 24 °C.

Results: The conducted analyses did not indicate exceeding critical parameters. The average droplet size of the lipid emulsion was not higher than 500 nm, and no aggregates of lipid droplets were observed. Turbidity did not exceed 0.5 NTU. Changes in pH and osmolality were not significant.of insulin per kilogram of body weight and the thyroid volume.

Conclusions: Tigecycline and cotrimoxazole were compatible with tested parenteral nutrition admixtures.

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SYNTHESIS AND CHARACTERIZATION OF HETEROLEPTIC ZINC(II) AZA-DIPYRROMETHENE COMPLEXES SUBSTITUTED AT THE PROXIMAL PHENYL RINGS

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Introduction: Azadipyrromethenes (ADPMs) are synthetic molecules with strong absorption in the visible light and near-IR region. Their complexes with –BF2 moiety are called aza-BODIPYs. Less studied group of compounds are complexes, in which two ADPM moieties coordinate a single metal ion. So far, only complexes of two identical ADPM molecules (homoleptic complexes) have been reported. Both aza-BODIPY and metal ADPM complexes, due to their optical properties are considered as photosensitizers for photodynamic therapy.

The aim of the study: The aim of the study was to synthesize new heteroleptic complexes, which contain two different ADPM moieties and a zinc(II) ion.

Methods: All reactions were carried out under inert gas (argon). ADPMs bearing phenyl or 4-hydroxyphenyl substituents were obtained in condensation reaction of 3-nitro-1,3-diphenyl-1-propanone derivatives. Alkylation reaction was employed to introduce 2-(morpholin-4-yl)-ethoxy moieties. Reaction mixtures were separated and purified by column chromatography on silica gel. Structure, purity and properties of new complexes were investigated by instrumental photophysical methods including NMR spectroscopy, UV-VIS spectrophotometry. UV-VIS studies were conducted in toluene, dichloromethane, tetrahydrofurane and N,N-dimethylformamide.

Results: The complexes were synthesized by direct complexation reactions of substituted aza-dipyrromethane ligands with zinc(II) salt. Reactions utilizing two different ADPMs (A and B) and zinc(II) ions resulted in formation of three complexes (ZnA2, ZnAB and ZnB2). The complexes were characterized by 1D and 2D NMR spectroscopy, including ROESY experiments, which allowed to discriminate two ADPM counterparts. The UV-VIS spectra showed strong two main bands – in UV region and long-wavelength part of VIS spectrum.

Conclusions: Mixed complexation reaction is an effective tool for synthesis of the heteroleptic ADPM complexes. All compounds strongly absorb light in the red part of the spectrum, which is considered optimal for photodynamic therapy.

EVALUATION OF PROFESSIONAL ADVICE PROVIDED AT THE PHARMACEUTICAL POINT AT THE POZNAN INTERNATIONAL FAIR FOR REFUGEES FROM UKRAINE

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Introduction: The war in Ukraine began on February 24, 2022. The armed conflict was associated with the immigration of people from Ukraine to Poland. According to a border guard report, 10.3 million refugees, mostly women and children, have arrived in Poland since then. Polish citizens received then an appeal from the Polish government for help, solidarity and support for Ukrainians. One of the places where Ukrainian people could receive help was the Pharmaceutical Point at the Poznań World Trade Center. A team consisting of a pharmacist, physician, psychologist and a Polish-Ukrainian translator operated there. Refugees could get there professional pharmaceutical advice and counselling, medicines free of charge. They could be also sent to a physicians if necessary, receive Polish equivalents of Ukrainian medicines or be informed where and how they can fill a necessary prescription.

The aim of the study: Evaluation of professional advice provided at the Pharmaceutical Point in Poznań for refugees from Ukraine, in the context of their needs and reported health problems.

Methods: From April to November 2022, anonymous surveys were conducted at the Pharmaceutical Point at the Poznań International Fair among patients who were refugees from Ukraine. The total of 500 respondents (7.4% men and 92.6% women) participated.

Results: The study showed that the help of the pharmacist was satisfactory and helpful for 82.8% of respondents (p=0.029773) and the competence of the pharmacist was considered very good for 63.8% and good for 29.2% (p =0.0220). 56.2% of respondents decided that when comparing a visit to a pharmacist in Ukraine and in Poland, they consider Poland better (p =0.0011). Moreover, 90.6% of the Ukrainians considered the pharmacist's help as necessary (p =0.0419) and 94.4% claimed that they want to visit the pharmacist again (p=0.049707). 56.8% of respondents also recognized that pharmacists are the medical profession they trust the most (p= 0.027226).

Conclusions: Pharmaceutical care in Poland, which is constantly developing, was positively assessed by refugees. Comprehensive and professional advice turned out to be satisfactory for Ukrainians.

WHAT INFLAMMATION HAS IN COMMON WHEN THE QUETIAPINE POISONING IS HAPPENING?

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Introduction: Quetiapine (QT) belongs to the 2nd generation of atypical antipsychotics. It is approved in the treatment of depression, schizophrenia, bipolar and anxiety disorders. The most common symptoms of poisoning are drowsiness, sedation, tachycardia, dilated pupils and decreased blood pressure. Also, the coexisting inflammation may significantly contribute to the disturbances in the course of QT poisoning.

The aim of the study: Presented studies aimed to assess the correlation between inflammation biomarkers such as interleukins 6 (IL-6) and 1B (IL-1B) serum levels and the way of treatment with analysis of poisoning severity in the group of intoxicated patients.

Methods: In this case thirty-five patients poisoned with QT were examined alongside with forty healthy people as the control. The RayBio Human IL-6 and IL-1B Elisa Kits from RayBiotech were used for IL-6 and IL-1B determinations. Both interleukins were chosen as the mediators of acute inflammation..

Results: The mean of IL-6 for intoxicated with QT patients was 209.02 ± 75.6 pg/mL and for IL-1B it was 2.0 ± 1.9 pg/mL. Both markers were statistically higher that measured in control group. Also, the severity of the poisoning was inversely proportional to the Glasgow Coma Scale (GCS) score. The decision to implement specialized treatment was made more often in more severe poisonings (QT toxic blood levels above 5 µg/ml) in which elevated values of the measured markers were noted.

Conclusions: The increase in IL-6 and 1B serum levels may support the hypothesis of coexisting inflammation arising according to the severity of overdose. There were statistically significant correlations between IL-6 and QT blood levels, the patient's clinical condition (GCS scale of 3±3) and the type of therapy used (intubation, sedation, activated charcoal administration).

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THE INFLUENCE OF METFORMIN ON THE PHARMACOKINETIC PARAMETERS OF OLAPARIB IN RATS

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Introduction: Olaparib is an innovative and molecularly targeted anticancer compound used to treat patients with ovarian cancer (OC). Olaparib is metabolized by CYP3A4 enzyme, which may be inhibited by metformin through the Pregnane X Receptor (PXR). These drugs are commonly co-used among OC patients with add-on type 2 diabetes mellitus which is one of the risk factors for OC.

The aim of the study: This study aimed to assess the influence of metformin (perpetrator) on the pharmacokinetic (PK) parameters of olaparib (victim) after single dose. To evaluate the inhibitory effect, the AUC0→∞ ratio was determined which is the ratio between AUC0→∞ (in the presence of perpetrator) and AUC0→∞ (without the presence of perpetrator).

Methods: Wistar male rats assigned to the test group (TG, n = 8) orally received both metformin (100 mg/kg BW) and olaparib (100 mg/kg BW), while the control group (CG, n = 8) received vehiculum with olaparib. Blood samples were collected for 24 hours. 10 µL of purified plasma was liquid-liquid extracted, then concentrations of olaparib were measured using UPLC-MS/MS (according EMA recommendations). The pharmacokinetics were determined and calculated using a non-compartmental model and statistically analyzed.
The experimental protocol for this study was approved by the Local Ethics Committee for Animal Experimentation in Poznan (No. 9/2022).

Results: The mean values of PK parameters for olaparib in TG and CG were as follows: Cmax = 9416.94 [10389.65] vs. 8716.73 [8659.60] ng/mL (p = 0.8342), tmax = 1.11 [0.80] vs. 1.18 [1.00] h (p = 0.7527), t0.5 = 3.18 [2,58] vs. 4.79 [1.63] h (p = 0.7929), ka = 1.23 [0.80] vs. 0.92 [1.00] h-1 (p = 0.1508) and Vz/F = 12.51 [7.41] vs. 22.49 [8.91] L (p = 0.6365) The ratio of AUC0→∞ values is 0.99.

Conclusions: After single dose metformin did not affect PK parameters of olaparib and had no inhibitory effect on olaparib metabolism.

NEW AZA-BODIPY DERIVATIVE CHELATING BORON – SYNTHESIS AND SPECTRAL PROPERTIES

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Introduction: BODIPY (boron dipyrromethene) and their analogues – aza-BODIPY are attracting attention for their fluorescent properties and their application in photodynamic therapy (PDT). Photodynamic therapy is a promising therapeutic approach for the treatment of various diseases, including cancer. In PDT, a photosensitizer (PS) is administered to the patient, which accumulates in the targeted tissue. Upon exposure to light of an appropriate wavelength, the PS generates reactive oxygen species that cause damage to the cancerous cells.

The aim of the study: The aim of the study was to synthesize new azadipyrromethene derivative, with hydroxyl group near chelating pocket, and convert it to aza-BODIPY with oxygen-boron bonds.

Methods: All reactions were carried out under in oven-heated glassware under inert gas. Azadipyrromethene derivative was obtained in multi-step reaction pathway, which embraced among others, aldol condensation of benzaldehyde and acetophenone derivative, Michael's addition of nitromethane, and condensation of resulting 3-nitro-1,3-diphenyl-1-propanone derivative. Flash column chromatography on silica gel was used for purification of the synthesized products. They were characterized by NMR techniques, mass spectra and UV-VIS spectrophotometry studies.

Results: Multi-step reaction pathway yielded azadipyrromethene, which contained hydroxyl groups at the ortho positions of the proximal phenyl substituents. Subsequent complexation reaction using boron trifluoride gave a desired compound, aza-BODIPY derivative. NMR experiments, including 2D experiments were used to assist ascribing signals to the atoms. Aza-BODIPY efficiently absorbed light in the near-infrared range ($\lambda max > 750$ nm), which is desirable for PDT. Additionally, fluorescence properties were studied.

Conclusions: New aza-BODIPY derivative was synthesized and its spectral properties, including light absorption and emission were established.

PHYSICOCHEMICAL CHARACTERIZATION OF A CO-AMORPHOUS CARVEDILOL PHOSPHATE-LOVASTATIN SYSTEM

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Introduction: Cardiovascular diseases (CVDs) are considered to be one of the most frequent causes of death in developed countries. Due to polytherapy and non-adherence to medication taking, new therapeutic strategies are being implemented. One of the strategies is a combination of two or more active pharmaceutical ingredients (APIs) into one dosage form (fixed-dose combination, FDC).

Carvedilol phosphate (CAR_P) and lovastatin (LOV) are poorly soluble drugs which are often used together in the treatment of CVDs, therefore, combining them into one dosage form can be beneficial for a patient.

The aim of the study: The aim of the study was to examine the physicochemical properties of the co-amorphous carvedilol phosphate-lovastatin system obtained by spray drying. The co-amorphous system usually offers a higher dissolution rate, therefore, might increase the bioavailability of the drugs in comparison to the dosage form with crystalline counterparts. The co-amorphous samples were prepared by spray drying from methanol and were characterized by Thermogravimetric Analysis (TGA), Differential Scanning Calorimetry (DSC), and Powder X-Ray Diffractometry (PXRD).

Results: TGA curves of the individual APIs, 50:50 (w/w) physical mixture and spray-dried sample indicated that no degradation due to the interaction between the drugs takes place and that the ingredients change individually in the mixture, thereby suggesting no chemical incompatibility. DSC analysis revealed one single glass transition in the spray-dried sample suggesting co-amorphization of the system. Also, DSC results revealed that the glass transition temperature varies depending on the carvedilol phosphate:lovastatin molar ratio. PXRD analysis of the spray-dried material confirmed the amorphous nature of the system.

Conclusions: The co-amorphous system CAR_P-LOV was successfully obtained by spray drying. The system may be potentially used for the development of FDC.

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TRANSDERMAL SYSTEMS WITH AGOMELATINE - PREPARATION AND CHARACTERIZATION

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Introduction: About 1,5 million people suffer from depression in Poland. Undoubtedly, the percentage of cases rose significantly after the global COVID-19 pandemic. Oral therapies with antidepressants are often burdened with numerous side effects, which are often the cause of therapy discontinuation. Therefore, there is a clear need to search for new, alternative ways of administering antidepressants, among which the transdermal route seems very promising. Agomelatine (AGO) is an antidepressant drug, which was introduced to the Polish market in 2009. Although its absorption from the gastrointestinal tract is high, its bioavailability is limited by first pass hepatic metabolism to 5%. Therefore, studies aimed at developing transdermal AGO delivery systems seem to be fully justified.

The aim of the study: The aim of the study was to produce polymeric transdermal films containing AGO with the use of photopolymerization reaction and to study their mechanical, physicochemical and pharmaceutical properties.

Methods: The initial mixtures containing 0.1% AGO consisted of glycerin, 2,2-bis(hydroxymethyl) propionic acid, 1-hydroxycyclohexyl phenyl, poly(diacrylate-ethylene glycol) and 2-hydroxyethyl methacrylate, were irradiated with UV light (365 nm). The films were assessed in terms of mechanical strength and then their morphology was imaged using the SEM. The chemical structure was studied by FT-IR and Raman microscopy. Thermal properties were assessed by DSC. The last stage concerned the dissolution studies.

Results: The films can be classified as elastomers. SEM assay confirmed uniform and smooth structure. The drug concentration was probably too low for Raman identification. The DSC analysis did not indicate any clear thermal processes. The films released the drug completely in up to 6 hours.

Conclusions: The films obtained in this preformulation studies meet the general recommendations for TDDS, and therefore constitute a good basis for further research aimed at improving the composition and properties, as well as refining the factors affecting the release time of AGO from the matrix.

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SMALL-MOLECULE PERK INHIBITOR PROVIDES NEUROPROTECTION IN PARKINSON'S DISEASE CELLULAR MODEL

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Introduction: Unfolded Protein Response (UPR) signaling pathway activity is linked to the accumulation of α-synuclein in Parkinson's disease (PD). During Endoplasmic Reticulum (ER) stress, PERK, the primary UPR sensor, is activated to restore cellular proteostasis. Yet, PERK eventually causes apoptosis and neurodegeneration in response to persistent ER stress, which makes it a perfect target for development of novel treatment strategies against PD.

The aim of the study: To evaluate the effectiveness of the selected small-molecule PERK inhibitor LDN-0060609 (LDN) against PD.

Methods: The effectiveness of LDN was assessed by Western blotting. DI TNC1 cells were exposed to LDN at 3-50μM for 1h, and subsequently treated with ER stress activator, thapsigargin (Th), at 500nM for 2h. Cells treated only with Th served as a positive control, whereas untreated cells as a negative control. The effect of LDN on cell cycle progression and apoptosis was measured by flow cytometry. Cells were treated with media containing 1 μM DMSO or with LDN at 6μM and 50μM and incubated for 24h. Cells exposed to 1 μM staurosporine or nocodazole were used as a positive control, and untreated cells as a negative control.

Results: Western blot analysis demonstrated a significant inhibition of PERK-dependent eIF2α phosphorylation by LDN at 50μM. Flow cytometry revealed no significant induction of apoptosis and no effect on cell cycle progression by LDN in any used concentration and incubation time.

Conclusions: To effectively treat PD, new drugs which directly target the molecular pathways involved in pathophysiology of the disease must be developed. We may assume that targeting PERK via small-molecule inhibitors may contribute to development of a novel treatment strategy against neurodegenerative diseases, that would provide neuroprotection and have no cytotoxic effect.

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DEVELOPMENT OF A NEW METHOD OF HONEYBEE (*APIS MELLIFERA*) VENOM FRACTIONING

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Introduction: Bee venom (BV) is one of the most important bee products, used in the treatment of many diseases (e.g. inflammatory) within the field of natural medicine called apitherapy. However, BV is also a toxin that bees use to defend themselves. In mammals, the exposition to venom causes side effects that can be fatal in the acute course.
Therefore, it is crucial to fully characterize venom's proteomic and metabolomic content and detect substances responsible for side effects. Although bee products such as venom, honey or royal jelly are well described in the scientific literature, there is a lack of complete qualitative and quantitative data.

Methods: Using UHPLC, new fractions of BV were collected. UHPLC enables more precise separation of BV compounds, which leads to unprecedented resolution in downstream analysis with MALDI TOF/TOF. The high purity of the obtained fractions allowed for the improved identification of their composition. Follow-up studies will be conducted.

Possible applications: The new method of honeybee venom fractioning can provide valuable data on the protein and metabolites contained in BV. This information can be useful in the development of new medicines based on BV that will have fewer side effects.

Acknowledgments: Project was realized due to scientific funds by the Poznan University of Medical Sciences, by the Student Scientific Association Research Project.

DEVELOPMENT OF A UPLC-MS/MS METHOD FOR THE QUANTIFICATION OF GENTAMICIN IN LOW PLASMA SAMPLE VOLUMES

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Introduction: Gentamicin is a broad-spectrum antibiotic widely used in neonatal departments. Due to the narrow therapeutic range, nephro- and ototoxic effects occurring at high doses and high individual variability of pharmacokinetics in newborns, it is recommended to monitor the concentrations of these drugs in the blood. However, the serious limitation of therapeutic drug monitoring (TDM) of gentamycin concentrations in small children is a high volume of blood required for analysis.

The aim of the study: The aim of this study was to develop a fast and simple UPLC-MS/MS method for the determination of gentamycin in low plasma sample volumes.

Methods: Since aminoglycoside antibiotics are very polar, we applied several analytical columns to obtain the best chromatographic separation of the gentamycin components. Moreover, mobile phase compositions with different additives (formic acid, ammonium acetate, perfluoropentanoic acid) were tested for longer column retention of the compounds. Optimal MS/MS conditions for the analyte detection were elaborated. The analytes were detected in positive ion mode using multiple reaction monitoring. Gentamycin C1, gentamycin C1a and gentamycin C2 were measured as [M+H+] using the mass transitions 477.9®322.2, 450.3®322.2 and 464.3®322.2, respectively. Vancomycin used as an internal standard was measured as [M+2H]2+ using the mass transition 725.0®144.0.

Results: The best chromatographic separation of gentamycin 1, gentamycin 1a, gentamycin 2 and vancomycin was obtained on the Zorbax Eclipse C18 column with a mobile phase composed of water (phase A) and acetonitrile (phase B), both containing perfluoropentanoic acid and ammonium acetate. For sample preparation, simple protein precipitation with 10% trichloroacetic acid was applied. The linearity of the method was confirmed in the concentration range of gentamycin complex 0.1 – 20 µg/mL.

Conclusions: The developed UPLC-MS/MS method with fast and straightforward sample preparation (protein precipitation) allowed to reduce the plasma sample volume to 10 µL and could be suitable for TDM of gentamycin in pediatric patients.

Ophthalmology, Laryngology & Dentistry | Surgery

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Influence of the polymerisation modes on the methacrylic acid release from dental light-cured materials - in vitro study.

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The aim of the study: This study explored the problem of lowering the pH around a composite filling concerning the polymerisation modes and methacrylic acid release, which may affect the oral health and the whole organism.

Methods: A total of 90 specimens (30 of each: Filtek Bulk Fill, Evetric and Riva LC) were placed in 90 sterile hermetic polyethene containers with saline and incubated at 37°C. Three curing modes: full power mode (FPM), ramping mode (RM) and pulse mode (PM) were used to light-cure ten samples of each material for 40 s. The pH and methacrylic acid release evaluation were performed at the following time points: after 2 h and after 3, 7, 21 and 42 days from the specimen preparation.

Results: All used materials were characterised by a gradual elevation in methacrylic acid concentration, regardless of light-curing mode. Only for Filtek Bulk Fill, the increased methacrylic acid release was closely associated with lower pH.

Conclusions: Corneal confocal microscopy is a valuable tool both for the assessment of pre-clinical impairment of corneal innervation and for monitoring the stage of the disease.

Evaluation of the association of corneal innervation and retinal changes in patients with type 2 diabetes.

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Tutor: Marta P. Wiącek, MD, PhD, Prof. Anna Machalińska, MD, PhD

Introduction: Due to diabetic neuropathy decreased corneal sensitivity and neurotrophic keratopathy may occur. Therefore, pathological changes in corneal innervation are the main indicators of the onset of diabetic neuropathy and can be visualised in corneal confocal microscopy. Consequently, diabetic-derived keratopathy leads to irreversible visual impairment and disability among people of working age in highly developed countries.

The aim of the study: The study aimed to assess the correlation between morphology of corneal nerves and the advancement of retinal changes in type 2 diabetes.

Methods: 100 eyes with diabetic retinopathy in the course of type 2 diabetes were included in the study. The extent of vascular changes at the eye fundus was assessed on the basis of ultra-widefield fluorescein angiography. The control group consisted of 115 eyes of healthy individuals, with no changes in the fundus. Laser scanning in vivo confocal microscopy was performed on all subjects (HRT3-RCM, Heidelberg Engineering). The following parameters of the nerve fibers were analyzed: density [no./mm^2] and branch density [no./mm^2], length [mm/mm^2]. Tortuosity and reflectivity were measured following the Oliveira-Soto scale. The measurement of corneal sensation in the centre of the cornea and its four quadrants was performed using the Cochet-Bonnet esthesiometer.

Results: In patients with diabetic retinopathy there was a significant decrease in nerve fiber density (8.33 vs 18.75; $p < 0.001$), length (6.54 vs 11.36; $p < 0.001$) and branch density (8.33 vs 20.83; $p < 0.001$) in comparison to controls. Corneal sensitivity was also significantly lower in patients with diabetes when compared to controls ($p < 0.001$). Interestingly, the advancement of corneal polyneuropathy was associated with the extent of vascular changes at the fundus.

Conclusions: Corneal confocal microscopy is a valuable tool both for the assessment of pre-clinical impairment of corneal innervation and for monitoring the stage of the disease.

Impact of pterygium removal on corneal parameters in optical coherence tomography.

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Tutor: Marta P. Wiącek, MD, PhD, Prof. Anna Machalińska, MD, PhD

Introduction: Pterygium is a conjunctival fibrovascular outgrowth over the cornea. As it progresses, alteration in cornea's curvature, compromised eye refraction and impaired vision may occur. Corneal topography may be impacted by both pterygium ingrowth and excision.

The aim of the study: To assess the impact of pterygium excision combined with conjunctival autograft fixation with tissue glue on alterations in corneal parameters as determined by anterior segment optical coherence tomography (AS-OCT).

Methods: Total of 43 patients (49 eyes) with pterygium who met the criteria for surgical removal were included in this study. A complete ocular examination was performed on each patient, including an eye exam, slit lamp, and AS-OCT evaluation. All assessments were conducted before the surgery as well as 7 days, 1 month, 3 months and 6 months after pterygium removal.

Results: From the day 7^{th} appointment onward, a progressive decline in the total astigmatism power has been seen, going from the preoperative median of 1.25 (2.63) D to 1.1 (0.8) D at 6-month follow-up (p=0.022). However, the total high-order aberration (HOA) reduced at the 1-month (from median 0.42 (0.67) D to 0.23 (0.30) D; p=0.036) and at 6-month visits (0.26 (0.095); p=0.029). Values were substantialy impacted by variations of anterior cornea astigmatism. Furthermore, a significant increase in total average keratometry values from 43.9 (1.7) D preoperatively to 44.2 (1.43) (p=0.008) 1 month after surgery was observed.

Conclusions: Following pterygium excision a significant anterior corneal steepening, as well as a decline in both astigmatism and HOA were observed. The anterior corneal surface turned out to play a crucial role in the total postoperative corneal topography values. The AS-OCT imaging appears to be a beneficial technique for tracking the development of the disease and its impact on pterygium eyes following surgery.

Microbal contamination in monthly contact lenses wearers.

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Tutor: Anna Chmielarz-Czarnocińska, PhD, Anna Gotz-Więckowska Prof., MD, PhD

Introduction: Using contact lenses (CLs) as a common method for correction of refractive errors is associated with a significant percentage of infectious complications.

The aim of the study: Assessment of the awareness of CL wearers about hygiene requirements related to the use of CLs. Identification of the bacterial flora of the conjunctival sac and from the CLs surfaces.

Methods: The study group consisted of 20 CLs wearers and 10 nonwearers. Microbiological analysis of smears from conjunctival sacs and from Cls. Investigation of surveys completed by study participants.

Results: The mean age of the patients was 23,5 years (range: 18-28). Bacterias was isolated from 19 (95%) CLs wearers, 4 (20%) CLs and 9 (90%) nonwearers . More than one bacterium was cultured in most cases. Predominant bacteria isolated in the research group was *Staphylococcus epidermidis* in 13 (65%) as well as in the control group - 7 (70%). The second most frequent bacteria in the research group was *Staphylococcus capitis* in 5 (25%) followed by *Staphylococcus hominis* in 4 (20%), *Staphylococcus warneri* in 3 (15%), *Micrococcus luteus* in 3 (15%), *Staphylococcus haemolitycus* in 2 (10%). On the CLs surface there were isolated *Serratia Marcescens* in 2 (10%), *Achromobacter xylosoxidans* in 2 (10%), *Klebsiella oxytoca* in 2 (10%). Apart from Staphylococcus epidermidis, in the control group was *Staphylococcus hominis* in 2 (20%), *Micrococcus luteus* in 2 (20%). According to the survey, 14 (70%) CLs wearers admitted to wearing lenses longer than the recommended time. Only 13 (65%) of patients wash their hands before inserting their Cls.

Conclusions: CLs wearers present more various conjunctival microbiota than nonwearers.
Bacterias detected in conjunctival smears of CLs wearers were different than from CLs surfaces. The results of the survey indicate non-compliance with the guidelines related to wearing CL.

Injury patterns of e-scooter-related maxillofacial trauma - findings from Poznan

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Introduction: There has been a considerable rise in the popularity and use of electric scooters recently. Because of it, the number of accidents involving them has risen as well. Head and neck injuries are the most common.

The aim of the study: was to determine the most frequent craniofacial injuries resulting from accidents involving electric scooters and identify the risk factors directly related to their placement and severity.

Methods: The study carried out a retrospective analysis of the medical records of patients of the Clinic of Maxillofacial Surgery from 2019-2022 in terms of craniofacial injuries suffered as a result of e-scooter related accidents. The statistical analysis was performed with Statistica 13.3 (Statsoft, Cracow, Poland).

Results: In the study population (31 cases), of which 61.3% were men, the median age was 27 years. At the time of the accident, 32.3% patients were under the influence of alcohol. Accidents were most common in the 21-30 age group, more often than not, they occurred during warm months and on weekends. The study identified a total of 40 fractures in the patients. The most common craniofacial injuries were mandibular fractures (37.5%), zygomatic-orbital fractures (20%) and frontal bone fractures (10%). A multidimensional correspondence analysis was also performed, which showed that age under 30, alcohol consumption and female gender were associated with a higher likelihood of mandibular fracture. Statistical analysis showed a significant difference in the duration of hospitalisation between women and men.

Conclusions: Proper education on the risks associated with the use of e-scooters is essential, with particular emphasis on the impact of alcohol on the driver. It is important to develop diagnostic and therapeutic algorithms for doctors both in ED and in specialised departments in order to detect or rule out the most common dangerous injuries resulting from e-scooters' accidents.

RESULTS OF 10-YEAR ENDOSCOPIC SURVEILLANCE AFTER COLECTOMY IN PATIENTS WITH FAMILIAL ADENOMATOUS POLYPOSIS.

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Introduction: Familial adenomatous polyposis (FAP) is a hereditary condition characterized by the development of multiple adenomas in the large intestine. Due to the high risk of colorectal cancer total colectomy or in some cases, proctocolectomy with an ileal pouch anastomosis (IPAA) is recommended. However, adenomas may reoccur in the rectum, J-pouch, rectal cuff, or other parts of the intestine. Factors determining relapse of the disease are still unclear, therefore endoscopic surveillance is necessary to assess mucosal changes.

The aim of the study: This study focused on the results of a 10-year endoscopic follow-up in patients who have undergone colectomy or proctocolectomy in the course of FAP.

Methods: A cohort of 42 patients operated on in the authors' clinic during 2010-2020 were enrolled in the study. After surgery, each patient was examined endoscopically at least two times. Follow-up biopsies were assessed and described using the Spigelman classification adopted for rectal and pouch examination.

Results: A total colectomy with ileorectal anastomosis was performed in 59.52% of patients and 16.67% of them had a total colectomy with IPAA. Invasive carcinoma in the large intestine was confirmed in 9.52% of cases. All patients were under endoscopic surveillance, precisely 39 (92.86%) had 2 follow-up assessments, 29 (69.05%) had 3, and 23 (54.76%) had 4 or more examinations. The median time between the surgery and the first follow-up visit was 15 months. A total of 5 (11.90%) patients had a diagnosis of high-grade dysplasia or T1 adenocarcinoma during the study time.

Conclusions: Most patients maintained endoscopic surveillance, which enabled early detection of neoplastic transformation and inflammatory changes. The Spigelman classification was useful in polyps assessment, however, it did not predict the cancer occurrence. A relatively high number of patients had invasive cancer at the time of surgery, which requires earlier qualification for surgical treatment.

Mixed reality supports superior precision and accuracy in humerus osteotomy: validation study

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Introduction: Mixed reality (MR) is a combination of virtual elements and a real environment. By using specialized headset, this technology enables to create 3-dimensional image of different objects, which can be integrated in space. We tried to explore its potential in orthopedic surgery, in the context of osteotomy. In this procedure high precision is crucial in order to adequately correct the mechanical axis of bones. Therefore virtually created tools may be beneficial to navigate surgeons intraoperatively and improve outcomes of such surgery.

The aim of the study: The purpose of the study was to asses if Mixed reality supports precision and accuracy in humerus osteotomy.

Methods: In this preclinical study we used swine femoral bones. Osteotomy was performed by two experienced orthopedic surgeons. One operator performed 30 degree, another 15 degree osteotomy. Each surgeon cut 54 bones in three different ways (each way 18 bones). First was Eye Bowing (EB) - osteotomy done only by surgeon's expertise, no additional guidance. Second was support by Wedge (W) - cut done using a triangle shaped physical wedge, which had exactly desired angle of osteotomy. Third, and last, guided by Holo Wedge (HW) - cut using virtually created wedge (using Microsoft HoloLens2 and RSQHOLO software). After osteotomy, excised fragment of bone was measured by an electronic protractor. Additionally AP and lateral photo views were taken to assess the axis of corrected bone.

Results: Three different ways of performing osteotomy showed similar, good results. But RSQHolo wedge showed smallest 95% confidence interval, which was the best in context of repeatability. Moreover lateral views of corrected bones revealed the least disruption of lateral bone axis using this tool.

Conclusions: We concluded that RSQHolo Mixed reality wedge is helpful to gain desired precision and accuracy of humerus osteotomy.

Recovery following Total Hip Arthroplasty using the minimally invasive Direct Superior Approach - functional outcomes and patient satisfaction at 6-8 weeks postoperatively.

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Tutor: Łukasz Łapaj MD, PhD, Dsc

Introduction: The Direct Superior Approach (DSA) is a minimally invasive approach to the hip in Total Hip Arthroplasty (THA) which is gaining popularity in recent years.

The aim of the study: The aim of this study was to evaluate early outcomes of the DSA using standardized questionnaires.

Methods: 33 consecutive patients with primary osteoarthritis or avascular necrosis of the femoral head were qualified for the research. Demographic data was collected before the surgery. All patients underwent primary total hip arthroplasty performed using the DSA approach. At 6-8 weeks postoperatively hip function and patient satisfaction were assessed using the Quality of Life Questionnaire (EQ-5D), the Harris Hip score (HHS) and the Goodman score. The obtained data was converted in the range of 0-100 and then statistically analyzed using the Prism 9.5.1 software.

Results: The results of the EQ-5D questionnaire indicated good and very good results in the five domains assessed in this form - mobility, self-care, performing daily activities, experiencing pain or discomfort and feeling anxious or depressed (mean value=84,07 [40-100]). The vast majority of patients presented excellent functional results according to HHS scale (mean value=90.77 [35-100]). Overall satisfaction from THA was high in almost all of the patients according to the Goodman score (mean value=90,66 [19-100]). The statistical analysis showed strong correlation between pain domains of Goodman score and EQ-5D ($r=0.608$, $p=0.0002$). Weaker correlations, however statistically significant, were shown between pain domains of EQ-5D and HHS ($r=0.497$, $p=0.003$) and Goodman score and HHS ($r=0.571$, $p=0.005$). There was also significant correlation between Goodman score and EQ-5D daily life activities domain ($r=0.438$, $p=0.01$). There were no postoperative complications observed such as implant loosening or periprosthetic infection.

Conclusions: Direct Superior Approach is a safe approach to the hip that provides early functional recovery and improves patients quality of life. However the long-term benefits and safety of this approach are yet to be determined.

Determining safety guidelines for iliotibial band graft harvesting – pilot study.

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Introduction: Iliotibial band (ITB) is a fibrous thickening of the fascia lata originating at the iliac crest and inserting at Gerdy's tubercle on the lateral tibia. The ITB contributes to lateral knee stabilization. It is widely used in orthopaedic surgery as an autograft during reconstruction procedures. Despite the complications that may result from the reduced stabilizing function of the knee joint by ITB being well known and described, no guidelines have been proposed for optimal harvesting of ITB graft.

The aim of the study: To characterize the morphological aspects of iliotibial band and the tensor fascia lata, which is at most risk during the graft harvesting procedure. To investigate, whether there are relevant features enabling prior assessment and optimization of harvesting procedure. To analyze whether these features were observable during a standard ultrasound examination of the lower limb.

Methods: Thirty two lower limbs with no signs of surgical interventions previously fixed in 10% formalin solution were examined. Subsequently, comparative analysis of results was performed. Final objective was achieved by performing twenty lower limb USG examination in ten healthy volunteers.

Results: The mean length of ITB was equal to 324.79mm with SD equal to 32,15mm. Average ITB length in women was longer in the right lower limb and in men in the left lower limb. On average, the right femur was longer than left. Certain features enabling prior assessment and optimization of harvesting procedure were visible in ultrasound examination and were considered reliable.

Conclusions: The iliotibial band and the tensor fascia lata are characterized by variability within their morphological features. These features are observable during an ultrasound examination and may allow optimization of ITB graft harvesting procedure, what can contribute to the reduction of complication rate associated with reduced stabilization of the knee by ITB after procedure.

Internal Medicine, Cardiology and Hypertension

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COVID-19 and indications for beta-blocker therapy after recovery

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Introduction: A Sars-CoV-2 infection can affect not only the respiratory system but also other organs, leading to frequent cardiovascular symptoms. Recent data shows that the most common comorbidities in patients infected with Sars-CoV-2 are arterial hypertension and cardiovascular diseases (CVD). Furthermore, patients who have recovered from COVID-19 may still experience symptoms and suffer from cardiovascular complications.

The aim of the study: Our study aims to investigate whether patients with CVD require additional treatment with beta-blockers or changes in previous dosages after recovering from a Sars-CoV-2 infection.

Methods: We conducted a retrospective study of 70 patients (age above 18); 33 women and 37 men with CVD, hospitalized due to COVID-19 from October 2020 to february 2022 in a temporary ward of the Department and Clinic of Internal and Occupational Diseases and Hypertension in Wrocław. The aim of the study was to evaluate a profile of COVID-19 patients with CVD and to compare whether and how the dosage of beta-blockers changed before and after infection with Sars-CoV-2. We collected data on patient gender, age, medical history, medication taken before and after COVID-19, course of COVID-19, measurements of respiration rate, pulse rate, and blood pressure during Sars-CoV-2 infection. To perform statistical analysis, we used the Wilcoxon signed-rank test and the Mann Whitney U test.

Results: Selected study group of 70 patients was divided into two groups: the first (n = 50) without increase or initiation of beta-blocker therapy, the second (n = 20) with administration or increase of the dose. The Wilcoxon pair sequence test showed a significant difference between groups (before and after infection) with p = 0,000196. In the second group 6 patients were treated with beta-blockers before COVID-19 and a dose increase was recommended after they had recovered, 14 patients who had not taken beta-blockers before the infection were prescribed beta-blockers after recovery.

Conclusions: Our study suggests that patients with CVD may require additional treatment with beta-blockers or an increase in the previous beta-blocker dosage after recovering from a Sars-CoV-2 infection to address post-COVID-19 complications.

Assessment of mitochondrial activity in response to semaglutide treatment

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Introduction: Despite new discoveries related to the mechanisms underpinning the evolution of diabetes, it remains a global problem. Incretin drugs affect the processes that regulate the release of insulin from the pancreas after a meal and are a promising instrument in the treatment of diabetes and obesity.

The aim of the study: Investigate the effect of semaglutide treatment on metabolic parameters and mitochondrial function.

Methods: The study is part of the Genetics of the Acute Response to Oral Semaglutide (GAROS) project. The study was conducted in 24 insulin-resistant subjects (age: 45.1±11.6, BMI: 36.5±4.2) who had been receiving oral semaglutide for 3 months (from a dose of 3 mg by systematically increasing to 42 mg). Before (v1) and after (v4) treatment analysis was performed. PBMCs were isolated by the Ficoll-Paque density gradient method. Mitochondrial function analyzes were performed on the Seahorse XFe24 Analyzer.

Results: To evaluate the mitochondrial cellular function used the Cell Mito Stress Test. Statistically significant results were obtained for the following parameters: Non-mitochondrial respiration (v1 8.512±4.273 vs. v4 13.73±2.959 p=0.0112), ATP production (v1 11.99±4.283 and v4 16.35±2.638 p=0.0279) and Coupling efencity (v1 62.24±17.95 and v4 91.64±30.05 p=0.0463). The Glycolytic Stress Test was used to assess cellular glycolytic function. Statistically significant results were obtained for the following parameters: Glycolysis (v1 0.3786±0.1620 and v4 0.7111±0.3951 p=0.0475) and non-glycolytic acidification (v1 2.299±1.375 and v4 1.009±0.6895 p=0.0326).

Conclusions: Treatment with semaglutide improves parameters related to glycolysis and ATP production in PBMC cells, which is associated with improved mitochondrial function. In addition, it has a beneficial effect on weight control and the maintenance of normal glucose levels both in the fasting and in 120' in OGTT test.

A pilot study of T-cell mediated kidney allograft rejection based on proteomic analysis of formalin-fixed paraffin-embedded specimens.

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Introduction: Despite improvements in Banff histological classification, the gold-standard diagnosis of graft rejection, based on histological analysis of kidney biopsy has multiple limitations.

The aim of the study: The aim of this work was to perform proteomic profiling of Formalin-Fixed Paraffin-Embedded (FFPE) kidney allograft specimens to identify a proteomic signature of T-cell mediated rejection (TCMR).

Methods: TCMR was diagnosed using histology assessments that followed Banff guidelines. A liquid chromatography-mass spectrometry (LC-MS/MS) technique was applied for proteomic profiling of formalin-fixed paraffin-embedded kidney allograft samples from for cause biopsies. FFPE tissue samples were dewaxed, proteins were then extracted, purified and digested with trypsin. Associations between detected proteins were assessed using multiple statistical tests, expression pattern analysis, and systems biology analysis.

Results: We analyzed 7 FFPE kidney allograft biopsies with histopathological symptoms of TCMR and 7 without histological evidence of any pathology. In total, 2387 proteins were detected; including 407, the levels of which enabled separation of the compared groups of samples: 242 were significantly upregulated and 165 were downregulated (p-value <0.005) in the TCMR group. Pathway analysis demonstrated overrepresentation of proteins related to antigen processing and presentation of both endogenous and exogenous peptide antigen via MHC class I and protection from natural killer cell mediated cytotoxicity. Of note, a large discrepancy between regulation protein levels was detected for AIF1 - Allograft inflammatory factor 1 and EIF5 and Eukaryotic translation initiation factor 5.

Conclusions: Proteomic signature discriminates T-cell mediated rejection from normal kidney allograft. Further studies are needed to determine whether AIF1 and EIF 5 have any diagnostic utility.

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Determining the effectiveness of heart rate measurement through smartphone apps - validation of photo-plethysmography based-methods using electrocardiography

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Introduction: Nowadays 33.4% of surveyed seniors aged >65 years use a smartphone device. This represents a field for expanding remote care options, using apps that monitor at patient' parameters. Specific disease entities require regular heart rate monitoring to match treatment with patients' therapeutic goal. Intensive development of artificial intelligence-based engines supports the efficiency and timing of in-app measurements. To date, the effectiveness in real life, of two most popular apps: Anura and Google Fit, has not been studied in the European community.

The aim of the study: To determine the usability and reproducibility of heart rate measurements using apps available for free in phone app stores. The goal of our project is to explore the feasibility of introducing an effective method of measuring heart rhythm without burdening the patient with additional medical costs.

Methods: In a group of 20 patients - exclusion criteria: atrial fibrillation, history of cardiac arrhythmia, pacemaker implantation - heart rate was measured. Simultaneous measurement was performed using a 4-lead ECG in the sitting position and the TOI (Transdermal Optical Imaging) method via the Anura app. This was followed by a simultaneous measurement under identical ECG conditions and through (PPG) photo-plethysmography technology via the Google Fit app. Statistical analysis of results using Statistica 13.3 - T-test for dependent samples and Microsoft Excel - correlation coefficient and mean of measurement differences.

Results: There was a normal distribution, the correlation coefficient (α) of ECG vs. PPG was α=0.9, ECG vs. TOI α=0.93. The t-student test of ECG vs. PPG p=0.17, ECG vs. TOI p=0.4, which means that there is no significant statistical difference in both methods and that the results correlate with each other to a high degree. Based on the mean differences of TOI: 3.9 (SD 3.0), PPG: 4.1 (SD 4.0).

Conclusions: It can be concluded that TOI is a more accurate method than PPG.

Ductus arteriosus anatomy in duct-dependent pulmonary circulation – a virtual reality volume rendering study

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Introduction: The increasing popularity of transcatheter ductus arteriosus (DA) stenting in patients with congenital heart defects with duct-dependent pulmonary circulation raises a question – what patterns of anatomy can be found in this group of patients?

The aim of the study: The aim of our study was to assess the morphology of the DA, pulmonary arteries (PA) and aortic arch in patients with duct-dependent pulmonary circulation using direct virtual reality volume rendering.

Methods: 30 anonymised CT scans of patients with duct-dependent pulmonary circulation aged from 1 to 47 days (median = 11) were analysed in virtual reality using VMersive software (VR-Learning, Warsaw, Poland). The morphology of DA and aortic arch was analysed and categorised. Following measurements were performed: DA diameter and length, number of DA segments and angles between them, aorta diameter.

Results: DA shape was categorised into 3 categories: straight (6.7%), single-bend (46.7%, divided into L-shaped and U-shaped) and tortuous (46.6%, divided into S-shaped and spiral), depending on the number of segments and their spatial relations. Mean DA length was 16.3 mm and ostial diameter 4.1 mm. The morphology of the aortic arch and DA was categorised into 3 types: left-sided arch and DA (70%), right-sided arch and DA (6.7%) and right-sided arch with left sided DA (23.3%). DA originated from the aortic arch in 43.3%, aortic isthmus in 16.7%, descending aorta in 16.7%, left brachiocephalic trunk in combination with right aortic arch in 20% and from persistent Vth pharyngeal arch in 3.3%. DA joined the respective PA in the pulmonary trunk bifurcation in 43.3% and distal to the bifurcation in 56.7%.

Conclusions: Virtual reality volume rendering allows for recognition of shape and topographic relations of DA and aortic arch, performing various measurements, assessment of DA ostium, its distal connection site and pulmonary arteries anatomy, which could prove valuable for planning transcatheter DA stenting.

Echocardiographic assessment of cardiac function in patients qualified for liver transplantation - observation in one medical center

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Introduction: Cardiac problems such as heart failure, valve disease, or pulmonary hypertension can be observed in patients with end-stage liver disease qualified for liver transplantation (LTx).
Pre-LTx transthoracic echocardiography (TTE) is a useful tool for evaluating cardiac function and selecting patients at higher risk.

The aim of the study: 1) To assess cardiac function using TTE in patients qualified for LTx in one medical center.
2) To compare TTE results before and 6 months after the procedure, in several patients undergoing LTx.

Methods: We perform TTE in 47 consecutive patients with advanced liver cirrhosis (median age 50; 20 females), qualified for LTx between November 2021 and February 2023 in our hospital. The main causes of cirrhosis were an alcoholic liver disease, HCV infection, hepatocellular carcinoma, and primary sclerosing cholangitis. Coronary artery disease was confirmed in 6 patients by coronary angiography. Cardiac anatomy, systolic and diastolic function of the left ventricle (LV), right ventricle (RV) systolic function, and RV systolic pressure were assessed. In 10 patients, who underwent LTx echocardiographic follow-up was performed 6 months after surgery.

Results: In patients qualified for LTx an atrial enlargement was detected: left atrium in 19 (40%), right atrium in 12 (25,5%). The LV contraction was hyperkinetic, with an ejection fraction 65 ± 3,1%. Right ventricle systolic function was also increased. Signs of pulmonary hypertension were not found.
Follow-up TTE performed in 10 patients (median age 55, 3 females) 6 months after LTx revealed normal contractility of both ventricles, significantly smaller atrial dimensions, lower aortic velocity, diastolic mitral annulus velocities, and RV systolic pressure, than before surgery.

Conclusions: Patients with end-stage liver cirrhosis present atrial enlargement, hyperkinetic circulation and mitral annulus velocities. Relatively early after the LTx, positive changes such as a reduction in the size of the atria, reduction of the right ventricular systolic pressure, and normal contractility are observed.

Public Health

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CURAPROX

A Comparative Study of Gait Parameters in School-aged Children with and Without Flat Feet

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Introduction: Although flat foot is a common postural defect in children, its effect on the development of movement biomechanics remains unclear.

The aim of the study: This study aims to compare the gait parameters of children with flat feet to those without this condition.

Methods: To assess the gait parameters, we used a G-sensor device to analyze 36 children (9-11 years old) with flat feet and 33 healthy children. We analyzed several parameters, including stride length, stance and swing phase duration, single and double support time, and the number of analyzed steps. We also compared the duration of analysis, cadence, speed, and step length between the two groups.

Results: Among the children, 17.39% had left-sided flat feet, 7.25% had right-sided flat feet, and 27.54% had bilateral flat feet. Furthermore, flat feet were more prevalent among boys (59.38%) than girls (45.95%). However, no statistically significant differences were observed in gait parameters between the two groups.

Conclusions: Flat foot is a common postural defect in school-aged children, particularly among boys. However, the results suggest that flat feet do not negatively impact the biomechanics of movement in children.

The interpersonal violence against minors in Poznań and neighboring municipalities based on data from the Department of Forensic Medicine of the Poznań University of Medical Sciences from 2015-2020.

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Tutor: Prof., MD, PhD Czesław Żaba

Introduction: Physical violence is a common social problem. Violence against minors is a particular phenomenon. Implementing correct prevention programs or legislative changes to counteract it requires a detailed determination of the phenomenon's scale. One of the sources of information may be the data contained in the documentation of forensic medical examination, most often performed on behalf of law enforcement authorities in victims.

The aim of the study: The aim was to describe the scale of the phenomenon affecting minors in Poznań and the surrounding municipalities, including drawing the relationship between the victim and the perpetrator and indicating the most common forms of physical violence.

Methods: 7689 anonymized forensic examinations performed in 2015-2020 at the Department of Forensic Medicine in Poznań were analyzed. Medical records were assessed, e.g. in terms of gender, age, the relationship between the perpetrator and the victim, type of injury and place of injury, method of impact, use of medical assistance, and legal classification of the act. All calculations and graphs were made using the statistical package R v. 4.0.2 and MS Excel.

Results: According to the analysis, 7,689 victims were registered, with 59.5% for men and 40.4% for women. The age of the victim was determined in 7684 cases. Minors, i.e. under the age of 17, accounted for 12.3% of all victims of violence. The most common injury was bruising (47.3%), and punching was the most common way to inflict damage (26.3%). 80.9% of children were not at risk of injury over 7 days or severe injury. 41.8% did not identify the perpetrator, but he was known to the victim. Parents accounted for 13.4% of perpetrators.

Conclusions: The scale of the phenomenon of physical violence indicates the need to introduce prevention programs. It is particularly important to conduct educational activities in educational institutions, both for students as well as teachers and parents. Teachers and medical staff should be alert to potential signs of child abuse.

The impact of the COVID-19 pandemic on alcohol-related emergency department visits in a large European city.

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Introduction: The COVID-19 (Coronavirus infectious disease 2019) pandemic has caused global behavioural changes due to the need to remain in quarantine by large groups of the population. sPrevious work on the effects of other epidemics on the human psyche has revealed a possible increase in the number of people who abuse alcohol to cope with mental stress. Despite this, the studies on the COVID-19 pandemic have not shown a clear correlation between lockdowns and quarantines and an increase in alcohol consumption.

The aim of the study: This study focused on examining the impact of the pandemic on the number of alcohol-related attendances in the Emergency Department (ED) in Poznan.

Methods: The periods of one year before the pandemic (control trial) and the first year of the COVID-19 pandemic (study group) were analysed retrospectively using the data of ED patients under the documented influence of alcohol. Total number, alcohol concentration, waiting time for a medical examination, the patient's aggressive behaviour, length of stay in the ED, and the need for additional tests, suturing wounds, or endotracheal intubation were analysed.

Results: 954 patients were identified in the study group and 794 in the control group. The median body alcohol concentration was 2.6%%. It has been shown that during the pandemic more women and fewer men under the influence of alcohol were admitted to the ED than in the pre-pandemic period. Additional examinations were performed less frequently and patients were admitted to other departments more often.

Conclusions: The study shows an increase in the number of patients under the influence of alcohol during the pandemic presenting to the ED and a noticeable change in management patterns' variables such as shorter length of wait, fewer performed laboratory tests and more admissions to wards.

Satisfaction of own smile and the overall self-esteem in the population of students of dentistry and other courses of studies.

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Introduction: Self-esteem is subjective and based on self-perception and evaluation. Relatively permanent in adults, it could influence our actions and behavior. Smile imperfections can be a reason for seeking dental treatment. A person's low self-esteem correlates with their self-satisfaction. This means that low smile satisfaction is not always the result of objective defects, but may be related to self-esteem.

The aim of the study: Therefore, our study investigated whether there is a correlation between self-esteem and smile perception and their comparison in different groups.

Methods: Through a survey, which involved 200 students from different universities, including 142 females and 58 males. Of which, 81 studying dentistry while the rest are not related to medicine. The questionnaire was composed of two sections. The first part containing questions related to their smile satisfaction, dental procedures and lifestyle. A second part instead focused on “Rosenberg Self Esteem Scale”.

Results: Correlation between self-esteem and smile satisfaction in the group of 'Other' students ($p=0.016385$, $r=0.219653$) compared to 'Dentistry' students ($p=0.1624$). Comparative analyses shown significant differences in smile satisfaction between the two groups ($p = 0.006251$) and gender-dependent differences in self-esteem ($p = 0.019995$). Differences in self-esteem ($p = 0.0001$) and smile satisfaction ($p = 0.0001$) was found among people reporting social pressure due unaesthetic imperfect dentition. Additional analyses shown correlation between unsatisfactory aesthetic parameters and a low self-esteem ($p=0.013022$).

Conclusions: This study reports that dentistry students demonstrate less correlation between smile satisfaction and self-esteem, probably due to their professional understanding of the smile or because of more frequent contact with unaesthetic and aesthetic smiles. Students of other courses present a stronger correlation.

The Phenomenon of Interpersonal Violence in Poznań and Neighboring Communes on a Five-year Basis Based on Data From the Department of Forensic Medicine of the Poznań University of Medical Sciences

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Introduction: Physical violence is a common phenomenon that is a significant social problem. The implementation of correct prevention programs or legislative changes to counteract it requires a detailed determination of the scale of the phenomenon in a given area. One of the sources of information is the data contained in the documentation of forensic medical examination, most often performed on behalf of law enforcement authorities in victims.

The aim of the study: The study aimed to describe the scale of violence in Poznań and the surrounding municipalities. Identify the profiles of the perpetrator and the victim and the relationship between them and identify the most common forms of physical violence characterized by the way the injuries are inflicted and their location.

Methods: 7689 anonymized forensic examinations performed in 2015-2020 at the Department of Forensic Medicine in Poznań were analyzed. Medical records were assessed in terms of gender, age, and profession of the victim, gender of the perpetrator, the relationship between the perpetrator and the victim, type of injury and place of injury, manner of impact, use of medical assistance, and legal classification of the act. All calculations and graphs were made using the statistical package R v. 4.0.2 and MS Excel.

Results: According to the analysis, 7,689 victims were registered. 8893 perpetrators were identified, of which 84.3% were men. Most injuries were caused by a punch (26.9%) and the injury that occurred most often was bruising (45.1%). The most common location of injuries was the head and neck area (30.6%). In more than half of the cases, the violence took place in a public place. In 40% of cases, the perpetrator was unknown to the victim. 56.8% of victims received medical attention after the incident. 85.9% of events were classified as health disorders lasting no more than 7 days according to Art. 157 Penal Code.

Conclusions: The scale of the phenomenon of physical violence indicates the need to introduce prevention programs, both within the framework of domestic violence and conflicts of unrelated people. It seems necessary to conduct social and educational campaigns to raise awareness about the phenomenon and show how to deal with it.

ChatGPT a tool for assisted studying or source of misleading medical information? AI performance on Polish Medical Final Examination (LEK).

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Tutor: Jerzy Jaroszewicz MD PhD

Introduction: ChatGPT is a language model created by OpenAI that can engage in human-like conversations and generate text based on the input it receives. It uses deep learning algorithms to understand and respond to natural language queries. ChatGPT could provide an assist, but on the other hand, one could rely too heavily on AI-generated information and potentially overlook important nuances.

The aim of the study: Our goal was to asses AI ability to solve clinical problems by examining factors contributing and overall performance of ChatGPT on Polish Medical Final Examination (LEK). Secondly, we wanted to evaluate ChatGPT capabilities as a tool for assisted studying.

Methods: We entered 492 questions with distractors from LEK database into ChatGPT (version 13th February - 14th March). For both correct and incorrect answers, we analyzed provided explanation for logical justification. For incorrect answers and logically inconsistent explanation we asked again highlighting the inaccuracy in the mentioned answer and observed if chatbot was able to provide adjustment. For correct answers we analyzed logical consistency of the explanation. Selected factors were analyzed for influence on Chat GPT performance.

Results: ChatGPT achieved impressive score of 60.57% letting it pass official threshold of 57%. For properly answered questions more than 70% were backed by logically consistent explanation. When providing an explanation for wrongly answered questions in 34% there was inconsistency in the explanation. After highlighting it to the chatbot in 78% it was able to correct itself and provide proper answer. Factors such as language used, subject, logical construction and task difficulty indicator ($p<.05$) had influence on the overall score meanwhile number of characters in task did not.

Conclusions: Although achieving sufficient score to pass LEK, ChatGPT can provide misleading information backed by seemingly logical explanation making it problematic recommendation for studying or as a source of medical knowledge. Thus, it should be used cautiously and be confronted by proper research. On the other hand, chatbots can be very useful tool for providing quick explanation for already known facts.

Association Between Changes in Quality of Life and Psychological Status Among Ukrainian Students During the War

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Introduction: Since the beginning of war in Ukraine, millions of people fled the country, exposed to the horrors of war that ruined their lives. But psychological status and changes in quality of life (QL) among young Ukrainians studying at universities are not assessed yet.

The aim of the study: The aim of this study was to assess associations between changes in QL and psychological status among Ukrainian students during the war.

Methods: A survey-based cross-sectional study was performed among 95 Ukrainian students, who studied at universities in a period of September-October, 2022. Depression was assessed via Patient Health Questionnaire (PHQ-9), QL - Short Form Health Survey (SF-36). Data were analyzed with t-Student's test, Spearman correlation test.

Results: We obtained such QL scores from Ukrainian students: Physical functioning(PF) - 92,85±1,08%; Role-physical functioning(RP) - 62,0±4,49%; Role-emotional functioning(RE) - 43,1±4,89%; Vitality(VT) - 46,8±2,64%; Mental health(MH) - 53,7±2,55%; Role-social functioning(SF) - 60,17±2,94%; Bodily pain(BP) - 70,0±2,48%; General health(GH) - 52,13±1,93%. Such scores were significantly lower in females than in males: RE (34,7±5,8% vs 57,1±8,2%; $p=0,02$), MH (48,9±3,0% vs 61,7±4,2%; $p=0,01$), SF (54,5±3,7% vs 69,6±4,3%; $p=0,01$).

Via PHQ-9 we determined that 10 persons (14,3%) had minimal depression(MinD), 23 (32,8%) had mild depression(MilD), 17 (24,3%) had moderate depression(ModD), 10 (14,3%) had severe depression(SD) and 10 (14,3%) had extremely severe depression(ESD). Females suffered from depression more often than males: ModD - 17,1% vs 7,1%($p<0,05$); SD - 12,9% vs 1,4%($p<0,05$); ESD - 10% vs 4,3%($p<0,05$). Correlation analysis showed that depression level via PHQ-9 negatively correlates with such SF-36 scores: VT ($r = -0,68$; $p<0,05$), MH ($r = -0,68$; $p<0,05$), SF ($r = -0,61$; $p<0,05$).

Conclusions: War negatively influenced QL and psychological state of Ukrainian students via decreasement of vitality, role-social functioning and mental health, caused and aggravated depression. This study can help us to determine strategy of providing support and assistance during education in universities.

PhD Basic Sciences

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KRAJOWI PRODUCENCI LEKÓW

Inhibition of the Unfolded Protein Response signaling pathway as a novel target in Parkinson's disease: an in vitro study

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Tutors: Wioletta Rozpędek-Kamińska, PhD; Grzegorz Galita, MSc; Dariusz Pytel, PhD; Professor J. Alan Diehl, PhD; Professor Ireneusz Majsterek, PhD

Introduction: Parkinson's disease (PD) is caused by accumulation of α-synuclein and dopaminergic neuronal loss. α-synuclein induces Endoplasmic Reticulum (ER) stress and activates pro-apoptotic PERK-dependent branch of the Unfolded Protein Response signaling pathway. Thus, we aimed to evaluate the effectiveness of selected small-molecule PERK inhibitor LDN-0060609 (LDN) in PD in vitro models.

Aim of the study: Assessment of the effect of specific, small-molecule PERK inhibitor against PD.

Material and methods: The experiments were performed on SH-SY5Y and DI TNC1 cell lines. To evaluate effectiveness of LDN, cells were pretreated with LDN at 3-50μM for 1h and then incubated with ER stress inducer, thapsigargin (Th; 500nM) for 2h. Untreated cells constituted a negative control, whilst cells exposed only to Th – a positive control. The level of phosphorylation of eukaryotic initiation factor 2α (eIF2α), the main substrate of PERK, was evaluated by Western blotting. The cytotoxicity analysis of LDN was carried out by colorimetric XTT assay. Cells were treated with LDN in wide concentration range (0.75–50μM + 0.5mM) or with vehicle (0.01% DMSO). Untreated cells constituted a positive control, whereas cells treated with 99.9% DMSO – a negative control. Cell viability was measured after 16, 24 and 48h.

Results: LDN significantly inhibited eIF2α phosphorylation at 25μM in SH-SY5Y cells (52%) and at 50μM in DI TNC1 cells (48%), and it had negligible cytotoxic effect at any concentration and incubation time in both cell lines.

Conclusions: The findings indicate high activity of LDN against PERK in SH-SY5Y and DI TNC1 cells without impairment of cell viability, and thus it may rescue neural cells from ER stress-mediated apoptosis. Further studies are needed to assess full potential of LDN and its possible application in novel therapeutic strategies against PD.

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Stress Granules prevent cell death by sequestration of EGR1-encoded mRNAs

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Introduction: Stress granules (SGs) are dynamic cytoplasmic structures that form in response to physical or chemical stress, such as heat or anticancer drugs. These RNA-containing *foci* are a key part of the cellular stress response and can either promote or inhibit cell death (apoptosis). Lomustine is an anticancer drug that induces SGs formation, but the underlying mechanisms still need to be fully understood.

Objectives: This study aimed to investigate the role of SGs induced by lomustine in human cells.

Materials and Methods: We used genetically modified haploid human cells (HAP1) with single kinases knocked out (ΔHRI, ΔGCN2, ΔPKR, ΔPERK) or with a modified sequence to produce an unphosphorylated mutant of the eIF2α initiation factor (S51A). We performed whole transcriptome analysis using DNA microarray technology and confirmed changes in gene expression with RT-qPCR. We also used immunofluorescence and *in situ* hybridization to detect mRNA transcripts in SGs.

Results and Conclusions: Our results showed that lomustine triggers SGs formation by activating the stress-detecting HRI kinase and phosphorylating eIF2α. Whole transcriptome analysis revealed that the pro-apoptotic EGR1 gene was activated in all genetically modified HAP1 cells after lomustine induction. However, we found that the mRNA transcript was associated with SGs, which inhibited its translation and ultimately limited apoptosis. Our findings suggest that SGs induced by lomustine may play a crucial role in determining cell fate and maybe a specific mechanism of multidrug resistance.

Interest in antibiotic pharmacokinetic modelling in the context of optimising dosing and reducing resistance: bibliometric analysis

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Tutor: Prof. Agnieszka Bienert (Department of Clinical Pharmacy and Biopharmacy, Poznan University of Medical Sciences, Poland)

Introduction: Modern statistics and pharmacokinetic modelling are increasingly applied to calculate personalised dosage regimens or estimate unique drug dosage equations. In an era of problems with resistant bacteria strains, this is one of the ways to optimise antibiotic therapy and minimise the risk of resistance development.

Ain of the study: This bibliometric study aims to investigate trends in antibiotics pharmacokinetic modelling studies, especially in dosage optimisation and to decrease bacterial resistance.

Material and methods: We used Bibliometrix©, VOSviewer©, CiteSpace© and Microsoft® Excel 365 to analyse Web of Science articles from 1983 to March 2023. We compared them across various authors, countries, affiliations, journals, keywords, Web of Science categories, co-citations and citation bursts.

Results: We analysed 968 articles following the inclusion criteria. Subject-related publications' average annual growth rate was 35.56%, maintaining a continuous upward trend. Analysing the interest in antibiotic resistance and Monte Carlo simulations, the average annual growth rate was 89.06% and 65.76%, respectively. The most productive and impacted authors are Roberts, JA., Lipman, J., and Wallis, SC. (82, 57, 34 articles, and 30, 25, 15 H-index, respectively). The United States leads in this field of research (29.13% of papers). The most relevant affiliations are the University of Queensland, Royal Brisbane and Women's Hospital, and Monash University. The most productive and impacted journals are *Antimicrob. Agents Chemother., J. Antimicrob. Chemother., Int. J. Antimicrob. Agents* (181, 83, 47 articles, and 42, 30, 18 H-index, respectively). The majority of articles by keyword clustered on meropenem, vancomycin, piperacillin, cefepime and amikacin. Moreover, the most trending aspects are therapeutic drug monitoring, resistance, antibiotic dosing, target attainment, intensive care unit, and paediatrics.

Conclusions: Given the results of this study, the constantly expanding bacterial resistance and the limited perspectives for marketing new antibiotics, we expect to see a steady increase in exploiting the potential of pharmacokinetic modelling for antibiotic therapy optimisation.

Novel thermosonification in surface disinfecting plant explants dedicated to introducing in vitro culture of Boesenbergia pandurata

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Introduction: Thermosonication has been employed in food and beverage industries as it could inhibit the microorganism growth in products while preserving the nutrition composition/phytochemicals, texture, aroma, or flavour. This method combines the mechanical attributes of ultrasound with moderate heat treatments. In order to introduce the species into *in vitro* culture, initial explants from donor plants must be disinfected, which is a complicated and often ineffective stage of initiation.

Aim of the study: The study aimed to develop an effective disinfection method of *B. pandurata* explants for the establishment of *in vitro* cultures of this medicinal plant.

Method: After repeated attempts at chemical disinfectant of the plant material using sodium hypochlorite or mercuric chloride, the thermosonication has been applied. The thermosonication method to surface-disinfect the rhizome fragment of *Boesenbergia pandurata* (fingerroot). The variables used in this method were (1) liquid solution (sterile distilled water or 3% hydrogen peroxide), (2) working temperature (30°C, 40°C, and 50°C), and (3) treatment period. A constant frequency of 40 kHz was used in all treatments for fingeroot rhizome fragments with $\pm$ 0.3 cm thickness.

Results: From the experiments, the results showed that temperature differences and treatment period did affect the disinfection result. As much as 80% of contamination occurred, a combination of bacteria and fungal contamination in thermosinication using sterile distilled water. Thermosonication in 3% H_2O_2 for 3 minutes improved the issue, with only 10% bacterial and no fungal contamination. This is a considerable improvement compared to the 100% contamination rate obtained from the NaOCl protocol.

Conclusion: Our results showed that thermosonication with H_2O_2 is an alternative for surface disinfection of explants with high contaminants. To our best knowledge, this is the first report on the implementation of thermo-assisted ultrasonication to surface disinfect explants intended for *in vitro* plant cultures.

Selected tribenzoporphyrazines and their liposomal formulations – photocytotoxicity study against bacteria

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Background: The phenomenon of antibacterial resistance has been steadily increasing and now appears to be one of the most serious threats identified by the WHO. The development of new antibacterial chemotherapeutics is hampered. However, in recent years alternative ways to stop the spread of pathogenic microbes have been developed e.g. Photodynamic Antimicrobial Chemotherapy (PACT). PACT uses photosensitizers capable of mediating ROS generation upon irradiation that damage the bacteria. Porphyrazines belong to photosensitizers of poor solubility and a tendency to form aggregates, which impedes their effective transport into cells and diminishes their photochemical features. These problems can be overcome by using appropriate drug-delivery systems, including liposomes.

Aim: The aim was to incorporate sulfanyltribenzoporphyrazines into liposomal formulations and compare their photocytotoxicities with free compounds against bacterial cells, including drug-resistant strains. Furthermore, the study aimed to determine the differences in action of the photosensitizers on the model biological membranes.

Methods: The first step was the synthesis of zinc(II) and magnesium(II) tribenzoporphyrazines, which in the second step were introduced into positively-charged liposomes using the thin-layer hydration method. The particle size was determined in water using the particle tracking analysis technique. Microbiological experiments were performed to evaluate their activity in PACT on the spectrum of Gram-positive and Gram-negative bacteria: *S. aureus* (including MRSA) and *E. coli.* For the experiments with model biological membranes, dipalmitoylphosphatidylcholine monomolecular Langmuir-Blodgett films were prepared alone and with the addition of the photosensitizers, and changes in the membrane stability were monitored during irradiation.

Results: Incorporation of tribenzoporphyrazines into liposomal formulations increased their photocytotoxicity. Tribenzoporphyrazines tended to destabilize the model biological membranes upon irradiation.

Conclusion: Photosensitizers in liposomal formulations reveal increased photocytotoxicity against bacteria, thus improving potential efficacy of PACT. The mode of action may be associated to the damage to the bacterial membranes.

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Does the newly discovered adipokine FAM19A5 affect food choices in people with metabolic syndrome?

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Introduction: FAM19A5 protein, which is associated with various metabolic and cardiovascular risk factors in humans, is an adipokine with growing importance in the context of metabolic diseases. Incorrect eating habits can affect the severity of obesity and metabolic syndrome (MS). The concentration of adipokines may affect the feeling of hunger and satiety, and thus affect food choices. Changing eating habits is the most important element of obesity treatment. So far studies on FAM19A5 have been conducted in animal models. Our study establishes, for the first time, associations between FAM19A5 levels and dietary habits in MS patients.

The aim of the study: The aim of the study was to demonstrate the relationship between FAM19A5 concentration and eating habits in patients with metabolic syndrome.

Material and methods: We determined the concentration of FAM19A5 in 45 people with MS (group A) and 35 people without MS (group B) with the use of ELISA test. In every patient, we also determined parameters that are crucial to diagnose MS due to actual diagnostic criteria. Anthropometric tests were also performed on the patients. Each patient completed the self-validated KomPAN® nutritional questionnaire to determine eating habits.

Results: People with MS had a higher consumption of meat, saturated fats, sweet and salty snacks, and a lower consumption of fruits, vegetables, juices, water and dairy than people without MS ($p<0.05$). Higher serum FAM19A5 protein levels correlated with higher

consumption of fish and physical activity in MS patients, and with hot drinks and fried foods in all participants ($p<0.05$).

Conclusions: FAM19A5 is a newly discovered adipokine whose serum concentration correlates with eating habits in people with metabolic syndrome.

Insect-based products - a health hazard or dietary game-changer?

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Introduction: The food production system accounts for approximately 25% of greenhouse gas emissions, indicating that its transformation is essential for mitigating the climate crisis. Edible insects were already deemed as an alternative low-carbon protein source. Nonetheless, nutrient density and safety constitute key issues in dietary changes. Most research analyzed the essential and toxic element levels of whole edible insects, but data on their content in commercial products is scarce.

The aim of the study: The present study assessed selected essential, toxic, and rare earth element contents in insect-based food (n=12) products available on the European market.

Material and methods: The purchased products were analyzed with inductively coupled plasma optical emission spectroscopy. The obtained toxic element values were confronted with Maximum Allowance (for As, Hg, Cd, Pb), Tolerable Weekly Intake (for Al), and Tolerable Daily Intake (for Ni). Essential element contents of food products were confronted with Dietary Reference Values (for Ca, K, Na, Mg, P, Cu, Fe, Mn, Mo, Se, Zn).

Results: The content of macro- and microelements decreased in the following order: K>Na>P>Ca>Mg, and Zn>Fe>Cu>Mn>Mo>Se. House cricket-based product contained the highest Ca, K, Cu, Mn, Se, and Zn levels. The mean content of rare earth elements was 9.3 µg/100 mg; thus, their dietary intake with these foodstuffs would be irrelevant. Cd, Pb, and As were always below the maximum allowance level set by EFSA, while Hg was below the method detection limit in examined products. Consumption of any foodstuff would not exceed the tolerable intakes for Al and Ni.

Conclusions: Results demonstrate that insect-based food can have favorable mineral content with low metal and metalloid contamination levels, not posing any safety concerns.

Keywords: *food safety; toxic elements content; edible insects; novel food; insects-based food*

Catch me if you can - development of a tool for capturing circulating cancer cells

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Introduction: The rapid increase in the incidence of various types of cancer in recent years stimulates the search for innovative, specific and easy-to-use diagnostic methods in order to apply appropriate treatment as soon as possible. The solution may be the analysis of a "liquid biopsy", which includes, among others, detection and characterization of circulating tumor cells (CTCs).

The aim of the study: The aim of the study was to select a silanized glass surface that most effectively binds EpCAM-positive cells of the LOVO colon cancer cell line and the SKOV-3 ovarian cancer cell line as an element of a diagnostic tool that captures CTCs from the peripheral blood of cancer patients.

Material and methods: In the study glass surfaces coated with three amino-functional trialkoxysilanes:
3-Amino-propyltriethoxysilane (A), [3-(2-Aminoethylamino)propyl]trimethoxysilane (AE) and (3-Trimethoxysilylpropyl)diethylenetriamine (AEE) were used.

In the first step ability of silanized glass surfaces to bind anti-EpCAM antibody – HEA125 was tested. The applied antibody was prepared in two concentrations: 25 µg/ml and 5 µg/ml. In the next step the effectiveness of attached HEA125 antibody to bind EpCAM-positive LOVO and SKOV-3 cells was assessed.

Results: The results of the study showed that the glass surface coated with AEE trialkoxysilane most effectively binds EpCAM-positive LOVO and SKOV-3 cells.

Conclusions: The obtained results can be used in the development of a diagnostic tool that captures CTCs from the peripheral blood of patients with colorectal and ovarian cancer. However, the usefulness of those silanes needs to be confirmed by further studies with patients.

The pursuit of head and neck cancer biomarkers – tissue expression of chloride intracellular channels

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Introduction: The chloride intracellular channels (CLICs) family contains six ion channels encoded by *CLIC1-CLIC6* genes. CLIC1 higher expression was reported in oral cancer and nasopharyngeal cancer in tissues and blood plasma. However, the expression patterns of other CLIC channels in head and neck cancer remain unclear.

The aim of the study: Our study aims to assess the mRNA expression of six *CLIC* ion channel genes in head and neck cancer tissues.

Material and methods: We examined 104 tumor samples, including squamous cell carcinoma of the oral cavity and larynx, and 93 healthy tissues harvested from the free margin of resection. We analyzed the mRNA expression with RT-qPCR.

Results: We found significantly different mRNA expressions of every *CLIC* ion channel between cancer and normal tissues (Mann-Whitney U test). *CLIC1* and *CLIC4* had higher expression in cancer tissues, whereas *CLIC2, CLIC3, CLIC5,* and *CLIC6* had higher expression in normal tissues.

Conclusion: Our results indicate that CLIC ion channels may act as head and neck cancer promotors or suppressors – possibly becoming novel biomarkers. Nevertheless, protein expression in tissues and blood samples assessment is obligatory, as well as patients' clinical data analyses and *in vitro* functional studies.

Prolyl hydroxylases activity in Head and Neck Squamous Cell Carcinoma – insights into tumour hypoxia

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Introduction: Head and Neck Squamous Cell Carcinomas (HNSCC) are solid tumors that develop from the mucosal epithelium of the mouth, pharynx, and larynx. HNSCCs may be characterized by reduced oxygen concentration due to insufficient blood supply to the tumor core. Hypoxia enhances more aggressive tumor phenotype and causes resistance to treatment. Hypoxia-inducible factors (HIF) are crucial transcription factors that support tumor cells' adaptation to hypoxic conditions by regulating the expression of more than a hundred genes. The HIFs level is known to be regulated by the prolyl hydroxylases family (PHD1, PHD2, PHD3), which directs them to the degradation pathway. The expression regulation of prolyl hydroxylases is still unclear, but few studies point to DNA methylation as a probable expression modulator. Dysregulation of PHDs at transcript and protein levels could influence tumorigenesis in different cancer types.

Aim: This study aims to evaluate the influence of DNA methylation on PHDs activity and the relevance of their expression in patients' survival.

Materials and methods: *PHD1*, *PHD2*, *PHD3*, *HIF-1α*, *CA9*, *VEGF*, and *GLUT1* genes expression at mRNA level were evaluated with quantitative RT-qPCR in cancerous and

normal tissues from 96 patients with HNSCC. The DNA methylation level of CpG islands in the promoter regulatory regions of *PHD1*, *PHD2*, *PHD3,* and *HIF-1α* was assessed using Methylation-Sensitive High-Resolution Melting analysis (MS-HRM).

Results: We found significantly higher mRNA levels of *PHD3*, *HIF-1α, GLUT1, VEGF,* and *CA9* (p=0.021; p<0.0001; p<0.0001; p=0.004 and p<0.0001, respectively) genes in tumor tissues compared to normal ones. We demonstrated the downregulation of *PHD2* mRNA level in tumor tissue (p=0.0013), and we did not find differences in *PHD1* level. We did not observe statistically significant DNA methylation of the CpG islands of all studied *PHDs* and *HIF*-1α promoters in tumor and normal tissues from HNSCC patients. However, differential expression patterns of *PHD1-3* and *HIF*-1α influence overall survival in HNSCC patients.

Conclusion: *PHD1-3* and *HIF-1α* are differentially expressed in the tumor tissue compared to normal ones of HNSCC patients, although not DNA methylation regulates its expression. Moreover, the transcript level of *PHD1-3* and *HIF-1α* could be a potential biomarker to predict patients' overall survival, highlighting their importance in tumor development.

Novel curcumin derivatives as cytotoxic and apoptosis-inducing agents towards bladder cancer cells.

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Aim: Curcumin as a scaffold has been widely used in medicinal chemistry for many years. Although curcumin exerts pleiotropic pharmacological activity, its low bioavailability, solubility, and instability limit its clinical use. Thus, different strategies were proposed to overcome these disadvantages, e.g., designing a new formulation and chemical modification. The synthesis of new curcumin derivatives that have improved ADMET (absorption, distribution, metabolism, excretion, and toxicology) properties and bioavailability gained particular attention from scientists in this field. Here we presented the anticancer activity of the two curcumin derivatives 4-(2-{4-[(1E)-2-{2,2-difluoro-6-[(1E)-2-{3-methoxy-4-[2-(morpholin-4-yl)ethoxy]phenyl}ethenyl]-1,3,2-dioxaborinin-4-yl}ethenyl]-2 methoxyphenoxy}ethyl)morpholine (**1**), and (1E,6E)-1,7-bis({3-methoxy-4-[2-(morpholin-4-yl)ethoxy]phenyl})hepta-1,6-diene-3,5-dione (**2**) against human bladder cancer cell lines (5637, SCaBER, and HT1376).

Methods: Cell viability and cytotoxic effect were evaluated by performing 3-(4,5-Dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) and lactate dehydrogenase (LDH) release assays, respectively. The RealTime-Glo™ Annexin V apoptosis and necrosis, caspases 3/7 activity, quantification of histone-complexed DNA fragments (mono- and oligonucleosomes), and cell cycle analysis using flow cytometry were performed to investigate cell death mechanisms. Moreover, membrane-based sandwich immunoassay detected 26 human cell stress-related proteins.

Results: Both compounds have lower IC_{50} values than curcumin on bladder cancer cells. Compound **1** caused the cell cycle arrest in a dose- and time-dependent manner. Moreover, the treatment with agent **1** increased caspases activity and apoptosis induction was confirmed by Annexin V binding. Interestingly, the internucleosomal degradation of genomic DNA, often associated with apoptosis, was not observed. Furthermore, compound **1** significantly affected the expression of p38, p21, and p27 proteins.

Conclusion: This study showed that curcumin derivative **1** has improved anticancer activity compared to the parental compound. Our data indicated that the apoptotic cell death pathway is involved in the anticancer activity of **1**. Curcumin derivative **1** is a promising structure; however, further studies are needed to describe its therapeutic potential better.

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Influence of histone deacetylase 10 on transcriptome and cell biology alterations in Sézary Syndrome cells

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Cutaneous T-cell lymphomas (CTCL) are a heterogeneous group of lymphoid neoplasms, which account for approximately 3.9% of all non-Hodgkin's lymphomas. Mycosis Fungoides (MF) and Sézary Syndrome (SS) are the two most common types of CTCL. MF is more indolent and chronic in its course, while SS is an aggressive, leukemic variant, characterized by severe erythroderma and the presence of malignant T lymphocytes in skin lesions and peripheral blood. Both MF and SS are still incurable and therapeutic actions are aimed at alleviating symptoms. The most effective therapy for CTCL is based on histone deacetylase inhibitors (HDACi), which are epigenetic drugs targeting histone deacetylases (HDACs). HDACs are a group of enzymes that remove acetyl groups from histones, modulate chromatin structure and regulate gene transcription.

The project aims to analyze the role of selected class IIb HDAC10 on the transcriptome and biology alterations of cancer cells in Sezary Syndrome.

Using a combination of molecular and genetic approaches, we investigated the significance of HDAC10 overexpression in SS, its impact on global gene expression, cell biology, and particular cellular pathways. Two model CTCL cell lines (Hut78, SeAx) with HDAC10 overexpression were used in the study. The performed RNAseq analysis indicated changes in global gene expression and cellular pathways affected by HDAC10 and co-immunoprecipitation (Co-IP) with mass spectrometry identified proteins that are bound to this epigenetic regulator. Several functional assays were performed.

Cellular fractionation and IF analysis confirmed mainly cytoplasmatic localization of HDAC10 in CTCL cell lines. Only a small fraction was detected in the nucleoplasm and bound to chromatin. The trend was confirmed in primary Sezary cells and normal CD4+ T-cells. There was no effect of HDAC10 overexpression on cellular processes including cell proliferation, cell cycle, and apoptosis. However, in the presence of the pro-apoptotic compound (Campthothecin), the inhibitory effect on apoptosis progression was detected.

The study showed that HDAC10 protein is mainly localized in the cytoplasm in Sezary Syndrome cells, and its overexpression has an inhibitory effect on apoptosis. The better

understanding of CTCL pathogenesis could lead to the improvement of future therapy and increase the general knowledge of this epigenetic regulator and its possible mode of action.

In silico method investigating camptothecin analog interaction with Protein tyrosine phospatatase, Shp2 (PTPN11)

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The human *PTPN11* gene encodes for the src tyrosine phosphatase protein (SHP2) which is now gaining much attention in many disorders particularly its oncogenic involvement in many cancers. Efforts in developing molecules targeting SHP2 with high efficacy is the future of drug discovery and chemotherapy. However, the interaction of a new camptothecin analog, FL118, with the catalytic domain of SHP2 protein remains unknown. Therefore, this study aims to provide in silico rationale for the recognition and binding of FL118 with the catalytic domain of human protein tyrosine phosphatase-SHP2 (PTPc-SH2-SHP2, chain A). The docking interaction of the human SHP2 protein's catalytic domain; Y279C and R465G mutants with FL118 ligand was calculated and analyzed using the Autodock 4.2 programme, setting the docking grid to target the protein's active site. The camptothecin analog formed a low and negative binding energies with PTPc-SHP2 wildtype and mutant SHP2 models, with SHP2-wildtype having the lowest binding energy (-7.54 Kcal/mol) and intermolecular energy (-8.13 Kcal/mol). In addition, the protein-ligand complexes revealed hydrogen bond interactions reflecting the degree of stability that each structure possesses, with the SHP2-wildtype forming the most stable complex among the structures. This in silico rationale identifies the novel FL118 camptothecin analog as a selective inhibitor of PTPc-SH2 domain of SHP2 protein, paving way for further investigations into the interactions and binding activity of potent analogs with SHP2 for potential therapeutic applications in PTPN11-associated disorders.

PhD Clinical Sciences

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TRENER

De Ritis ratio as a biomarker of NAFLD and metabolic disorders in postmenopausal women with Metabolic Syndrome

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Tutor: Assoc. Prof. Monika Szulińska

Introduction: De Ritis ratio between the serum levels of aspartate transaminase (AST) and alanine transaminase (ALT) <1 may suggest NAFLD. It provides valuable diagnostic and prognostic information. Both serum AST and ALT increase with body weight. Almost half of the patients with NAFLD fulfill the criteria for metabolic syndrome. In patients with NAFLD and NASH, the AST/ALT ratio is <1, particularly in morbidly obese patients. Patients with NAFLD have a higher mortality rate than the general population and are at increased risk of developing cardiometabolic complications.

The aim of the study: The study determined whether the de Ritis ratio may predict NAFLD and metabolic disorders in postmenopausal women with MetS.

Methods: The study was conducted on 39 women > 55 years of age with ALT and AST >40 who were assigned to two groups: without MetS (n=9) and with MetS (n=30). De Ritis ratio was calculated. Anthropometric tests were performed. The serum concentrations of ALT, AST, TG, HDL, and CRP were determined. VAI was calculated.

Results: The mean de Ritis ratio in the MetS group was 0.84±0,24. There was a significant correlation between the de Ritis ratio and CRP (0,38), and between de Ritis Ratio and VAI, WC, TC, HDL, LDL, and TG no significant correlation was observed.

Conclusions: De Ritis ratio can be considered a valuable marker of NAFLD in women>55 years of age with MetS at high risk of cardiometabolic complication. De Ritis ratio correlated with CRP. Further studies are needed to evaluate the de Ritis ratio as a predictor of metabolic disorders in postmenopausal MetS women.

Healthy male amateur cyclists with larger right ventricle end-diastolic area have better exercise capacity in the cardiopulmonary exercise test

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Introduction: Endurance training improves physical performance and leads to structural and functional cardiac changes termed athlete's heart. Measures of exercise capacity are usually associated with the left ventricle. Similar relationships with the right ventricle are less studied.

The aim of the study: We compared the exercise capacity in male cyclists divided into those with normal or increased (>12.6 cm^2/m^2) right ventricle end-diastolic area index (RVEDAi).

Methods: RVEDAi was estimated in 116 male volunteer amateur cyclists by resting echocardiography (ECHO). All participants underwent a cardio-pulmonary exercise test (CPET) to exhaustion on a cycloergometer using ramp protocols for measuring the load, oxygen consumption (VO_2) and oxygen pulse (O_2pulse) at the first (VT1) and second ventilatory thresholds (VT2), and peak exercise, and the total duration of exercise. Age and body mass index (BMI) had normal distribution and are presented as mean ± standard deviation, other continuous data did not have normal distribution and are presented as median (interquartile range). Using the nonparametric Mann-Whitney test, the CPET results were compared between cyclists with normal and dilated right ventricle.

Results: The cyclists' age was 32.5±8.6 years, their BMI 24.8±2.8 kg/m^2, the RVEDAi was 12.41(11.14-13.86) cm^2/m^2. Cyclists with larger (>12.6 cm^2/m^2) RVEDAi (N=53) achieved higher load, VO_2, and O_2pulse at VT1, VT2 and peak exercise and exercised longer than individuals with smaller RVEDAi (N=63) (p=0.0062-0.0431). Individuals with larger RVEDAi reached peak values of load 355(321-405) W, O_2pulse 21.63(18.91-23.94) mL/beat and VO_2 3.96(3.19-3.87) L, whereas those with smaller RVEDAi reached peak load 311(273-373) W, peak O_2pulse 19.58(17.52-22.24) mL/beat, peak VO_2 3.5(3.31-4.07) L. The exercise time was 10.78(10.07-11.81) minutes in the higher vs 10.33(9.45-11.25) minutes in the lower RVEDAi group.

Conclusions: Cyclists with larger RVEDAi consume more O_2 during exercise, have a better cardiac inotropic function (higher O_2pulse), achieve higher loads and exercise longer. RVEDAi is related to the exercise capacity of amateur cyclists.

Surprising Severity: Pediatric Case of COVID-19

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Introduction: COVID-19 can affect people of all ages. While children are generally less likely to experience severe symptoms, children with underlying health conditions are at higher risk of developing severe illness. However, it is important to remember that even healthy children can become seriously ill with COVID-19, so we must be particularly vigilant.

Case report: The article presents a case report of a 2.5-year-old girl who was admitted to the clinic due to SARS-CoV-2 infection. The girl had a mild cough and a fever up to 38.8°C, which was managed with antipyretic drugs. She tested positive for SARS-CoV-2. On the day of admission, her parents reported that her blood saturation dropped to 91% for several seconds. The patient had no chronic diseases or allergies. The physical examination revealed that the girl was in good general condition, had no complaints, normal temperature, and no dyspnea. There were no skin changes. Peripheral lymph nodes were palpated and found not to be enlarged. The throat was slightly reddened, tonsils were slightly loose, without exudates. On auscultation, heart sounds were clear and regular. There was a normal alveolar murmur over the lung fields. The abdomen was soft, painless, and liver and spleen were not enlarged. Peristalsis was audible, and peritoneal symptoms were negative. There were no signs of meningitis. Laboratory tests showed slight leukopenia with normalized monocytosis, slight coagulation abnormalities, and a slight increase in lactate dehydrogenase activity. A chest x-ray on admission showed peribronchial infiltrates in the right lower lobe. Despite the absence of dyspnea symptoms on admission, there were episodes of saturation drops at night. The girl required oxygen therapy. CT scan revealed ground glass opacities in both lungs. The patient was treated with convalescent plasma transfusion, remdesivir, dexamethasone, budesonide, short-acting bronchodilators, parenteral fluid therapy, enoxaparin prophylaxis, and antipyretics A follow-up CT scan revealed a reduction in lung parenchymal opacities, and the patient was discharged home in good general condition.

Conclusions: The presented case report highlights the importance of being vigilant for signs of COVID-19 in children, even if they have only mild symptoms or are asymptomatic at the time of admission.

Time Perspective as a Mediator of Depressive Symptoms in Patients with Polycystic Ovary Syndrome

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Introduction: Polycystic ovary syndrome (PCOS) is a chronic endocrinopathy characterized by oligo- or anovulation, clinical and/or biochemical markers of hyperandrogenism, and polycystic ovaries and is associated with an increased prevalence of depression. Research conducted on psychiatric patients has shown correlations between depression and decreased cognitive function.

The aim of the study: The aim of this study was to examine the possible mediation of the time perspective (TP) in the development of depressive symptoms in patients with PCOS.

Methods: A study was conducted on 83 patients with PCOS and 65 healthy women. Standardized questionnaires were used to assess depressive symptoms (Beck Depression Inventory – BDI-II) and time perspective (Zimbardo Time Perspective Inventory – ZTPI).

Results: Our study revealed an indirect influence of depressive symptoms on PCOS through the positive future time perspective. In the logistic regression model, which included depression and a given time perspective as predictors of PCOS, only the future TP ($b = -0.004$, $p < 0.003$, $OR = 1.004$, 95% CI [1.001, 1.008]) was significantly independently related to the occurrence of PCOS.

Conclusions: Our result is another argument for the role of psychoeducation and appropriate communication with a patient from the risk group in a way that builds hope and allow to regain influence on life situation.

Methodological and cellular factors affecting the magnitude of breast cancer and normal cells radiosensitization using gold nanoparticles.

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Introduction: Breast cancer (BC) is the most common malignant tumor in women, which most often originates from the epithelial tissue of the breast gland. One of the most recommended kinds of treatment is radiotherapy (RT), but irradiation can affect not only the cancer tumor but also the healthy tissue around it. Au nanoparticles (AuNPs) were proposed as a radiosensitizing agent for RT which would allow for lower radiation doses, reducing the negative radiation effects on healthy tissues. The clinical success of AuNPs is expected to be based on a better understanding of the mechanisms by which their physicochemical properties influence cellular radiobiological responses.

The aim of the study: The main objective of the study is to assess the dependence on the radiosensitivity of BC (MDA-MB-231) and normal mammary gland epithelial cells (MCF12A) to ionizing radiation, caused by functionalized AuNPs under diverse conditions.

Methods: The viability, uptake, reactive oxygen species induction, and mitochondrial membrane potential in cells were analyzed applying a time and concentration-dependent manner. After the different incubation times with AuNPs, cells were exposed to 2 Gy. The determination of radiation effect in combination with AuNPs was investigated using the clonogenic assay, p53, and γH2AX level, as well as, Annexin V staining.

Results: AuNPs were not cytotoxic, while they generated higher reactive oxygen species levels in cells. The most effective in inducting the radiosensitization effect in BC cells was the RGD-PEG800-AuNPs30nm. The same in size AuNPs functionalized with the PEG chain different in the length acted variously. Results highlighted the strong need for assessing the experimental conditions' optimization before the AuNPs will be implemented with IR. Moreover, results indicated that AuNPs did not act universally in cells.

Conclusions: In this study, a complex explanation of the radiosensitization causes was proposed. It is evident that the time- and concentration-depend manner is crucial in the AuNPs implementation in radiotherapy. AuNPs could be a promising tool as a radiotherapy sensitizing agent, but it should be specified and deeply investigated under what conditions it will be applied taking into consideration not only AuNPs modifications but also the model and experimental conditions.

Neuroblastoma detection in patients with Horner syndrome

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Tutors: Prof. Anna Gotz-Więckowska, MD, PhD[1]; Prof. Katarzyna Derwich MD, PhD[3]; Marta Pawlak MD, PhD[1]

Introduction: Horner syndrome (HS) usually manifests by a triad of symptoms: unilateral ptosis, miosis and anhidrosis caused by oculosympathetic tract damage. Isolated anisocoria or ptosis occur rarely. HS can be associated with neuroblastoma (NBL) which is the most common extracranial solid tumor in children. It is diagnosed with computed tomography, magnetic resonance, or 123I-metaoiodobenzylguanidine scintigraphy which require general anesthesia in young children.

The aim of the study: The study aimed to define the imaging examination (like ultrasonography or radiography) effectiveness in NBL finding in patients with HS.

Methods: We analyzed retrospectively the data of patients with NBL treated in the Department of Pediatric Oncology, Hematology, and Transplantology in Poznan between 2004-2022. We performed an ophthalmological examination in 5 patients with HS who had finished NBL treatment. In particular, we measured the palpebral fissure and pupils diameter.

Results: There were 13 cases of HS in patients with NBL – 5 caused by a tumor, and 8 postoperative. In 3 out of 5 cases HS was an isolated manifestation. In most of the patients, the imaging examination descriptions pointed to the first or second neuron of oculosympathetic tract damage. Most often, the primary locus of the NBL was mediastinum. However, there were also cases of cervical or disseminated disease associated with HS. The thoracic radiography was sufficient in detecting change in mediastinum in all except one case with primary tumor in this localization. In one out of four cervical tumors, the ultrasound did not show the change. All of the examined patients had a whole triad of HS symptoms.

Conclusions: HS requires vigilance in the process of diagnostic decisions. Generally, thoracic radiography or cervical ultrasonography are effective. However, the negative results do not allow tumor exclusion. Usually, NBL is associated with full-presentation of HS as it is connected with the first or second neuron of oculosympathetic tract damage.

Right atrial remodeling related to training and half-marathon run in amateur athletes

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Introduction: Endurance training may cause atrial remodeling and atrial arrhythmias in professional athletes. However, there is a lack of data on right atrial adaptation to training and half marathon run in amateur runners.

The aim of the study: This paper discusses the influence of ten-weeks training and half marathon run on the right atrial (RA) strain parameters in non-elite athletes. It also aims to investigate whether these changes affect the runner's competitive performance.

Methods: The study group consisted of 45 recreational runners with a mean age of 32.96 ± 5.12 years, 27 men. Two-dimensional, Doppler and speckle tracking echocardiography was performed before the ten-weeks training period (stage 1), 48 hours before (stage 2) and within 48 hours after (stage 3) the half marathon run.

Results: In training period, there were no significant changes in RA volumes and RA ejection fraction between stages. We did not notice significant differences in RA strains during reservoir, conduit and contraction phases between stages. Athletes who trained more intensively had significantly higher maximum RA volume in stage 1 ($r = 0.32$; $p = 0.033$) and in stage 3 ($r = 0.44$; $p = 0.003$). They had also larger RA area in stage 1 ($r = 0.32$; $p = 0.030$). Runners whose RA area was larger, achieved significantly better finishing race time ($r = -0.49$; $p = 0.001$). Higher RA volume correlated with better half marathon performance ($r = -0.32$; $p = 0.039$).

Conclusions: Ten-weeks training period and half marathon run were not associated with RA dilatation or functional changes based on strain deformation analysis in amateur runners. We observed the influence of intensity of physical training on the enlargement of volume and surface area of right atrium, which resulted in better half marathon finishing time. Our study indicates that amateur training and half marathon distance run do not generate temporal changes in right atrium.

Safety of non-standard regimen of systemic steroid therapy in patients with Graves' orbitopathy – a single-center experience

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Tutors: Prof. PUMS Nadia Sawicka-Gutaj, MD, PhD, Kacper Nijakowski, MD, PhD

Introduction: Graves' orbitopathy (GO) is an autoimmune disorder of the orbit and retro-ocular tissues and the main extrathyroidal manifestation of Graves' disease. In moderate-to-severe and active GO i.v. glucocorticoids are recommended as first-line treatment. According to the 2021 EUGOGO guidelines the most common protocol employs a cumulative dose of 4.5 g methylprednisolone given in 12 weekly infusions.

The aim of the study: The aim was to assess the safety profile of metylprednisolon administered for three consecutive days at a dose of 1 g in patients with moderate-to-severe and sight threatening Graves' orbitopathy..

Methods: We retrospectively evaluated 161 medical records of patients with GO treated with high-dose systemic glucocorticoids in Endocrinology, Metabolic Disorders, and Internal Medicine Department in Poznan in years 2014- 2021. Clinical data included age, gender, laboratory results (Na, K, ALT, AST, TRAb, glucose), activity and severity of GO, smoking status, duration of the disease, and presented side effects. The statistical analysis was performed with Statistica 13.3 (StatSoft, Cracow, Poland).

Results: The presence of mild side effects was observed during 114 (71%) hospitalizations. The most common complications were hyperglycemia (n=95), elevated aminotransferases (n=31), headache (n=11), and facial erythema (n=11). Increased levels of aminotransferases were more likely observed in smokers and GO duration above 12 months. Based on the multivariate logistic regression, higher TRAb and CAS values were significantly associated with lower odds of hyperglycemia. In turn, the increased odds of elevated aminotransferases were significantly correlated with higher initial ALT levels, female gender, and GO duration above 12 months. In addition, the multidimensional correspondence analysis showed that GO patients who declared smoking and had not L-ornithine L-aspartate applied demonstrated a higher probability of elevated aminotransferases.

Conclusions: The non-standard regimen of systemic steroid therapy of GO applied in our center the has a good safety profile and does not require excess hospitalizations

Oxygen pulse at various stages of the cardio-pulmonary exercise test to exhaustion is correlated with the resting stroke volume in male amateur cyclists

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Introduction: Oxygen consumption (VO_2) shows the amount of O_2 the body utilizes under different conditions. Heart rate (HR) and stroke volume (SV) (an index of inotropic function of left ventricle) regulate VO_2, which, after normalization by HR, gives the oxygen pulse (O_2pulse). O_2pulse also depends on the arterio-venous O_2 difference, which changes in a narrow range during exercise in most healthy people. Thus, the O_2pulse is considered a proxy of SV during exercise. Endurance sports may lead to the structural and functional adaptation of the heart. Usually, fit athletes with better exercise capacity have a more dilated left ventricle, resting bradycardia and higher SV. Whether the resting SV translates to O_2pulse at various stages of exercise is uncertain.

The aim of the study: This study investigated the predictive value of resting SV with O_2pulse measured at various stages of the cardiopulmonary exercise test (CPET) in amateur cyclists.

Methods: Biplane SV was quantified by 2D transthoracic echocardiography (ECHO) in 118 male volunteer amateur cyclists. Their O_2pulse was measured during the first (VT1) and second (VT2) ventilatory thresholds and peak exercise of a CPET to exhaustion on a cycle ergometer using individually-tailored ramp protocols. Continuous data had normal distribution and are presented as mean ± standard deviation. Parametric Pearson correlation quantified the association between resting SV and O_2pulse measures.

Results: The cyclists' mean age was 32.5±8.6 years, and body mass index was 24.8±2.8 kg/m^2, SV was 96.1±25.0 ml, O_2pulse at VT1 was 17.9±3.5 ml/beat, at VT2 20.0±3.7 ml/beat, and at peak exercise 20.7±3.4 ml/beat. SV positively correlated with O_2pulse at VT1, VT2, and peak exercise with r between 0.41-0.46 (for all $p<0.001$).

Conclusions: Our study confirms that male amateur cyclists with better left ventricular contractility achieve higher O_2pulse during exercise of various intensities. Whether SV can be used to plan cycling training and races requires further investigation.

Sleep quality, chronotype and overweight/obesity in young adults

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Introduction: The relationship between chronotype, sleep quality and obesity is not completely understood. Some studies have shown that eveningness is significantly linked to obesity when compared to morningness. Sleep disturbances, meal timing and eating habits in relation to chronotype may explain this connection.

The aim of the study: The aim of this study was to investigate the association between chronotype, sleep quality and dietary patterns with overweight/obesity in young adults.

Methods: The study was conducted among 226 healthcare students at Poznan University of Medical Sciences (51 men, 175 women). Paper-and-pencil measures were used: quality of sleep was assessed by Pittsburgh Sleep Quality Index (PSQI) and chronotype by Morningness-Eveningness Scale (CSM). Body composition in 98 participants was analyzed using the biological impedance method with a TANITA Composition Analyzer.

Results: The mean age of the participants was 19.9±1.9 (range 18-35) and mean BMI was 22.2±3.7 kg/m2 (range 14.7-40.9). Thirty-eight participants (16.8%) had overweight or obesity, 22 participants had underweight, 166 – normal weight. The PSQI score of majority of the participants (54.0%) indicated poor quality of sleep. In body composition analysis, participants with overweight/obesity had significantly higher body fat percentage, visceral fat rating, total body water percentage and fat free mass. They also had significantly longer sleep latency and more frequently used sleeping pills. No gender- and body mass-related differences in CSM results were observed. There was an association between low habitual sleep efficiency and low sleep quality and delayed breakfast, and between delayed breakfast and visceral fat rating.

Conclusions: Our results suggest that sleep disturbances may contribute to the development of overweight and obesity. Further studies are needed to evaluate the potential for healthy sleep interventions in the prevention of obesity.

Artificial intelligence for temporomandibular joint detection on cone beam computed tomography

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Tutor: Assoc. Prof. Wilk Szymon, PhD; Assoc. Prof. Dyszkiewicz-Konwinska Marta, DDS, PhD

Introduction: The temporomandibular joint (TMJ) is a synovial joint essential for proper jaw movement and function, such as chewing, speaking, and swallowing. TMJ disorders (TMD) are common in adults and can cause pain, stiffness, and difficulty with jaw movement. Diagnosis of TMD involves clinical evaluation and diagnostic imaging, such as cone beam computed tomography (CBCT), which generates three-dimensional scans of the TMJ. Unfortunately, the analysis of CBCT can be time-consuming, and some dentists may not have sufficient training in this area. However, recent developments in artificial intelligence (AI) have shown promise in enhancing diagnosis and treatment in dentistry, saving time through automated analysis.

The aim of the study: This study aims to develop and validate an AI-based tool for TMJ detection on CBCT scans.

Methods: We conducted the study using 17 anonymized CBCT scans of patients with and without TMD obtained from the database of Poznan University of Medical Sciences. We developed an AI-based model employing a Convolutional Neural Network (CNN) to extract from a DICOM (Digital Imaging and Communications in Medicine) file a given number (10 by default) of sagittal slices most suitable for further analysis. The CNN model consisted of four blocks of convolutional layers with a Rectified Linear Unit (ReLU) activation function, followed by max-pooling. We preprocessed the collected data and utilized the leave-one-out cross-validation method to train and validate the model. All components of the TMJ were clearly visible in these slices. Finally, the results obtained by the model were evaluated by specialists and subjected to statistical analysis.

Results: The model was able to extract the significant slices with a high accuracy of 95.13%.

Conclusions: The model accurately identifies sagittal slices most suitable for further analysis by the dentist, enabling its potential use as an assist tool for specialists in diagnosing TMD. That can ultimately improve patient care and save time.

Surgical Case Report I

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Fertility-sparing surgery in early-stage cervical cancer: surgical case report

Authors: Magdalena Nadolna, Julia Kołodziejczyk
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Tutor: PhD Sebastian Szubert

Background: Cervical cancer is not only the most common gynecologic malignancy but also the fourth most frequently diagnosed cancer in women worldwide. The crucial issue in the treatment recommendation is the desire for pregnancy among women. Diagnosis at an early stage enables to preserve fertility. The procedures, including conization and radical trachelectomy may be an option for patients with stage IA2-IB1, replacing radical removal of the uterus.

Case report: A 32 -year old female underwent a screening PAP test which revealed high-grade squamous intraepithelial lesions of cervical cancer (HSIL). Colposcopy and targeted cervical biopsy was performed. Its outcome showed HSIL/ CINIII, however invasive lesions could not have been excluded. The ultrasound scan showed hypoechogenic area size 1,3 cm, hence the decision to make a surgical conization using electrosurgical pencil. Histopathological evaluation of the cone biopsy revealed low- grade squamous cervical cancer, classified as IB1 in FIGO system. Lymphovascular space invasion was presented (LVSI+). The surgical margins were tumor-free. Magnetic resonance imaging showed no metastases. Then, due to strong desire for pregnancy and disease advancement, the patient was qualified for the treatment with radical trachelectomy and pelvic lymphadenectomy. The procedure consisted of the removal of the majority of the cervix, resection of the parametria with preservation of autonomic innervation of the pelvis. Prophylactic abdominal cerclage was applied. Postoperative histopathology revealed no residual tumor and no metastases in lymph nodes. PAP smear three months after the surgery was normal. The patient feels well, has no voiding dysfunction, normal periods and can plan her pregnancy.

Conclusions: The nerve- sparing radical trachelectomy is a safe method that provides radicality of therapy and simultaneously low risk of urinary tract complications and preserving fertility.

Between life and death: The Dissecting Aneurysm of Thoracic Aorta (TAAD) with Endoleak (EL) type 1a as a possible complication of Endovascular Aneurysm Repair (EVAR)

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Background

Endoleak is a continual leaking of blood out of the graft and into the aneurysm sac with potential rupture. It is a possible complication of EVAR. EL type Ia occurs in defect of the proximal sealing zone of the stent. We present the case of EL type Ia hybrid repair using debranching techniques, laser fenestration and implantation of specific stents.

Case Report

A 46 year-old-man was admitted to the hospital for an advised repair of TAAD with EL type Ia, as a result of stent implantation into thoracic aorta in 2013. Patient with history of gout and COPD. Presented anatomical variability: right aortic arch with an aberrant left subclavian artery. Solution involved 2 stages. 1st operation consisted of debranching the aortic arch and creating a bypass between left and right common carotid artery (LCCA and RCCA). The 2nd stage was performed 2 weeks later. Retrograde deep femoral artery access was made. The right brachial artery, left superficial temporal artery and left radial artery were punctured. The stent (type arch branch COOK with 2 branches to RCCA and left subclavian artery (LSA)) was implanted to the aortic arch. Laser fenestration of the stent was performed toright subclavian artery, followed by both balloon-expandable-covered and self-expanding stent. Stent was implanted to distal part of the descending aorta (DA). The BeGraft stent was implanted via femoral access to RCCA. The self-expanding stent was implanted to RCCA. The two aortic BeGrafts and two self-expanding Zilver stents were implanted via femoral access to LSA. Arteriography confirmed procedure effectiveness. Major postoperative complications including pericardial tamponade and respiratory insufficiency occurred. The patient was admitted to ICU. The CT revealed an aneurysm of the DA, dissection of the abdominal aorta and occlusion of the right bronchus. Lifesaving operation took place. Thoracotomy performed through the 5th intercostal space allowed removal of 17 cm thoracic aortic aneurysm. Aneurysmorrhaphy was performed. After a month he was discharged in stable condition, qualified for in-home respiratory therapy.

Conclusions

Multiple guidelines recommend follow-up imaging after EVAR to treat e.g. aortic complications. Early detection and treatment are crucial to prevent setbacks and improve results. It is worth mentioning that personal approach to each case is recommended.

Reconstruction of the left half of thorax in a 2-month-old patient with multiple congenital malformations

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Tutor: Marcin Gładki, M.D., Ph.D.

Background

2-month-old male patient admitted to Department of Pediatric Cardiac Surgery in Poznań with mesocardia, single ventricle, single atrium, dextro-transposition of great arteries, pulmonary stenosis, coarctation of aorta and patent ductus arteriosus (PDA) was additionally diagnosed with situs inversus, congenital left-sided absence of true ribs and three-fingered left hand with thumb aplasia. Medical care of such patient seems to be challenging for a multidisciplinary team.

Case report

The patient was qualified for pulmonary–systemic shunt. PDA ligation was performed from median sternotomy approach. Because of stable increase of saturation, the patient was disqualified from pulmonary–systemic shunt. Postoperative course was complicated by left-sided thorax collapse due to absence of true ribs, despite intubation and SIMV-mode ventilation. Due to severe condition, on the 14th day after surgery tracheostomy was performed.

CT scan revealed right-sided spinal curvature, "butterfly" Th_3 vertebral cleft and asymmetric left-sided bone malformations of I–VII ribs in the form of adhesions of adjacent ribs into one rib with common shaft. USG confirmed extreme hypoplasia of rib cartilage and scaffold.

On the 21st day the patient was qualified for anterior chest wall reconstruction due to consecutive failed extubation attempts. Resternotomy and extensive dissection of the left half of thorax revealed false ribs, absence of true ribs, as well as subcutaneously located heart and hypoplastic lung. Three artificial "ribs" were cut and modeled from Codubix® material, and implanted between the native bony ribs and the sternum. Obtaining hemostasis, thorax was closed in layers. The patient in stable condition was extubated on the 3rd day after reconstruction and was transferred to Department of Pediatric Cardiology on the 11th day.

Conclusions

Due to numerous abnormalities and dysmorphology, genetic consultation suggested suspicion of Holt-Oram syndrome, however, the diagnosis requires proper genetic tests. The patient is currently hospitalized in the intensive care unit. Further treatment strategy remains to be adopted.

Crohn’s disease – when segmental ileitis turns life upside down. a case presentation from surgical standpoint.

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Tutor: Jarosław Cwaliński MD, PhD

Background:
Crohn’s disease (CD) is an inflammatory bowel disease affecting the whole gastrointestinal tract, especially the terminal ileum and ileocecal region. Although treated mainly by gastroenterologists, CD remains of interest to general surgeons, especially its complications. When an inflammatory tumour causes permanent insufficiency of the ileocecal region, conservative treatment becomes ineffective, and surgery is necessary. In such cases, ileocecal resection may be the final remedy.

Case report:
A 36-year-old patient was admitted to the surgery department due to subileus caused by an inflammatory tumour of the ileocecal region. History revealed primary ileocecal resection due to complicated appendicitis 2 years earlier and postoperative histopathology showed changes typical of CD. One year later nausea and vomiting related to insufficiency of ileocolic anastomosis appeared. Over the next 6 months, abdominal pain, loose stools and loss of body weight increased. Finally, colonoscopy and MRI enterography confirmed the recurrence of ileocolic inflammation. After 3-month conservative treatment, remission was achieved. However, 6 weeks after the last dose of drugs, the previous complaints returned. Therefore, the patient was qualified for ileocolic anastomosis resection and stapled reconstruction. Symptoms resolved for one year. Unfortunately, postoperative pharmacological treatment was ineffective, so another anastomosis resection was made. A year later, as recurrence was noted, biological therapy was implemented. There has not been any progression yet.

Conclusions:
Manifestation of Crohn's disease in the terminal ileum and ileocecal valve is one of the main indications for surgical treatment. The decision on surgery is made individually based on the severity of symptoms and the effectiveness of pharmacological treatment. Considering that consecutive surgeries may cause short bowel syndrome, interdisciplinary management becomes crucial for CD patients.

First implantation of new-generation Edwards INTUITY Elite™ biological prosthesis in aortic position for surgical valve replacement in a pediatric patient in Poland

Authors: Aleksandra Sucharska, Paweł Bednarek
Affiliation: Scientific Group on Pediatric Cardiac Surgery, Poznan University of Medical Sciences
Tutor: Marcin Gładki, M.D., Ph.D.

Background:

For the first time in Poland, Edwards INTUITY Elite™ was used in 2014 at Silesian Center for Heart Diseases in Zabrze. The procedure was performed on obese 130-kg adult female patient. Since then, there have been no domestic reports of such implantation attempts in children, until 2022, when the first operation was performed at Department of Pediatric Cardiac Surgery in Poznań as described below.

Case report:

13-year-old male patient with congenital combined valvular disease of bicuspid aortic valve was admitted to Department of Pediatric Cardiac Surgery and qualified for surgical valve replacement. Echocardiography revealed moderate aortic insufficiency with stenosis (despite commissurotomy at age 6.5 years), mild mitral regurgitation and moderate tricuspid regurgitation.

From median re-sternotomy approach, ascending aorta and right atrium were cannulated with straight cannulas for extracorporeal circulation; left atrium was supplied with venting cannula. After aorta cross-clamp and anterograde blood del Nido cardioplegia infusion, both degenerated aortic cusps were resected through aortotomy. Using delivery system, the 23 mm prosthesis was parachuted along three guiding sutures applied onto aortic annulus and positioned by tourniquets. Frame was expanded with inflation balloon and guiding sutures were finally tied. Aorta was sutured and declamped at 39 minutes. After reperfusion, extracorporeal circulation was stopped at 64 minutes without complications and vessels were decannulated. Obtaining hemostasis of surgical field the wound was sutured, leaving a mediastinal drainage.

Echocardiography confirmed improvement of hemodynamic parameters. Post-operative period was uneventful and patient was discharged from hospital on the 12th day.

Conclusions:

Simplified implantation technique, requiring only 3 sutures (instead of 12–15 as in case of traditional prosthesis), allows for relative reduction of aortic cross-clamp time and cardiopulmonary bypass. Clinical safety and excellent hemodynamic performance of rapid deployment aortic valve replacement, as well as no need for long-term anticoagulant treatment, seem to be a reasonable solution in the pediatric population.

Ozaki aortic valve neocuspidization in pediatric patient with accidentally diagnosed endocarditis

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Tutor: Marcin Gładki, M.D., Ph.D.

Background:

Almost 3-year-old male patient in stable condition was urgently admitted to Department of Pediatric Cardiac Surgery with suspicion of infective endocarditis on aortic valve due to heart murmur, accidentally diagnosed on pediatric medical appointment. Besides that, patient was completely asymptomatic.

Case report:

Transthoracic echocardiography revealed heterogeneous hyperechogenic 0.76 × 0.6 cm mass with morphology of vegetation, adhered to margin of aortic valve non-coronary cusp and ballotting between left ventricular outflow tract (LVOT) and aortic bulb, moreover, moderate aortic regurgitation. Patient was qualified for resection of valvular vegetation and Okazaki aortic valve neocuspidization.

From median sternotomy approach, cannulation and venting, initiation of extracorporeal circulation, aorta cross-clamping and anterograde del Nido blood cardioplegia administration were conducted. Proximal aortotomy revealed balloting solid calcificated vegetation affecting non-coronary cusp, which was completely excised with part of degenerated cusp. Open aortic valvuloplasty was performed by suturing autologous pericardial patch to partially resected cusp, preserving coaptation with only moderate regurgitation. After suturing and venting, the aorta was declamped after 50 minutes and cardiopulmonary bypass was stopped after 66 minutes with catecholamines supply. Surgical wound was closed in layers, leaving mediastinal drainage.

Intubated and mechanically ventilated in SIMV mode, patient was transferred to postoperative intensive care unit. Empiric antibiotic therapy was implemented. On the 1st postoperative day patient was extubated. On 2nd day, the patient in stable condition was transferred to intermediate care unit for further observation. No fungi or bacteria were isolated in the culture.

Conclusions:

The diagnosis of subclinical endocarditis in asymptomatic children is of great importance in preventing complications, particularly neurological ones. In these children, Ozaki aortic valve neocuspidization involving independent replacement of aortic valve cusps with autologous pericardial neocusps is a promising technique as it allows to avoid anticoagulant therapy, especially in physically active children and doesn't affect aortic annulus growth.

Exceptional intrapericardial location of solitary fibrous tumor

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Tutor: Prof. Bartłomiej Perek, M.D., Ph.D.

Background:
Solitary fibrous tumor is an uncommon mesenchymal neoplasm composed of spindle or ovoid cells and collagen. It can arise from multiple areas in human body. Abdominal, pelvic, pleural tissues and extremities are the most common sites. This neoplasm usually concerns people in their fifth or sixth decade of life. The recurrence rate is between ten and thirty per cent. Surgical excision of the mass is usually considered as a method of choice. In this report we present and discuss a case of a young patient with an exceedingly rare location of the tumor in the pericardial cavity.

Case report:
The 28-year-old man was admitted to the hospital with exertional dyspnoea accompanied by fever and general weakness. Echocardiography and computed tomography disclosed excessive fluid and a few-centimeter-large mass located inside the pericardial cavity. Magnetic resonance imaging (MRI) showed that the tumor was connected to the intrapericardial part of the inferior vena cava. The mass was successfully removed during surgery. Histopathological examination was remarkable for positive STAT6, vimentin and BCL-2 staining. Eventually, the diagnosis of solitary fibrous tumor of exceptional location was established. The patient was discharged from hospital on 6th postoperative day. Oncologists have chosen watchful waiting strategy with no adjuvant therapy. One year after surgery no signs of recurrence have been found in the follow-up imaging studies (echocardiography and CT).

Conclusions:
In rare cases pericardial effusion associated with non-specific symptoms can be related to pericardial solitary fibrous tumor. Imaging examinations such as echocardiography followed by CT or MRI enables appropriate diagnosis. Surgical resection is a method of choice and is usually related to favorable post-discharge outcomes.

Functional Endoscopic Sinus Surgery Removal of Ethmoidal Foreign Body after Traumatic Orbital Injury

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Background:
The paranasal sinuses are air-filled spaces surrounding the nasal cavity that connect directly to the sinus cavity via the sinus ostia, which become clinically significant in times of inflammation, infection, and malignancy. The presence of a foreign body in this region is a rare occurrence but can arise after maxillofacial trauma or as a dental or surgical complication. Functional endoscopic sinus surgery (FESS) is a minimally invasive technique that can precisely open the sinus air cells and ostia under direct visualization. This allows for the removal of infected or disproportionate mucous membranes, blockages of the sinus ostia, and lesions within this region.

Case Report:
A 20-year-old male presented with a torn right eyeball and no light passage after a beating injury. Imaging studies found a round metallic body, measuring 6 mm 3000 HU, on the border of the superior orbit and posterior ethmoid with lens subluxation and hyperdense blood within the eyeball. A maxillofacial consult advised against attempting to remove the retained body due to a high probability of secondary injury. Further ENT analysis excluded contraindications and functional endoscopic sinus surgery (FESS) was effectively performed with anterior/posterior ethmoidectomy, mucosal debridement, and removal of a 5 mm silver-copper ball.

Conclusions:
The discovery of an external body near the ethmoidal paranasal sinus is particularly rare and may cause complications including visual disturbance, eyeball movement disorders, infection, abscess, rhinorrhea, and nasal obstruction. The management depends on both the degree of external injury and precise location, size, and general composition of the object. This case describes a metallic object found at the border of the posterior ethmoidal sinus after a traumatic incident. After careful consideration of potential impediments and risk of secondary injury to delicate nearby structures, endoscopic sinus surgery was performed under the guidance of neuronavigation, and the object was successfully removed with no postoperative complications.

A new presentation of hemolysis after mitral valve repair due to mitral regurgitation and chord rupture

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Affiliation: Faculty of Medicine, Vilnius University, Lithuania, Vilnius University
Tutor: Jonas Plioplys, MD

Background:
Hemolytic anemia is a rare complication of mitral valve repair surgery, occurring in less than 1% of patients. Fragmentation of the mitral regurgitant jet is the leading cause of intravascular hemolytic anemia after surgery. The presence of schistocytes, fragmented cells on a peripheral blood smear, and echocardiographic evaluation help diagnose the mechanical origin of hemolysis after mitral valve repair. The management of hemolytic anemia is with blood transfusions and treated with mitral valve reoperation.

Case report:
A 52-year-old male had a chord rupture of the mitral valve's posterior leaflet with grade IV mitral regurgitation. The patient underwent mitral valve posterior leaflet repair and annuloplasty surgery. After three weeks of discharge, the patient developed symptoms of hemolytic anemia and was given a transfusion of four units of red blood cells. Laboratory tests showed schistocytes, anemia (hemoglobin at 67 g/l), the presence of hemoglobinuria, mixed hyperbilirubinemia (total bilirubin at 55.1 μmol/l) with dominant indirect bilirubin at 44.1 μmol/l, haptoglobin at <0.08 g/l, lactate dehydrogenase (LDH) at 2912 U/L, and a negative direct Coombs test. The diagnosis was confirmed by transesophageal echocardiography, which showed a mitral paravalvular leak. The final diagnosis was non-immune hemolytic anemia of mechanical origin. The patient underwent mechanical mitral valve replacement surgery, which went without complications, and the patient did not require blood transfusions after the surgery. The patient began recovering once the mitral valve was repaired.

Conclusions:
Hemolytic anemia is a rare complication of mitral valve repair surgery, and its timely recognition and appropriate management, including mitral valve reoperation, are essential. Echocardiography is a valuable diagnostic tool to identify the mechanical origin of hemolysis. Both bioprosthesis and mechanical valve show good results with favorable outcomes.

Concurrent cranialization and inflammatory lesion removal by neurosurgery and otolaryngology teams

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Background:
Chronic rhinosinusitis with nasal polyps may require functional endoscopic sinus surgery in patients with a severe course, or if medicine has failed to improve symptoms. Recurrence of inflammation and spread to the posterior wall of sinuses through Breschet veins can lead to osteomyelitis, increasing the risk of brain involvement. This rare occurrence requires multi-specialty cooperation between otolaryngologists and neurosurgeons due to the risk of cerebrospinal fluid leakage and meningitis.

Case Report:
A 52-year-old man with a long surgical history of 12 functional endoscopic sinus surgeries for chronic rhinosinusitis was readmitted to the otolaryngology department. The patient was evaluated for paranasal sinus inflammation and purulent nasal discharge. A non-contrast CT scan showed widened connections of the maxillary, ethmoid and sphenoid sinuses to the nasal cavity. Imaging revealed further inflammation and erosion of the frontal sinus posterior wall as a result of the recurrence of a previously operated Pott's puffy tumour. A mucocele subsequently developed in all related sinuses causing thinning, mucosal changes and multi-site tearings of the left frontal sinus walls, as confirmed by MRI. There were no intracranial abscesses present or pathological enhancements. Due to the complex nature of this case, neurosurgery and otolaryngology teams operated concurrently. A bifrontal craniotomy provided access for cranialization and drainage of the frontal sinuses with obliteration of the sinus nasal opening. In addition, inflammatory lesions of the nasal cavity and ethmoid sinus were removed endoscopically. Intraoperative bacteriological studies yielded no positive results. Post-operatively, there was mild edema but no further complications.

Conclusion:
Mucoceles and Pott's puffy tumours are complex sequelae of severe chronic rhinosinusitis. When the inflammation extends posteriorly beyond the sinus region managed by otolaryngologists, a synchronised surgical plan involving neurosurgeons is thereby vital due to the additional risk of brain involvement.

Rare case of recurrent myofibroblastoma in a female patient

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Background:
Mammary-type myofibroblastoma (MFB) is a rare benign spindle cell tumor of the breast. It accounts for <1% of all breast tumors. Usually it is discovered among men between 60 and 70 and increasingly among postmenopausal women. Due to its rare incidence no risk factors or genetic predispositions are identified, although some role of steroid hormones is suspected in the pathogenesis. As MFB is well encapsulated, the treatment of choice is surgery without further adjuvant therapy. Only one relapse of MFB has been reported in the literature, thus we find a presented case interesting.

Case report:
We report a case of second recurrence of MFB in a sixty one year old female patient presenting with a painless lump located in the upper outer quadrant of the right breast. She was first diagnosed with MFB in 2015. Two tumorectomies were performed, first after diagnosis and second year later as a consequence of relapse. After another recurrence of MFB the patient was qualified for mastectomy in 2023.

Conclusions:
Ultimately, MFB occurrence is uncommon among both sexes with a higher prevalence in male breast. There is little data concerning recurrence of MFB, therefore careful observation and documentation of recurrent MFBs in female patients could prove beneficial in treating future cases.

The young patient who became lung and kidney recipient – a case report

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Background:
Cystic Fibrosis (CF) is a congenital, multiorgan genetic disease, the progression of which including severe respiratory illnesses. Currently the treatment involves taking CFTR-modulators, however anteriorly lung transplantation (LTx) was the only therapeutic option for CF patients. LTx involves lifelong intake of nephrotoxic immunosuppressive therapy, which may lead to end-stage renal disease (ESRD) and the necessity of kidney transplantation (KTx).

Case report:
Our case report describes 22-year-old man who became in 2018 double LTx (DLTx) recipient due to CF and in 2021 kidney recipient, in all probability because of nephrotoxicity of calcineurin inhibitor–based immunosuppressive therapy, antiinfection drugs as well as restricted control over the patient related to the COVID-19 pandemic and patient's non-compliance. In 2016, the patient presented chronic respiratory failure, therefore he was qualified for LTx. He spent 2 years on national lung transplant waiting list. In November 2018, the patient underwent orthotopic DLTx. He was discharged in good health after monthlong hospitalization with the normal kidney function (glomerular filtration rate >60ml/min./1,73m^2 and serum creatinine level 44µmol/l). At the time the treatment involved 3-drug immunosuppression based on tacrolimus, mycophenolate mofetil and prednisolone. From October 2019 progressive impairment of kidney function leading to the acute kidney injury was observed. The dialysis therapy was implemented. In September 2020, 19-year-old patient was qualified to KTx as he presented ESRD. KTx was finally performed in August 2021. The patient was discharged 3 weeks after KTx in good health. Nowadays, he is treated with the same immunosuppressive therapy and does not require supplemental oxygen therapy as well as the dialysis therapy.

Conclusions:
DLTx is an important therapeutic option for CF patients. However, in aforementioned patient the immunosuppressive drugs, including restrictions related to COVID-19 pandemic and patient's non-compliance contributed to ESRD. ESRD in patients with previous LTx significantly shortens life expectancy, therefore KTx is often essential therapeutic option.

Icterus Caused by Echinococcosis–Untypical Indication of Liver Transplant. Case Report

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Background:
Jaundice is, in most cases, caused by haemolysis, liver failure or biliary tract obstruction, but it can also be a symptom correlated with parasitic cysts in the liver. The key to which procedure should perform is to determine if the cysts are resectable and whether the organ can restore its functions after the process. In chronic infection with the Echinococcus spp. parasite, transplantation can be considered when the surgery is impossible.

Case report:
A 28-year-old man with jaundice and slight pulmonary restriction, lost about 20 kg in two months, was admitted to the clinic. The reason for hospitalization was a non-specific tumour in the liver and recurrent mechanical jaundice and inflammation of the bile ducts. Additional tests show increased INR (1,65) and bilirubin (1,34 mg/dl). Multiple endoscopic and percutaneous drainage of the left lobe of the liver was performed. Also, the radiological examination (USG, CT, MRI) confirmed an unresectable tumour. To comply with the differential diagnosis of liver disease, we found the parasite serological analysis showed the IgG-positive test for Echinococcus. Because of the tumour location, the resection was impossible, and the patient qualified for orthotopic liver transplantation (OLTx). A high-protein diet is recommended, and the antiparasitic drug–albendazole is prescribed. The patient was discharged home after a month of observation.

Conclusions:
Jaundice indicated an inflammatory process in the liver due to echinococcosis. Liver transplantation is an effective therapeutic method in patients with unresectable cysts. Moreover, the patient must take antiparasitic drugs before and after the transplantation to avoid the recurrence of the echinococcosis. OLTx combined with benzimidazole therapy provides satisfactory long-term outcomes in selected patients with non-resectable echinococcosis lesions.

A Case of Ludwig's Angina, an Extensive Deep Neck Infection of Odontogenic Origin

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Background:
Ludwig's angina is a serious and potentially life-threatening phlegmon of the floor of the mouth and neck requiring prompt diagnosis and treatment. Diffuse infection in Ludwig's angina can rapidly spread to the surrounding tissues and potentially lead to serious complications such as aspiration pneumonia, sepsis, or airway obstruction. The condition is commonly caused by polymicrobial infections of an odontogenic origin, as presented in this case.

Case Report:
A 60-year-old male was admitted to the emergency department with massive swelling of the left side of the face and neck, lasting two weeks. Intraoral examination revealed multiple carious lesions and purulent drainage. CT of the neck and craniofacial area showed a diffuse phlegmon extending from the oral cavity floor to the subcutaneous and deep tissue of the neck with involvement of the left parotid gland. Extensive caries of teeth 33 and 34 were suggested to be the starting point of the infection. Emergency surgical drainage and debridement with tooth extraction were performed under general anesthesia, and empirical antibiotic therapy was started. CT on the second postoperative day revealed a significantly increased extent of the infection that required further surgical debridement. Following the results of microbiological culture and sensitivity testing, the antibiotics were changed, and standard wound and drain care was continued. The patient improved significantly and was released 18 days after admission.

Conclusions:
This case highlights the importance of prompt and aggressive management of Ludwig's angina to prevent severe complications and optimize patient outcomes. Repeated surgical intervention and targeted antibiotic therapy are usually necessary to control the rapid spread of the infection. Proper oral health care, early treatment of dental infections, and collaboration between physicians and dentists are crucial in preventing Ludwig's angina.

Prosthetic arthroplasty for thumb carpometacarpal joint osteoarthritis

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Background:
Thumb carpometacarpal joint (CMCJ) osteoarthritis, or rhizarthrosis, is the second most common location of degenerative disease of the hand after the distal interphalangeal joint. Thumb CMCJ prosthetic replacement aims to restore thumb biomechanics and improve pain and function. Implant arthroplasty has proven that in the medium and long-term, it may be considered as a valid and reliable alternative to trapeziectomy.

Case report:
A 60 year old female patient complained of experiencing pain at the base of her thumb, resulting with pinching and grasping difficulties using both hands. The diagnosis was made based on the clinical presentation, which included the reproduction of the patient's pain and crepitus after performing the thumb carpometacarpal grind test. Furthermore, radiographs of the hand showed osteoarthritis of the first carpometacarpal joint. Conservative treatment, including thumb bracing and pain management, did not yield successful results. Consequently, surgery was deemed necessary. The first surgery involved a replacement of the right first carpometacarpal joint, and the patient recovered rapidly after the procedure. Three months later, the second surgery was performed on the left first carpometacarpal joint. Both surgeries were successful, and the patient did not experience any complications. She reported feeling well and not experiencing any pain in either thumb carpometacarpal joint during daily activities.

Conclusions:
The use of prosthetic total joint replacement to treat osteoarthritis of the thumb carpometacarpal joint (CMCJ) has been successful in improving the patient's strength, mobility, and overall thumb function while completely eliminating pain. Implant arthroplasty has demonstrated its reliability as an alternative to trapeziectomy over time. However, further research is required to compare the outcomes of total arthroplasty versus trapeziectomy to determine which treatment is most effective for treating symptomatic thumb CMCJ arthritis.

Surgical Case Report II

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COMPLEX TREATMENT OF RARE CASE OF THORACIC OUTLET SYNDROME

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Background: Thoracic outlet syndrome (TOS) is a term, used to describe the group of symptoms caused by compression in the region of the thoracic outlet. The most common is neurogenic (nTOS) (95%) and includes brachial plexus compression. Less frequent (3% of cases) is venous (vTOS), caused by subclavian vein compression and the rarest is arterial (aTOS) due to subclavian artery compression, it accounts for 1% of cases.

Case report: A 22-year-old male was admitted to the hospital due to treatment of aTOS, caused by anatomical anomalies of the ribs. The patient reported symptoms of left upper extremity ischemia caused by thromboembolism. 5 months earlier the catheter-directed thrombolysis was performed for the treatment of acute left limb ischemia. His medical history presented coagulation factor XII deficiency and the use of psychostimulants. The patient was qualified for the removal of an additional rib and 1st left rib. After the initial examination, the procedure was made via a subclavicular cut. There were no complications and the patient was discharged with anticoagulant treatment and a recommendation for follow-up in the vascular surgery outpatient clinic.

Conclusion: The presence of rib anomaly and thromboembolism of the upper limb suggest the possibility of aTOS. Each type of TOS can usually be differentiated by patient clinical history, physical exam, neurophysiological testing and imaging. It should be noted, that endovascular treatment without surgical releasing thoracic outlet do not offer long term benefit for the patients.

EHLER-DANLOS SYNDROME AND ITS COMPLICATION WITH SMA ANEURYSM.

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Background: Ehlers–Danlos syndrome (EDS) is a group of genetic connective tissue disorders that may present itself as hypermobility of joints, elastic skin, and changes of the walls in blood vessels. Depending on the subtype the formation of the aneurysms may be observed. The treatment of aneurysms in EDS patients poses a lot of challenges due to the fragility of vascular walls, therefore any surgical intervention must be carefully considered.

Case report: 10-year-old, female patient with Ehlers-Danlos syndrome (EDS) was admitted because of sudden abdominal pain. The patient was transferred from another hospital where the diagnosis of perforation was made. On admission, USG, an abdominal CT scan with contrast was performed. The examination revealed an aneurysm of the superior mesenteric artery (SMA) with complete thrombosis. Although collateral circulation is supported by the inferior mesenteric artery (IMA), no ischemic changes were noted in the small intestine. The patient was immediately started with analgesics ,heparin and antibiotics. During the course, inflammatory markers, D-dimer, and INR increased. Due to extensive throbbing pain, an exploratory laparotomy was performed. The small intestine was properly looped and well supplied with blood. A complication of hemorrhagic infiltration in the wall of the small intestine, descending colon, and distal parts of the transverse colon was observed. Feeding was limited. No further surgical intervention was performed. The patient was treated with pro- and anticoagulants. Further USG and CT examinations showed no significant changes in thrombosis of SMA, but visualized an improvement in the intestinal wall. The patient was released in good condition, supplied with heparin, and scheduled for the further diagnostic process of possible aneurysm exclusion.

Conclusion: Vascular screening in Ehlers-Danlos patients is an important part of disease control. SMA thrombosis in such cases can be treated conservatively as long as the ischemic changes in the intestines are not observed.

MANAGEMENT OF EXTENSIVE SKIN NECROSIS FOLLOWING SEMICONSTRAINED TOTAL KNEE ARTHROPLASTY: A CASE REPORT

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Background: Semi-constrained total knee arthroplasty (TKA) is a surgical intervention typically performed in patients with severe valgus or varus knee deformities. This procedure is associated with a favorable prognosis, with most patients experiencing a rapid recovery and high satisfaction rates. However, complications may occur, including periprosthetic fracture, prosthesis loosening, infectious complications, and skin necrosis surrounding the incision. Treatment for skin necrosis may involve surgical debridement and skin transplantation.

Case report: An 85-year-old patient was admitted to the Department of Septic Orthopaedics with extensive skin necrosis following semi-constrained TKA performed 3 months earlier. Surgical wound debridement was performed, followed by a placement of a vacuum system for 28 days. A partial-thickness free skin graft was harvested from the patient's left thigh and sutured into the wound bed. The leg was immobilized in a cast shell for one week, after which physiotherapy was initiated. The patient was discharged home three weeks following the skin transplantation.

Conclusion: Skin necrosis is a significant complication following knee arthroplasty that requires a careful combination of surgical and conservative management. Early patient mobilization and prophylactic antibiotics are also essential steps in preventing complications. Frequent follow-up visits with an experienced orthopaedic surgeon, and the possibility of plastic surgeon involvement, are recommended. Furthermore, it is important to emphasize the need for extensive multidisciplinary monitoring of patient compliance, particularly in elderly patients who may have difficulty adhering to post-operative care instructions.

BENTALL DE BONO SURGERY AS TREATMENT FOR ASCENDING AORTIC ANEURYSM IN A PREGNANT PATIENT.

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Background: Aortic aneurysms are a rare pathology, occurring in 4-8% of the population and only in 0.0004% of pregnant women. However, they are a serious clinical problem due to their late detection, which can be associated with up to 90% patient mortality. The risk of rupture or dissection complications significantly increases during pregnancy and in the postpartum.

Case report: The case report concerns a 29-year-old female patient after a caesarean section performed at 34+2 weeks due to an aneurysm of the ascending aorta diagnosed during pregnancy, admitted to the cardiosurgery department of the JP2 hospital in order to prepare for the procedure using the Bentall de Bono method.
During pregnancy, the patient reported reduced exercise tolerance (NYHA I/II), an episode of fainting, palpitations, dizziness, and periodic retrosternal resting pains that worsened during stress.
Echocardiography at 31 weeks revealed an ascending aortic aneurysm, bicuspid aortic valve, dilated aortic annulus (30 mm), and grade II aortic regurgitation. Angio-CT of the chest showed a dilated ascending aorta; up to 53 mm.
In the follow-up ECHO, in addition an enlargement of the left atrium was found, preserved global cardiac contractility, LVEF = 56%, moderate tricuspid regurgitation.
An aneurysm of the ascending aorta larger than 50 mm in the case of a concomitant bicuspid aortic valve is an indication for surgery. However, for the safety of the fetus and the mother, the operation was postponed until 3 months after cesarean delivery.

Conclusion: Bentall de Bono surgery is considered the standard for treatment of ascending aortic aneurysms. Most patients with aortic aneurysms are asymptomatic, therefore the main goal of surgical intervention is to reduce the risk of adverse aortic events. Aortic aneurysms in pregnant women are a case study, but require a careful consideration of clinical management, due to the risk of complications for both mother and child.

BILATERAL PNEUMOTHORAX: A COMPLICATION OF TRACHEOSTOMY.

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Background: A tracheostomy is a relatively common procedure in palliative care for patients with tumours of the head and neck. Invasive tumours can impede ventilation by directly obstructing the airway and increasing the difficulty of tracheal intubation due to swelling. Tracheostomies can result in complications, with a rare example being iatrogenic pneumothorax.

Case report: A 73-year-old woman was diagnosed with an inoperable oral cavity tumour, which infiltrated the tongue, oral floor, and exceeded past the midline. The patient was admitted for a scheduled tracheostomy in preparation for palliative radiotherapy. Approximately 6 hours after the procedure, the patient was found on the ground with SpO2 60%. A clot in the tube was removed and oxygen therapy was introduced, however her SpO2 did not exceed 90%, raising suspicion of a pneumothorax. Imaging revealed an expanding bilateral pneumothorax which was measured from the anterior chest wall to the lung (R: 86 mm and L: 98 mm). General surgeons placed bilateral drainage tubes and the patient was placed on prophylactic antibiotic therapy, resulting in an increase of SpO2 to 94%. The patient was then discharged home for palliative radiotherapy seven days post-drainage removal. The radiotherapy resulted in minimal shrinkage of the tumour and the tracheostomy tube was removed during a follow-up visit. The patient died 5 months post-tracheostomy.

Conclusion: Iatrogenic bilateral pneumothorax in the setting of a tracheostomy is a rare complication that can occur due to direct damage to the tracheal wall or paratracheal placement without defined injury. Air is forced through the injury into the mediastinum and hypoxia develops. A bronchoscope is ideally utilised for visualisation during a tracheostomy to avoid damage or misplacement. This acts as an additional safety measure to reduce the risk of overall complications but it is not a standard practice in many countries.

REVISION TOTAL HIP ARTHROPLASTY USING CUSTOM MADE MONOFLANGE ACETABULAR COMPONENT: CASE REPORT.

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Background: Severe bone stock loss due to dislocated loose hip prosthesis is a very serious late complication of total hip arthroplasty that requires challenging revisional surgery. Custom made implants are a further treatment option when severe osseous defect of hemipelvis occurs and there is no suitable standard implant available.

Case report: A 64-year old woman was admitted to the orthopedic hospital with a 6-year history of hip pain after total hip arthroplasty. Radiological imaging revealed loose acetabular component with dislocation of the prosthesis resulting in severe bone stock loss and pelvic discontinuity. After a meeting of orthopedic surgeons specializing in total hip arthroplasties, a decision was made to qualify the patient for the revision surgery. CT based custom made monoflange acetabular component (CMAC) was fabricated to repair the acetabular defect. There were no complications in the perioperative period. Postoperative radiological imaging revealed good hip joint reconstruction. After 6-months follow-up there was a significant improvement in hip function and the patient fully returned to the normal activities. No infection or implant loosening has been observed.

Conclusion: Revision surgery using CMAC in patients with severe bone stock loss may improve their postoperative quality of life and allow them to return to their normal activities. Customized implant is an alternative option in rare cases such as an old dislocation of hip prosthesis with severe bone stock loss and pelvic discontinuity. However the long-term evaluation of clinical outcomes after revision total hip arthroplasty using custom made components is yet to be explored.

MALE BREAST CANCER IN A 37-YEAR-OLD PATIENT

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Background: Male breast cancer (MBC) is a rare disease affecting about 1 in 100 000 men. The risk factors of MBC include age, family history of breast cancer, excess estrogens caused by obesity, liver cirrhosis, and dysfunction of testicles. In most cases, diagnosis is achieved by mammography and tissue biopsies. The most common type of MBC is no special type carcinoma (NST). The MBCs with the most prevalent expression profile, estrogen (ER) positive and human epidermal growth factor 2 (HER2) negative, are treated by surgery followed by adjuvant therapies such as chemotherapy, radiotherapy, and endocrine therapy.

Case report: A 37-year-old male patient came to the Surgery Outpatient Clinic with a lesion in the right breast. Medical history revealed a nipple leak. The patient denied the use of stimulants. The family history was not indicative. Physical examination revealed a smooth lesion about 0.5 cm in diameter. MMG, ultrasound, and a core-needle biopsy of the lesion were applied. Histopathological examination allowed clinicians to diagnose NST and Ductal carcinoma in situ. Immunohistochemistry revealed expression of estrogen receptor, progesterone receptor, and proliferative antigen Ki-67 (2% of the NST cells nuclei) and was concomitantly HER2 negative. The patient was qualified for surgical treatment. A total mastectomy of the right breast and a biopsy of the right axillary lymph nodes were performed. Currently, the patient remains under the supervision of the oncology clinic.

Conclusion: The average time from onset of symptoms to diagnosis in MBC is 21 months. It was four months since the first specialist consultation to have our patient diagnosed and operated on. As MBC is rare, the disease is often regional or distant when diagnosed. The presented case emphasizes the role of awareness of male breast cancer among patients and clinicians in the prevention of treatment delay.

A CASE REPORT OF RECURRENT RETROPERITONEAL LEIOMYOSARCOMA.

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Background: Leiomyosarcomas are malignant tumors that mainly occur in the retroperitoneum, accounting for 12%–69% of cases, and are usually incidental findings at imaging due to the lack of identifiable signs or symptoms. Recurrent retroperitoneal sarcomas have poor outcomes, with a 5-year overall survival rate of 14%–29%.
We report a case of recurrent retroperitoneal leiomyosarcoma.

Case report: A 61-year-old male patient was admitted to the emergency department with symptoms of dull pain in the lower abdomen and urinary hesitation of fourth-day duration. On physical examination the abdomen was soft without tenderness to palpation, accompanied by suprapubic pain and induration. Radiography imaging showed no signs of pneumoperitoneum or obstipation. A multislice computed tomography (MSCT) scan detected a solid mass that was compressing the bladder but was not expansively infiltrative. Because of the verified solid mass, it was decided to perform laparoscopic exploration during which a large soft tissue tumor was verified, which was located retroperitoneally. Considering the size and the localization of the tumor, it was decided to do a conversion which allowed for the total removal of the tumor. The patient in good general condition with symptom relief was discharged to home care after seven days. However, on the control three months after, the patient complained of new-onset pain. Unfortunately, the MSCT scan verified a hypovascular area that was more likely to be a residual tumor process rather than a postoperative seroma. Laparoscopic exploration was suggested once again, but the patient refused it and was referred to an oncologist for further treatment.

Conclusion: Malignant diseases can also affect patients with modest symptoms. Therefore, when discomfort and unexpected changes in body functions suddenly arise, tumors should be a possible differential diagnosis. Furthermore, given the high potential of sarcomas for recurrence, any related symptoms should be taken seriously and tumor recurrence excluded.

AN INCIDENTAL FINDING: LEPIDIC ADENOCARCINOMA IN A YOUNG MALE WITH RECURRENT PNEUMOTHORAX.

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Background: Lepidic adenocarcinoma of the lung is a subtype of non-small cell lung cancer (NSCLC). It is more commonly associated with older individuals with a history of tobacco use or exposure to asbestos, radon, and air pollution. Here we report a case of lepidic adenocarcinoma with an unusual presentation in a low-risk patient.

Case report: A 30-year-old male with a history of recurrent pneumothorax was admitted to the Emergency Department due to acute respiratory distress syndrome. His physical examination revealed desaturation and increased heart and respiratory rates. Chest x-ray showed complete lung atelectasis. Therefore, pleural drainage was applied, and the patient got transferred to the Thoracic Surgery Department. Subsequently, the patient underwent right upper wedge resection with right pleurectomy via video-assisted thoracic surgery (VATS). Histopathological examination reported reactive mesothelial cells of the pleura. One month later, the patient went through reoperation due to the recurrence of symptoms and a cluster of emphysematous bulla exposed in chest computed tomography (CT). A bullectomy with mechanical pleurodesis was performed. The final histopathological examination reported a lepidic adenocarcinoma of the lung.

Conclusion: The rarity of lung cancer in young individuals poses a unique diagnostic challenge. Lepidic adenocarcinoma is typically slow-growing and has a better prognosis than other lung cancer subtypes. However, it can still be aggressive. Treatment options may include surgery, radiation therapy, chemotherapy, or combinations of those depending on the staging and general condition of the patient.

A CASE REPORT: A GIANT RETROPERITONEAL LIPOMA.

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Background: Retroperitoneal lipomas are very rare benign tumors with unknown etiology. Only 22 reported cases of retroperitoneal lipomas were published in the English literature. These tumors account for 2.7% of primary retroperitoneal tumors, of which about 80% are malignant. Retroperitoneal lipomas are oftentimes asymptomatic for a long period of time until the obstruction or shift of the adjacent organs occur. To date no consensus is established to distinguish giant lipomas from non-giant lipomas, though previously reported cases of giant retroperitoneal lipomas describe tumours with at least one dimension greater than 10 cm. Although initial diagnosis is based on an MRI (magnetic resonance imaging) or CT (computed tomography) scan, yet these imaging techniques may not accurately differentiate between benign lipoma and well-differentiated liposarcoma. Surgical resection is the treatment of choice with laparotomy performed in most cases. To our best knowledge, a laparoscopic extirpation of giant retroperitoneal lipoma has not been previously described.

Case report: We report a 75-year-old Caucasian female, who was referred to the abdominal and endoscopic surgery department due to excessive pain on the right side of abdomen. A computed tomography (CT) scan indicated a large mass with fat density in retroperitoneal space, feeding blood vessels were also observed. A laparoscopy was performed with suspicion of retroperitoneal lipoma. Intraoperatively a yellowish lobulated mass was found, measuring 150x200 mm in size and weighing 3200g. Histopathological examination confirmed the diagnosis of lipoma. No perioperative complications were encountered, and the patient was discharged on the fifth postoperative day.

Conclusion: As clinical manifestation is non-specific, imaging examinations make pre-operative diagnosis of lipoma. It is challenging to differentiate retroperitoneal lipoma and liposarcoma before histopathological examination, therefore radical resection is the gold standard surgical treatment. Most commonly laparotomy is performed, though laparoscopy can be also indicated.

CRANIOPHARYNGIOMA RESECTION - THE APPROPRIATE MANAGEMENT OF THE POSTOPERATIVE OUTCOMES.

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Background: Craniopharyngiomas (CP) are benign grade I tumors that occur in the region of the hypothalamus and pituitary gland. There are two histologic subtypes: adamantinomatous and papillary.
Adamantinomatous craniopharyngioma usually presents as cystic masses with peripheral calcifications, and it primarily affects children. The treatment typically involves surgical removal of the tumor, followed by adjuvant therapy.

Case report: A 13-year-old male presented at the emergency department with a headache, unresponsive to medication, and multiple episodes of projectile vomiting. He received symptomatic treatment. The CT scan indicated a tumor-like hyperdense lesion in the sellar and suprasellar regions. Afterward, a native MRI (magnetic resonance imaging) revealed that the structure had two hyperintense components, one of them being solid and the other one cystic. Considering the tumor's aspect and localization, the transsphenoidal approach was chosen for the total resection.
The histopathological diagnosis was adamantinomatous craniopharyngioma. The post-surgery native MRI revealed no signal corresponding to the hypophysis or hypophyseal stalk. Postoperatively, clinical manifestations indicated endocrinological impairment. Also, biochemical changes were specific to pituitary insufficiency and diabetes insipidus. The treatment for the substitution of corticotrophic, somatotropic, and thyrotropic axes was established. The treatment with desmopressin was started, as well.
One year after the operation, a control MRI with contrast showed no residual mass, nor any relapse of the tumor.

Conclusion: The aim of this case report is to present a very important and frequent complication that appears in approximately 80–90% of the patients that undergo this type of procedure. Surgical resection is the gold standard in the treatment of craniopharyngiomas, thus the necessity of knowing the appropriate management of the patient's condition that may arise after the intervention. For patients with CP, timely and optimal management of early postoperative and long-term complications is essential. Consequently, it is necessary to closely monitor these patients and have a close interdisciplinary collaboration.

THE MANAGEMENT OF GLIOBLASTOMA IN A 50 YEARS OLD MAN.

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Background: Glioblastoma is the most common and aggressive primary brain tumor in adults. It was classified by the World Health Organization (WHO) as of the highest grade (IV) out of all brain tumors. Glioblastomas can also evolve from previously diagnosed WHO grade II or grade III gliomas. Standard treatment includes surgery, radiotherapy and chemotherapy. Current developments focus more on immunotherapy. One of the clinical hallmarks of glioblastoma is extensive infiltration of the tumor surrounding parenchyma. Invasion happens along pre-existing structures such as white matter tracts. They almost never metastasize outside of the brain. The aim of this case report is to provide an overview of the management of a glioblastoma.

Case report: We present the case of a 50 years old man, with no medical history. He was admitted to the Neurosurgery Department of the University Emergency Hospital Bucharest for secondary generalized seizures, cephalalgic syndrome and vertiginous syndrome, of rapid and progressive aggravation, unresponsive to conservative treatment. Neurological examination was unremarkable. The head CT and MRI depicted a mass of 30/20/20 mm in dimension in the left temporal lobe, near the cortex. Pterional craniotomy is performed, with complete ablation of the tumor, without periprocedural incidents. Postoperative pathology confirmed the diagnosis of glioblastoma. Postoperatively, the clinical evolution was favorable, with progressive improvement in pain symptoms. The postoperative CT scan confirmed complete tumor resection.

Conclusion: We chose to present the case of a patient with an interesting brain pathology. This is in order to emphasize the importance of early diagnosis and treatment, that may inhance the survival rate.

Non-surgical Case Report I

Scientific Committee

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POZycja pierwsza

CASEOUS CALCIFICATION OF THE MITRAL ANNULUS: WHEN METASTATIC SUSPICION TURNS OUT TO BE BENIGN NECROSIS- A CASE REPORT

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Tutors: Bernadeta Chyrchel MD, PhD, prof. Andrzej Surdacki MD, PhD

Background: Mitral annular calcification (MAC) is a chronic and degenerative process that affects the fibrous base of the mitral valve. Several factors contribute to its development, including: age, atherosclerosis or abnormal calcium-phosphorus metabolism. MAC diagnosis is associated with increased risk of cardiovascular disease, arrhythmias and mortality, however is often overlooked clinically. Caseous calcification of the mitral annulus (CCMA) is a rare type of MAC with presence of extensive calcification and infiltration of the annulus accompanied by a liquefactive necrosis.

Case report: We present a case of a 72-year-old female patient, who was hospitalized due to left-sided atypical chest pain. Performed echocardiography revealed a 2x3cm tumor below the mitral annulus, which did not impair the mitral valve blood flow. Subsequent HRCT confirmed presence of the lesion, additionally showing an abnormal subpleural structure in the right lung. PET/CT showed metabolic activity of the lesion in the right lung and mediastinal lymph nodes. Multiple diagnostic tests including transesophageal echocardiogram were ordered. MRI was performed to assess the abnormal tissue characteristics, based on suspicion of metastatic origin of the lesion in the heart. Previous documentation and comparison with CT, PET and MRI diagnostics revealed no progression in the calcified, well-demarcated mitral annular abnormal structure and negative inflammatory markers. Patient was diagnosed with caseous calcification of the mitral annulus. Moreover, regression of the subpleural lesion in a follow-up CT was observed. As a result, the patient was excluded from surgery and recommended to follow the path of periodic echocardiographic monitoring.

Conclusion: Mitral annular calcification in the form of caseous calcification of the mitral annulus is an uncommon occurrence. Properly performed differential diagnostics is crucial to distinguish CCMA from a tumor, which allows the patient to avoid unnecessary surgical treatment.

THE MAN THAT "FOUGHT" DEATH: PURKINJE ACTIVITY INDUCING REFRACTORY VENTRICULAR FIBRILLATION EPISODES.

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Background: Ventricular fibrillation (VF) is a wide complex tachyarrhythmia (QRS complex duration > 0.12 seconds) caused by irregular electrical activity and characterised by a ventricular rate of usually greater than 300 with discrete QRS complexes on the electrocardiogram (ECG). VF is an extremely dangerous rhythm significantly compromising cardiac output and ultimately leading to sudden cardiac death (SCD). VF has been identified in nearly 70% of cardiac arrest patients.

Case report: A 54-years old male was urgently admitted to 1st Department of Cardiology on the first of July 2019, due to multiple cardiac arrests as a result of VF, refractory to treatment.
10 days prior to the hospitalisation, the patient had suffered a MI, which had been treated by percutaneous coronary intervention (PCI) of left anterior descending artery (LAD) and right coronary artery (RCA) with implantation of drug-eluting stents (DES). Despite successful restoration of the myocardial blood supply, the patient's condition worsened as multiple episodes of VT lead to recurrent sudden cardiac arrests.
On July 2nd, after multiple failed attempts of electrical cardioversion, radiofrequency ablation (RFA) was performed to terminate the refractory VF. Multiple arrhythmogenic foci in the Purkinje fibres were found across the ventricles, which was consistent with premature ventricular contractions (PVC) on the 12-lead ECG findings. The foci was then isolated by RFA, successfully putting the VF to an end. Antiarrhythmic drugs – lidocaine and amiodarone – were subsequently introduced to maintain the proper sinus rhythm. The patient was scheduled for a follow-up RFA within the next 6 weeks.

Conclusion: Purkinje related ventricular tachyarrhythmias, one of the most serious sequelae of post MI, was presented in this case. In most cases, early PCI is not sufficient treatment therapy and other invasive procedures, such as RFA, prove to be the most effective tool in improving a patient's prognosis.

DIAGNOSTIC PROBLEMS IN IDENTIFYING THE ETIOLOGY OF SYMPTOMS IN A THIRTY-EIGHT-YEAR-OLD FEMALE.

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Background: Sight deterioration caused by the defect in the oculomotor nerve is common amongst neurological patients, however, the etiology varies - both cerebral strokes and diabetes or hypertension can cause it. Similarly, headaches are non-specific to one disease. Differential diagnosis is obligatory when treating patients with these symptoms successfully.

Case report: A thirty-eight-old female was admitted to the hospital because of sudden problems with vision and cephalgia. On history taking, the patient admitted to being three months after her third delivery, neither suffering from any chronic diseases nor taking drugs permanently. Problems with vision were caused by right oculomotor nerve palsy and then were successfully treated with steroids. The results of Magnetic Resonance Imaging in T2 and FLAIR sequences revealed some non-characteristic hyperintensities in the subdural white matter of both cerebral hemispheres and a lesion in the left lobe of the pituitary gland. It is also worth mentioning the diagnosis of COVID-19, confirmed by antigen test during the stay at the hospital. After a careful diagnostic process, arteriovenous malformations were finally claimed.

Arteriovenous malformations are mainly congenital abnormalities of vessels, characterized by the lack of development of the capillaries between arteries and veins. In most cases, they do not cause any symptoms. However, in some patients, mainly after the rapture, hemorrhagic strokes or seizures can be the first presentation.

Conclusions: The case represents the value of properly undergoing differential diagnosis. The patient's symptoms accompanied by laboratory and imaging test results allowed to diagnose arteriovenous malformations, however excluding more common medical conditions was essential. This case also reminds about the importance of being cautious in history taking and lastly making accurate decisions about the treatment even without knowledge of the accurate etiology of the disease.

HYPERTENSIVE EMERGENCY DUE TO A DELAYED DIALYSIS MODALITY TRANSITION IN PATIENT WITH FAMILIAL HYPOMAGNESEMIA WITH HYPERCALCIURIA AND NEPHROCALCINOSIS (FHHNC)

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Tutor: Ilona Idasiak-Piechocka Assoc. Prof., MD, PhD

Background: This case report presents a history of a familial hypomagnesemia with hypercalciuria and nephrocalcinosis (FHHNC) patient admitted to the hospital with hypertensive encephalopathy. FHHNC is a very rare autosomal recessive disease caused by mutations in CLDN16 or CLDN19 resulting in insufficient magnesium and calcium renal reabsorption. The disease onset occurs usually in infancy or childhood manifesting itself mostly in polydipsia, polyuria, hematuria, urinary tract infections and nephrolithiasis. FHHNC development contributes to nephrocalcinosis and following chronic kidney disease (CKD) which is not slowed by routine administration of high-dose magnesium and thiazide diuretics. Ultimately all FHHNC patients need renal replacement therapy (RRT).

Case presentation: A 28-years old male with stage 5 CKD caused by FHHNC, was brought to the emergency room due to symptoms of hypertensive emergency. Prior to the admission, the patient was undergoing the process of qualification to kidney transplantation and his RRT of choice was continuous ambulatory peritoneal dialysis (CAPD) as he was strongly opposing hemodialysis (HD) despite a past hypertensive emergency. Upon admission, the patient presented confusion, severe agitation unresponsive to sedative medication, clinical and laboratory signs of ineffective dialysis with features of overhydration and blood pressure reaching 213/123 mmHg and also being unresponsive to hypotensive drugs. He was then transferred to Intensive Care Unit, intubated due to decreasing state of consciousness (Glasgow Coma Scale score 7) and underwent continuous veno-venous hemodialysis coupled with continuous intravenous hypotensive therapy. After three days, his state improved, followed by extubation and imaging showing no signs of recent hypertensive encephalopathy. He then agreed to transition from CAPD to in-center HD.

Conclusions: Inadequate CAPD may result in hyperhydration and a hypertensive emergency. The lack of effectiveness of CAPD requires transition to another RRT modality. In the absence of patient consent, appropriate education should be implemented and psychological consultation should be considered.

DIFFERENTIATION OF CAUSES OF DEATH IN A PATIENT WITH AN IMPLANTED ICD: ASSAULT, ARRHYTHMIAS OR FALL

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Tutor: Czesław Żaba Prof., MD, PhD

Background: Implantable cardioverter-defibrillator (ICD) are currently one of the basic methods of treating arrhythmias and preventing sudden cardiac death. The number of patients qualified for ICD implantation in the world is constantly growing. Attempts are also made to use ICD records in the case of determining the cause of death. In addition, data from the device are used to identify unidentified corpses or in mass events.

Case report: A 67-year-old man was found unconscious on the stairs. The patient had fresh head injuries and pulseless electrical activity on an electrocardiogram. After over an hour of unsuccessful resuscitation, the patient was pronounced dead. Due to the impossibility of excluding the contribution of other people to the patient's death, a decision was made to initiate an investigation and perform a post-mortem examination. An autopsy showed massive myocardial hypertrophy and post-infarction scar of the left ventricular wall. There were no injuries to the central nervous system that could lead to death. Post-mortem data from the patient's ICD was read, which showed the patient's cardiac arrhythmias in the form of ventricular fibrillation. The toxicological examination did not reveal the presence of psychoactive substances or toxic concentrations of drugs. Based on the analysis of the entire material, it was found that the cause of death of the patient was circulatory and respiratory failure resulting from ventricular arrhythmias. The head injuries were secondary to a fall due to cardiogenic syncope.

Conclusions: The reading and analysis of data recorded by the ICD regarding the function of the heart can play a key role in determining the cause of death, especially in cases where the autopsy performed did not clearly explain the circumstances of death. This procedure should be performed in every post-mortem examination of a patient with an implanted ICD.

AN ORTHOTROPIC HEART TRANSPLANT: TWO RHYTHMS, ONE HEART

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Background: Patients with heart transplants are prone to arrythmias due to graft ischemia which leads to conduction system damage. Sick sinus syndrome can arise after orthotropic cardiac transplantation which is characterized by impaired automaticity of the SA node preserving the AV node function. Furthermore, atrial flutter is considered the most common arrhythmia of heart transplants in which it occurs in 9% of patients. Atrial flutter is a normal, macro re-entrant arrythmia with supraventricular tachycardia characteristics. It commonly occurs in the right atrium, through the isthmus between the tricuspid valve and inferior vena cava.

Case Report: We report a 67-year-old man who was admitted to the 1st Department of Cardiology for assessment of atypical atrial flutter. The patient history included a prior orthotropic heart transplant in 2002 due to dilated cardiomyopathy, Hepatitis B carrier, metabolic syndrome, stroke, and sick sinus syndrome treated with a DDD pacemaker. During December 2021, the patient came in with heart palpitations and fatigue. After further investigations and Holter monitoring, the patient was diagnosed with atrial flutter. Due to his comorbidities and dual heart rhythm, the patient was qualified for a radiofrequency ablation of the trigeminal isthmus in March 2023. Postoperatively, the patient was stable and his arrythmia was ablated successfully.

Conclusions: In conclusion, patients with heart transplants are more prone to arrythmias due to scarring of the cardiac tissue. In patients with high comorbidities, radiofrequency ablation is preferred as the method of treatment as it has a high success rate with minimal complications improving the patient's quality of life. Indeed, this patient's arrythmia was successfully restored to normal with no complications. He is scheduled for a follow-up in the cardiac ward in 3 months.

DESMOPLAKIN'S GENE MUTATION AND ITS IMPACT ON CARDIAC MUSCLE

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Background: Desmoplakin (DSP) is the most abundant component of the desmosome. It is encoded by the *DSP* gene (locus *6p24.3*) and has three isoforms, of which DSP-I is predominantly in cardiac muscle. DSP supports structural stability through intercellular adhesion and provides appropriate electrical conductivity by regulating gap junctions and ion channels. Desmoplakin plays a crucial role in myocardium development and the maintenance of its structural functions. Mutations in the DSP gene result in various hereditary cardiac disorders such as dilated cardiomyopathy (DCM), arrhythmias and left ventricular noncompaction cardiomyopathy which can coexist.

Case report: A 24-year-old male patient with confirmed *DSP* gene mutation suffers from dilated cardiomyopathy, heart failure, long QT syndrome, multiple episodes of symptomatic ventricular tachycardia and paroxysmal atrial flutter. At the age of 16, he had a sudden cardiac arrest (SCA) and a cardioverter-defibrillator was implanted for secondary cardiac death prevention. Furthermore, the patient's twin brother also suffers from DCM. In echocardiography there is a significantly reduced left ventricular ejection fraction (EF=25%) and generalized hypokinesis and in cardiac magnetic resonance imaging late gadolinium contrast enhancement of the nonischemic type (the anterolateral and posterolateral wall). The patient is periodically hospitalized because of heart failure. Treatment is based on bisoprolol, spironolactone, sakubitril/valsartan, amiodarone and anticoagulants.

Conclusions: Desmoplakin is essential for the maintenance of myocardium structural functions and can impair it in a number of coexisting ways. All hereditary cardiomyopathies are genetically heterogeneous. Hereditary cardiomyopathies are rare heart diseases that often manifest in adolescence, impair heart function and significantly worsen the quality of life. Their first symptom may be SCA, so cardiomonitoring is crucial. Therefore, genotype-specific methods should be used in the diagnostic process of these conditions. Implantation of a cardioverter-defibrillator is the only form of cardiac death prevention.

A case report of erysipelas with parotitis.

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Background: Erysipelas is a skin disease caused by bacterial infection of damaged skin, usually by Streptococcus. The disease is manifested by high fever, severe pain, and the reddened swelling is well demarcated. This case describes erysipelas in a patient who presented facial oedema on the right side involving the right eyelid, cheek and right parotid gland.

Case report: A 62-year-old female patient presented to the Emergency Room due to swelling and redness of the right orbit from the previous day. The pain was also manifested in area of the right parotid gland and cheek. For several days the patient had an infection with rhinitis, thick purulent discharge from the nose and high fever. After examination, extracranial sinus complications were suggested. The patient was admitted to the otolaryngology department for antibiotic therapy and for a decision on qualifying for surgery. In CT scan found bilateral concha bullosa, mucosal thickening of both maxillary sinuses and a cyst of 15 mm in the left one. Swelling of the right parotid gland and multiple enlarged lymph nodes up to 14 mm bilaterally were detected. Due to the patient's condition, the operation was canceled. The ophthalmologist recommended Neomycin ointment and broad-spectrum antibiotic therapy. A swab was taken from the right eye and the aerobic swab detected Staphylococcus epidermidis and Streptococcus pyogenes. The existing antibiotic therapy was modified by including Ospen, Borasol compresses and hydrocortisone ointment. In the following days a significant reduction of erythematous and edematous lesions and ailments in the right orbital region was observed. Fever has subsided.

Conclusions: The most important in the diagnosis of the disease was the aerobic culture of the eye swab, which allowed a definitive diagnosis to be made. Identifying the bacteria causing the disease and performing an antibiogram are very important to determine the best and most effective treatment.

Diagnosing late-stage syphilis in a 25-year old HIV-positive patient: a challenging clinical case

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Background: Syphilis is a sexually transmitted disease caused by the bacterium Treponema pallidum. In HIV-positive patients, the risk of infection is particularly high and diagnosis is complicated due to the masking of symptoms and their atypical manifestation.
Additionally, the presence of HIV can affect the results of serologic tests for syphilis, further complicating diagnosis. Syphilis infection can modify the course of HIV infection in seropositive patients, contributing to a challenging diagnostic situation that poses a challenge for physicians and requires the use of special diagnostic and therapeutic procedures.

Case description: A 25-year-old HIV-positive patient with undetermined viremia, treated with antiretroviral drug Biktarvy, was admitted to the Department and Clinic of Dermatology, Sexually Transmitted Diseases and Clinical Immunology at the Collegium Medicum UWM in Olsztyn for the treatment of late-stage syphilis. On physical examination, there were bluish-purple papular lesions on an erythematous base on the thighs and in the intergluteal cleft. About a month earlier, the patient had been hospitalized for the diagnosis and treatment of nodular lesions with the presence of nodules and pustules in the genital and thigh areas. The patient had a history of risky sexual contacts. The primary symptom of syphilis had not been recognized by the patient.
Currently, histopathological examination of skin lesions reveals skin mycosis (Grocott+, PAS+). The VDRL test is negative, while TPHA IgG is 1:50, and IgM is negative.
Further serological testing of cerebrospinal fluid has been planned for the patient to confirm or rule out neurosyphilis, and further management and treatment will depend on the results.

Conclusions: Patients at risk of syphilis infection include those infected with HIV, those with risky sexual contacts, a history of other venereal diseases, and men who have sex with men (MSM). In patients from these risk groups, regular testing for the most common sexually transmitted diseases, including syphilis, should be considered. Early recognition of syphilis and appropriate treatment can protect patients from developing serious health and life-threatening complications of late-stage syphilis, which can be particularly dangerous for HIV-positive patients and those with chronic diseases.

Challenges in the treatment and management of HCV infected patient - case report

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Background: The development of direct-acting antivirals (DAAs) in 2011 was a significant breakthrough in HCV therapy. New treatment regimens offer excellent efficacy and sustained virologic response (SVR) above 90%. Even though this course of treatment offers notable success it might be affected by various factors, such as effectiveness of the health care system, accessibility of the therapy and patient compliance.

Case report: The subject of our study is a 50 year old male. In August 2016 the patient was recognized with chronic alcoholism and HCV infection. The combination of the factors mentioned above lead to the diagnosis of liver cirrhosis. Despite being qualified to the DAA-s therapy, the patient decided to ignore medical recommendations. In March 2018 the patient was diagnosed with hepatocellular carcinoma (HCC) and was admitted to 24 weeks treatment consisting of Sofosbuvir and Ribavirin. The lack of improvement led to continuation of therapy with Epclusa (sofosbuvir/velpatasvir) until liver transplant in 2019. Following the surgery the patient neglected post-transplant recommendations and in 2021 was administered to the hospital with symptoms of decompensated liver cirrhosis, related to HCV infection. The applied Vosevi (sofosbuvir / velpatasvir / voxilaprevir) treatment resulted in SVR

Conclusions: Our case highlights the importance of patient compliance and challenges of HCV infection treatment. Presented study emphasized the vast range of factors that should be taken into consideration when deciding the course of treatment. Non-medical aspects of therapy need to be acknowledged.

Loss of vision in the course of giant cell arteritis.

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Background: Giant cell arteritis is a rare disease of arteries, occurring mainly in the elderly population. Although the involvement of temporal arteries can be most symptomatic, occlusion of ophthalmic arteries has the most serious consequences. That's why early diagnosis and treatment are essential.

Case report: A 74-year-old female patient with hypertension was consulted by a family medicine doctor several times because of neck pain radiating to the temporal areas of the head, without response to nonsteroidal anti-inflammatory drugs. She began having headaches, night sweating, edema of the submandibular area, and trismus. The condition was treated as a common cold, but two days after administering the antibiotic patient's vision deteriorated in the right eye, and she experienced flashes of light. Eventually, blindness occurred.
So, the patient was admitted to the Ophthalmological Department. She had anisocoria and a fundus examination revealed papilledema and optic nerve atrophy. Although imaging of the face and head did not reveal any significant abnormalities, ultrasound examination showed thickened walls of the temporal and carotid arteries with a halo sign. Laboratory blood tests revealed elevated CRP (109,8mg/l). Upon above mentioned findings, giant cell arteritis was suspected.
Steroids and IV vinpocetine were administered, without improvement. So, the patient was referred to the Rheumatology Department to continue the treatment. On admission, she presented swelling of both temporal arteries. Erythrocyte sedimentation rate and CRP were back to normal. A lack of contrast filling in the ophthalmic arteries was observed in CT angiography. The whole clinical picture confirmed the primary diagnosis. Dexamethasone was upped to 45mg/day, and methotrexate in a dose of 25 mg weekly in subcutaneous injections was added.

Conclusions: New onset headaches in elderly patients should alert healthcare professionals. That's why differential diagnosis is crucial here, as giant cell arteritis if left untreated leads to blindness in 30%-50% of patients.

A CONUNDRUM FOR A RHEUMATOLOGIST - THE CASE OF SCLEROMYXEDEMA

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Introduction: Scleromyxedema is a rare, chronic disease classified as scleroderma-like diseases. The etiology remains unknown. Characteristic is the accumulation of mucin deposits in the connective tissue, which form lichen-like papules, which cause hardening and thickening of the skin. The disease is also manifested by neurological changes (encephalopathy, peripheral neuropathy) or rheumatological changes (migratory arthritis, sclerosis of the skin).

Case report: A 76-year-old female patient was referred to the Department of Rheumatology for diagnosis of systemic sclerosis. The patient reported problems with holding objects and visual disturbances. On physical examination, severe waxy-papular skin changes on the upper limbs and forehead, diffuse hardening of the skin on the palms, forearms and lower limbs with "excess" soft skin on the back and shoulders, from about 2 years earlier. The patient also presented chanted speech for about 4 years with no identifiable neurological causes. Laboratory tests have been extended. Inflammatory parameters and markers of muscle damage - negative. Immunofixation showed IgG Lambda monoclonal gammopathy. The patient was referred for X-ray - calcinosis was excluded. A dermatological consultation was ordered, samples were taken for histopathological examination - the result showed the presence of mucin deposits in the tissues. Scleromyxedema was suspected. It was decided to start treatment with intravenous immunoglobulins at a dose of 150 g per cycle. In the following days of hospitalization, a slight improvement in the patient's speech was observed, immunoglobulin infusions were continued for 6 months in monthly cycles, achieving complete regression of skin lesions with slight neurological improvement.

Conclusions: Although scleromyxedema is a rare disease, it and other scleroderma-like diseases should not be forgotten in the case of a patient referred with suspected scleroderma. Proper differentiation of this disease not only allows for making an accurate diagnosis, but more importantly, enables the inclusion of effective treatment, which may differ dramatically between diseases related to scleroderma.

Unilateral eye damage during the use of isotretinoin

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Tutors: Anna Chmielarz- Czarnocińska MD, PhD; Anna Gotz – Więckowska Prof., MD, PhD

Background: Isotretinoin, a 13-cis–derivative of retinoic acid, is used in the treatment of an array of dermatological conditions, of which the most frequent is moderate to severe nodulocystic acne. The drug is associated with a wide variety of adverse effects including the ocular ones. Most of them are mild, but alarming cases of serous retinal detachment or decreased macular thickness have been reported.

Case report: A 17-year-old patient was admitted due to a worsening of vision in her right eye for the past 3 months, with a sudden decrease in central vision in her right eye. She had no other health conditions, except for acne vulgaris, which was treated orally with isotretinoin (Curacne) at a dose of 40 mg/day for 4 months. She had no previous vision problems and denied any history of trauma. On ocular examination, the right eye's best corrected visual acuity (BCVA) was 0.3 and the left eye's BCVA was 1.0 on Snellen chart. Intraocular pressures were within normal limits in both eyes. Right eye: in fundus examination, a lesion of the size of approximately 3 disc diameters was visible in the center of the macula with slightly jagged edges, with retinal pigment epithelium (RPE) changes at the edges. Macular OCT showed RPE atrophy in the foveal region with a reversed optic shadow and disruption in the photoreceptor structure. The left eye's fundus, macular OCT and the anterior segments of both eyes were normal.

Conclusions: Several reports describe a similar concomitance of severe optic adverse events and isotretinoin administration, however, the potential mechanism of activity remains unknown, especially in regard to a unilateral symptom presentation. Further studies are necessary to evaluate the existence of cause and effect relationship.

Destruction as a Cure; A Contraindicatory Treatment Method for Dermatomyositis With Spectrum of Cardiac Involvement

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Tutor: Adrian Gwizdała MD., PhD

Background:Dermatomyositis is an autoimmune systemic disease indicated by chronic muscle fatigue, cutaneous eruption and inflammatory cell infiltrates in the skeletal muscle, but causes cardiac manifestations predominated by congestive heart failure and conduction abnormalities. Autoantibodies are present in this disease, with increased focus in myositis; one of the most common being the histidyl-tRNA synthetase antibody, present in 20% of dermatomyositis patients. This suggests that the autoimmune inflammation of the skeletal muscle may impact the cardiac muscle as well, causing the cardiac symptoms of this disease.

Case Report: A 42- year old female patient presented to the 1st Department of Cardiology after RF ablation of ventricular ectopy with subendocardial fibrosis in the lateral and anterior walls of the heart revealed. Medical history included persistent atrial fibrillation after RF ablation of the right atrial isthmus in 2018, arterial hypertension, hypothyroidism, splenomegaly, cholelithiasis, and dermatomyositis. An electrophysiology test revealed the advanced 2nd degree symptomatic block, prompting the implantation of a DDD stimulator with the atrial electrode placed on the coronary sinus opening. The patient was discharged home in stable condition with prescriptions of Apixaban, antihypertensives, and ARNI medications and was instructed to return for a check-up at the Stimulator Control Clinic in 6-8 weeks.

Conclusions: Conduction abnormalities are one of the most reported cardiac diseases, observed in 32% of patients with dermatomyositis. The most prevalent arrhythmia is supraventricular arrhythmias, and without pacemakers, they frequently resulted in a fatal outcome. The percentage of heart disease as a direct cause of death in individuals with dermatomyositis is 10-20%. The conduction abnormalities only progressed despite corticosteroid treatments and medication, and requiring the need for a pacemaker. Often, invasive methods may be the only effective treatment in patients with systemic diseases.

Granulomatosis with polyangitis resistant to standard induction treatment – case report

Authors: Piotr Pietrzyk
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Introduction:Granulomatosis with polyangiitis (GPA) is an autoimmune disease, most often associated with the presence of c-ANCA antibodies. It's characterized by necrotizing granulomatous airway inflammation and necrotizing immunodeficient glomerulonephritis. In the case of multi-organ involvement, it can reduce the quality of life and lead to death.

Case discussion: An 81-year-old female patient diagnosed with cANCA+ granulomatosis with polyangiitis, end-stage renal failure in the course of the disease, currently hospitalized due to relapse of GPA. The disease was diagnosed in 2018, when she underwent resection of a tumor in the middle lobe of the right lung - histopathology revealed granulomatous changes. At that time, induction with pulses of glucocorticosteroids and cyclophosphamide was used in the treatment, and then, from 2020, maintenance mycophenolate mofetil. Clinical remission was achieved (lung lesions regressed), but no significant reduction in the value of cANCA antibodies was obtained. Nodular changes in the lungs recurred in the spring of 2022, causing atelectasis in the middle and upper lobes. Induction treatment with cyclophosphamide and steroids was started again. Due to the persistently elevated level of CRP and fungal cells (C. albicans) found in the bronchial lavage fluid, the alternative treatment with rituximab was not decided at that time; antifungal voriconazole was introduced, leading to the cure of the infection. In control examinations, a significant regression of pulmonary lesions was observed, but still without immunological remission. Out of concern for the patient's well-being, it's necessary to consider changing the current induction treatment to alternative treatment and starting rituximab.

Conclusions: The purpose of this case report is to draw attention to the possibility of ineffectiveness of the standard induction treatment of cANCA+ granulomatosis with polyangiitis. Lack of immune remission increases the risk of GPA relapse, which is associated with the continued occurrence of life-threatening organ changes and the need for an alternative treatment method.

TAVI as a part of orthopaedic treatment after a sudden femur fracture prior to a previously planned procedure.

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Background: In daily practice, we may encounter situations that are not described in any academic textbooks - for example, what to do when a patient breaks a limb that requires surgical treatment before a planned TAVI procedure in the hospital. Can or should a cardiac intervention be performed? How did we deal with such a case?

Case report: An 85-year-old woman with aortic valve disease – severe aortic sclerosis combined with aortic regurgitation and multimorbidity including atrial fibrillation, hypertension, and diabetes type II presenting the symptoms of NYHA class II/III was admitted to the Department of interventional cardiology for elective transcatheter aortic valve implantation (TAVI). The patient's medical history revealed percutaneous coronary intervention (PCI) of the diagonal branch, carotid artery stenting of the right internal carotid artery, implantation of a DDD pacemaker, and left knee arthroplasty. A transthoracic echocardiography (TTE) showed tricuspid aortic valve sclerosis, AVA around 0.8 cm2, mild aortic insufficiency, normal LVEF, mild mitral and tricuspid valve insufficiency. During hospitalisation, while using the toilet patient fell. RTG showed a left femoral shaft fracture. Due to the extremely high operational risk of this fracture, the left leg conservative treatment was provided. TAVI was performed the next day on vital indications as a step before surgical treatment of the fracture. The procedure ran without complications, control echocardiography presented the aortic valve implant in the correct position and preserved function. As thrombotic prophylaxis, enoxaparin was administered. During the post-operative care, an episode of delirium has been observed moreover laboratory tests showed anaemia and thrombocytopenia. The patient received red blood cells (RBCs) and fresh frozen plasma (FFP) which resulted in an improvement in morphology. After equalizing, parameters patient was transferred to the orthopaedic and trauma surgery ward.

Conclusions: This case shows us that TAVI is a procedure that not only extends the lives of patients but also serves as a bridge to other procedures, reducing the risk of death and complications. Thanks to this case, we can also see the importance of multidisciplinary collaboration.

Multiple infectious complications in the first month after kidney transplantation

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Background: Infections are the main complications in kidney transplant (KTx) recipients. Especially ones caused by multidrug-resistant or opportunistic pathogens may be difficult to either diagnose or treat successfully. Below we present a case of a *Klebsiella pneumoniae NDM* urosepsis with sequelae.

Case report: A 56-years old female with end-stage kidney disease of unknown etiology underwent a deceased donor KTx. Immunosuppression regimen included basiliximab, mycophenolate mofetil, tacrolimus and glucocorticosteroids.
Kidney allograft function was delayed. On the 15th post-operative day the patient presented with a fever of 38,5°C. Blood and urine cultures, together with rectal swab were all positive for *Klebsiella pneumoniae NDM,* also resistant to colistin, considered a drug of choice in the presence of New Delhi metallo-β-lactamase. Eventually the patient received an 8-day course of a combination therapy including intravenous fosfomycin and meropenem vaborbactam, which resulted in bacterial clearance, but the side effect was hypernatremia. While still on antibiotics, the patient developed progressive dyspnea and cough, corresponding with rhonchi and wheezes on lung auscultation and consistent with bronchopneumonia on a HRCT scan. After a complete diagnostic workup including bacterial and mycobacterial cultures, blood Aspergillus galactomannan and Candida mannan, immunofluorescent staining of bronchoalveolar fluid for *Pneumocystis jiroveci* and multiplex PCR testing of both nasopharyngeal swab and bronchoalveolar lavage,human metapneumovirus was identified as a causative agent. Along with pneumonia, the patient also developed *Clostridioides difficile* diarrhea and cytomegalovirus infection, that were successfully treated with oral vancomycin and intravenous ganciclovir, respectively. After 6-weeks of hospital stay the patient was discharged without any signs and symptoms of infection and satisfactory kidney allograft function.

Conclusions: KTx recipients require careful supervision as they may develop multiple infectious complications. Infections caused by carbapenem-resistant *Enterobacteriaceae* pose a significant challenge in the setting of mandatory immunosuppression and few therapeutic options, further limited by renal failure and side effects.

Not only about mad cows or a rapidly progressive dementia

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Background: Creutzfeldt-Jakob disease (CJD) is a potential cause of rapidly progressive dementia.

Case report: The authors describe a 63-year-old woman who presented with a rapidly progressive dementia, ataxia, visual and sleep disturbances progressing for several months. In family history: rapidly progressive dementia with gait imbalance in her mother, sister and two cousins.
On admission to the ward, the woman was conscious, without verbal contact. On neurological examination, astasia, abasia, dysarthria, quadriparesis, increased muscle tone of the spastic type in the upper limbs and myoclonus were presented. Behavioural disturbances with screaming, restlessness, agitation were periodically observed.
CNS MRI showed cortical-subcortical atrophy in both frontoparietal lobes and signal enhancement in T2 sequence with diffusion restriction in head of caudate nucleus and putamen.
EEG examination revealed generalised slowing of activity and the presence of triphasic waves. In cerebrospinal fluid examination 14-3-3 protein was present.
During the following days of hospitalisation increasing contact disturbances were observed. The woman was somnolent. Opisthotonus and quadriplegia with increased muscle tone occurred. The woman died five months after the onset of symptoms.
An autopsy was performed with tissue collection from the frontal lobe and cerebellum. Neuropathological examination revealed a pathological form of the prion protein PrPsc as well as a heterozygous mutation at codon 200 of the PRPN(E200K) gene and a polymorphism at codon 129 of Met/Met, leading to the diagnosis of a genetic form of CJD.

Conclusions: CJD is a potential diagnosis among patients with dementia, myoclonus, cerebellar and visual disturbances. Although 85% of CJD is a sporadic type, it is worth to remember that an inherited form may also occur.

An unexpected cause of myocardial infarction - case study

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Tutor: Aleksandra Gąsecka, MD, PhD

Background: Coronary artery embolism is a rare cause of myocardial infarction (MI). Its incidence is not accurately defined as the diagnosis process poses many difficulties. It is estimated that 4 to 7% of all patients with MI do not have coronary artery disease. One of the conducted autopsy studies has revealed coronary artery embolic infarct in 13% of patients.

Case report: A 59-year-old patient was admitted to the emergency room from Chopin Airport due to ST segment elevationmyocardial infarction (STEMI). The patient was traveling from the United States via Paris to Warsaw. Since the landing in Paris, he had had several episodes of vomiting accompanied by chest tightness. His past medical history included percutaneous coronary intervention with implantation of 3 stents into left anterior descending artery and dyslipidaemia.
Directly from the emergency room, the patient was transferred to the invasive cardiology department, where coronary angiography revealed no significant stenoses in the coronary arteries and peripheral embolization in the right posterolateral branch. Due to the embolic cause of vessel closure, no interventional treatment was conducted.
Given the diagnosis of STEMI, dual antiplatelet therapy was administered. During further diagnostic work-up,patent foramen ovale was diagnosed and the patients was qualified for its percutaneous closure.

Conclusions: In case of our patient, the most probable cause of STEMI was paradoxic embolism, caused by the migration of deep vein thrombus through a PFO during the "natural" Valsalva manoeuvre, as the patient vomited on the plane and then suddenly felt a pain in his chest.
Practitioners should take it into consideration especially in the patients presenting with high thromboembolic risk factors such as a long flight.

CASE REPORT: NEW ONSET OF AUTOIMMUNE DISEASES FOLLOWING COVID-19 INFECTION

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Tutor: Raimonda Klimaite MD.

Background: COVID-19 is an infectious respiratory tract disease that can lead to multiple organ damage, including thyroid and pancreas. Recently, new onset autoimmune diseases after SARS-CoV-2 infection have been reported increasingly and it is believed that molecular mimicry is the main mechanism for complications. In this report, we present a clinical case of a woman who got infected with COVID-19 during pregnancy and was diagnosed with new onset type 1 diabetes and Graves' disease.

Case report: The 31-year-old pregnant woman, who just recovered from COVID-19 infection, was admitted to the hospital to diagnose suspected gestational diabetes as constant hyperglycemia was observed. The blood tests revealed diabetes mellitus: fasting glucose- 11.46 mmol/l, glucose tolerance test 2-hour value- 19.78 mmol/l, HbA1c- 6.7 (4-6 %). Type 1 diabetes was confirmed as Anti-GAD65- 2000 (0-5 kU/l), Anti-IA2 - 1200 (0-5 kU/l), insulin antibodies - 800 (0-1 kU/l) were observed. The treatment with 2-4 units of insulin detemir (Levemir) was started and good blood glucose control was achieved.
The blood tests also confirmed Graves' disease: fT3- 6.24 (3.34-5.14 pmol/l), fT4- 22.57 (9-21.07 pmol/l), TSH- 0.01 (0.4-3.6 mU/l), anti-TSH- 6 (<1.0 kU/l). The treatment with Propylthiouracil 100 mg was started. However, despite of treatment of the new onset autoimmune diseases, the miscarriage occurred due to non-developing pregnancy.
Propylthiouracil was changed to Methimazole and euthyreosis was reached over time. Insulin detemir (Levemir) was changed to insulin glargine (Abasaglar). 2-4 units of insulin are enough after 12 months of the diabetes mellitus diagnosis.

Conclusions: COVID-19-mediated autoimmunity is known as an important predisposing factor for development of Graves' disease and type 1 diabetes so it is essential to suspect, diagnose and find the most efficient treatment strategy individually.

Surprising outcome of the hypertension treatment – case study

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Background: Angioedema is a disease of the skin and mucous membranes manifested by the occurrence of local edema. The swellings are painless, do not cause itching and cover the face and limbs. Localization of the edema within the pharynx or larynx may lead to potentially life-threatening airway obstruction.
One of the main groups of drugs responsible for causing angioedema are angiotensin-converting enzyme(ACE) inhibitors, commonly used in the treatment of hypertension.

Case report: A 47-year-old man was admitted to the Cardiology Department due to mitral regurgitation diagnosed in an outpatient setting in order to qualify for surgical treatment. His past medical history included bilateral nephrectomy due to polycystic kidney disease, chronic dialysis therapy, hypertension, type 2 diabetes, gout, alcohol abuse in the past and active smoking.
Physical examination revealed a blood pressure of 170/103 mmHg. The patient was administered 12.5 mg of captopril sublingually. After two days, edema was observed in the mouth area and tongue.
Angioedema may be histaminergic, occurring in the course of allergy, resulting from a type I hypersensitivity reaction involving IgE and mast cells. Angioedema associated with the use of ACE inhibitors, on the other hand, is non-histaminergic, dependent on an increase in the concentration of bradykinin in the blood. ACE inhibitors increase its concentration by lowering the level of angiotensin II, which breaks it down. This side effect usually occurs within the first month of treatment.

Conclusions: It should be remembered that the use of even the most widespread drugs, such as ACE inhibitors, is never without risk. Careful monitoring of possible adverse reactions is advisable, especially in patients with multiple underlying health conditions.

Case report: Thyroid storm

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Background: The hyperthyroidism is a common thyroid disorder accounting for about 50 cases of 100 000 people a year, especially impacting women. One of the most life threatening medical condition is a thyrotoxic storm which is diagnosed by clinical symptoms combined with laboratory tests and requires specific treatment. In this report, we present a clinical case of an older woman who was diagnosed with thyrotoxic crisis leading to fatal complications despite of immediate specific treatment.

Case report: The 78-year-old woman was admitted to the hospital for suspected thyrotoxicosis complaining about 15 kg weight lost, weakness of the legs, bad mood, tachycardia, thirst and hyperglycemia. She was never diagnosed with any thyroid disease before. The patient condition was severe, she was conscious but mildly disoriented, the tremor of the hands was observed. Thyroid gland was IB°. The blood tests revealed elevated creatinine 93 (45-84 μmol/l), uremia 20.4 (2.8-7.2 mmol/l), hypercalcemia 2.74 (2.2-2.65 mmol/l), hyperphosphatemia 1.69 (0.81-1.45 mmol/l), ALT 57 (0-35 IU/l), AST 49 (0-35 IU/l) that confirmed impaired kidney and liver function. The fT4 was 102.96 (9-21.07 pmol/l), TSH was 0.01 (0.4-3.6mU/l), fT3 was 38.4 (3.34-5.14 pmol/l), Anti-TPO was 1000 (0-3.2 kU/l), Anti-Tg was 615.2 (0-13.6 kU/l), Anti-TSH was 0.9 (<1.0 kU/l). After evaluating the clinical data and laboratory test results, the severe thyrotoxicosis caused by autoimmune thyroiditis was suspected. The instant treatment with Methimazole, Hydrocortisone, Metoprolol was started. However, later that night the patient was found without vital signs, the resuscitation was started immediately but the death caused by thyrotoxic crisis was inevitable.

Conclusions: Thyrotoxicosis crisis has to be suspected and started treating as soon as possible because of the possible fatal outcome. This disease is an emergency disorder that leads to multiple organ failure and requires comprehensive aggressive treatment.

FINDING A PERFECT BURNING SITE IN LOCALIZED RE-ENTRY ATRIAL TACHYCARDIA

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Tutor: Adrian Gwizdała, MD., PhD.

Background: Atrial flutter (AFL) is a supraventricular tachyarrhythmia usually caused by re-entry circuits within the right atrium (RA). Typical electrocardiography (ECG) findings of AFL include regular atrial rhythm of 250-300 bpm, cycle length between 200 and 260 ms, and constant "seesaw" P wave morphology. Sometimes AFL may have an atypical presentation in ECG which includes a broad spectrum of other macro-reentrant tachycardias (MRAT) that are usually associated with structural heart disease, especially in patients with a history of cardiac surgery or extensive catheter ablation of atrial fibrillation (AF). AFL has been reported in approximately 8% of patients following AF ablation using RF energy. In such cases, mapping the re-entry circuit in an electrophysiology (EP) exam becomes necessary.

Case: A 59-year-old male with a history of dilated cardiomyopathy (DCM) received an implantable cardioverter defibrillator (ICD) after developing a non-sustained ventricular tachycardia upon mitral and tricuspid annuloplasty. Six years later he was admitted to the cardiology department for an ICD replacement and ablation due to atrial fibrillation. Unfortunately, the patient returned to the hospital with a rare case of atypical AFL characterized by a cycle length of 270 ms. Electrophysiology (EP) examination identified the arrhythmia substrate within the atriotomy scar in the right atrium and the trigeminal venous isthmus. Radiofrequency ablation of those two sites successfully restored the sinus rhythm. No further episodes of atypical AFL have been observed to this day.

Conclusions: Pharmacological management of atypical flutter does not differ from that of typical flutter. However, frequent association with structural heart disease and resulting complex re-entry circuits, such as MRAT, are important factors to consider as possible causes for atypical ECG findings. Quick identification of arrhythmia substrates by EP mapping allows for earlier termination of AFL and prevents late complications of SHDs, thus preventing future underdiagnosis and improving patients' quality of life.

Non-surgical Case Report II

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Forestier’s disease - a mysterious disease with spine pain

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Tutor: Prof. Bogna Grygiel-Górniak

Background: Forestier’s disease, also known as diffuse idiopathic skeletal hyperostosis (DISH), is a systemic disorder characterized by the ossification of entheses of the axial skeleton. The underlying cause remains unknown, but the disease seems strongly associated with the male sex and metabolic disorders. It’s usually asymptomatic, hence difficult to diagnose.

Case report: A 70-year-old female patient was admitted to the hospital due to some musculoskeletal symptoms, such as joint pain in her distal interphalangeal joints (DIP) of hands, interphalangeal joints of feet for a few years. She complained of pain in her left hip after sciatica which had been diagnosed a year ago. She has been experiencing calves cramps since March 2022. She has suffered from obesity, hypertension, and cholangitis with biliary cirrhosis. Physical examination showed mild DIP joints pain of the left hand. Heberden’s nodes were detected bilaterally. An X-ray revealed narrowed joint spaces of DIP joints with osteophytes. Knee joints spaces narrowing and ossification of the quadriceps enthesis were observed bilaterally. Lumbosacral spine X-ray depicted the anterior longitudinal ligament (ALL) ossification and narrowing joint spaces. Rheumatoid factor (RF) was negative; however, ANA antibodies were positive (1:640), with slightly elevated antimitochondrial antibodies (AMA). According to all the results and clinical manifestations, the connective tissue disease (CTD) was excluded, and the patient was diagnosed with Forestier’s disease.

Conclusions: Based on clinical manifestations, it is crucial to differentiate DISH from inflammatory diseases (spondyloarthropathy), such as ankylosing spondylitis (AS), which may give similar symptoms. As DISH can remain asymptomatic, performing radiography to emblazon typical DISH lesions is highly recommended. Elevated ANA can be elevated in liver diseases.

Ankylosing spondylitis with peripheral joint involvement

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Introduction: Ankylosing spondylitis (AS) is a chronic immune-mediated inflammatory arthritis affecting sacroiliac joints and the axial skeleton, mainly in young males. Although the diagnosis seems distinguishable, the disease's course may differ depending on gender. In women, peripheral arthritis is more common than in men.

Case report: A 61-year-old woman was admitted to the rheumatology clinic due to deterioration of pain condition - she complained of pain in the cervical spine, limiting its mobility, and pain in the left hip, both knees, and in single small joints of the hands. Past medical history included the appearance of the first symptoms – pain in both hip joints at the patient's age, 34 years of age. Ten years later, pain, swelling, and edema appeared in both knee joints. Later, the elbow, metacarpophalangeal, proximal interphalangeal, and wrist joints were also affected. Until now, the woman was treated with methotrexate and sulfasalazine with limited effect.

Physical examination confirmed thoracic kyphosis, limited mobility of the thoracic spine, flexion contracture of the right elbow joint, and pain and swelling of small joints of the hands. The laboratory tests revealed an increase in inflammatory parameters (CRP, ESR, WBC). The genetic evaluation showed the presence of the HLA-B27 antigen. X-ray was performed, and the sacroiliac joints, atresia, and periarticular osteosclerosis were diagnosed. Degenerative changes in hip joints were visualized, with greater intensity on the left side. The woman was qualified for biological treatment with certolizumab.

Conclusions: Typical axial symptoms of AS symptoms are suggestive of this disease. However, the inflammation of small joints of hands and feet can also be present, which can delay the diagnostic process, resulting in prolonged higher disease activity. Thus, quick differential diagnosis in case of ineffective treatment with classical disease-modifying antirheumatic drugs (DMARDs) and immediate biologic DMARD implementation can increase the possibility of disease remission.

Jaccoud's arthropathy – the diagnostic problem in connective tissue diseases

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Background: Jaccoud's arthropathy is a benign, chronic joint condition characterized by ulnar deviation of fingers and subluxation of metacarpophalangeal joints. It is correctable and needs to be differentiated from fixed deformities characteristic of rheumatoid arthritis. Traditionally it was associated with rheumatic heart disease, but it can also occur with systemic connective tissue diseases such as systemic lupus erythematosus (SLE) and psoriatic arthritis. Systemic lupus erythematosus is a chronic autoimmune condition with various symptoms, including joint pain, face rash, fatigue, and GI symptoms.

Case report: A 68-year-old woman was admitted to the Department of Rheumatology, Rehabilitation, and Internal Medicine for diagnostic evaluation and treatment modification. She was diagnosed with rheumatoid arthritis 20 years ago. One year ago, the diagnosis was changed to rheumatoid arthritis-polymyositis overlap syndrome. During hospitalization, the symptoms included weakness in her lower extremities, pain and edema of the hands' joints, and a face rash. Laboratory tests showed leukopenia, increased values of creatinine kinase, lactate dehydrogenase, alanine and aspartate aminotransferases, uric acid, and erythrocyte sedimentation rate. Her diagnosis was changed to systemic lupus erythematosus with Jaccoud's arthropathy, and treatment was modified accordingly.

Conclusions: Early inflammatory arthritis usually causes diagnostic difficulties. Jaccoud's arthropathy quite often develops in SLE and causes correctible deformation. Differentiation between various rheumatic conditions can be challenging if benign arthropathy Jaccoud's arthropathy develops.

A race against time: managing heart failure in a patient with rare systemic disease

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Tutor:Daria Keller, MD., PhD.

Background: Amyloidosis is a rare systemic disease, in which a misfolded protein deposits in parenchymal organs causing a spectrum of cardiac and extracardiac symptoms. One of its manifestations is cardiomyopathy (CM), which unless quickly identified and treated, leads to rapidly progressing heart failure (HF). Transthyretin (TTR) is one of the amyloidogenic precursor proteins and is responsible for transthyretin amyloid cardiomyopathy (ATTR-CM). Since 2018 a novel drug tafamidis has been proved to reduce mortality and is the only up-to-date approved drug for treatment of ATTR-CM. Unfortunately its availability for Polish population is insufficient.

Case report: A 71-year-old male was admitted to 1st Department of Cardiology for further assessment of HF. Comorbidities included III^{0} atrioventricular block treated with DDD pacemaker (2019), atrial fibrillation and chronic kidney disease. Transthoracic echocardiography showed left ventricular hypertrophy with characteristic relative apical sparing of longitudinal strain – cardiac amyloidosis was suspected. Cardiac magnetic resonance revealed left ventricular ejection fraction (LVEF) of 52%, increased volume of extracellular matrix and diffuse transmural/subendocardial fibrosis. Troponin and NT-proBNP levels were elevated. Normal serum free light chain ratio and absence of monoclonal protein in immunofixation ruled out monoclonal gammopathy. ATTR-CM was confirmed by ^{99m}Tc-DPD scan (Perugini Grade III). Unfortunately, time-consuming diagnostics and legal obstacles delayed tafamidis administration by several months, causing exacerbation of HF symptoms and reduction of LVEF to 20%.

Conclusions: Diagnosis and management of patients with ATTR-CM requires a multidisciplinary approach. Standard pharmacotherapy in ATTR-CM is not well-tolerated, so tafamidis remains the only drug to inhibit disease' progression. According to 2023 American College of Cardiology guidelines, standardized comprehensive care allows for faster causal treatment and is critical for improving prognosis in ATTR-CM. This practice is still yet to be implemented in Polish healthcare system.

„BAD GUYS" IN POSTERIOR WALL: REDO ABLATION OF AF

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Background: Atrial fibrillation (AF) is the most prevalent tachyarrhythmia characterized by irregular heart rhythms and a 5-fold increased risk of stroke. Due to AF's tendency for recurrence standard pharmacotherapy at times is not sufficient and radiofrequency ablation (RFA) has to be performed. RFA utilizes current-generated heat to isolate trigger foci, commonly located in the pulmonary veins, from the rest of the heart. Unfortunately, occasionally a redo RFA is required in order to terminale the arrythmia.

Case report: A 66-year-old male presented to the Cardiology Department in February 2020 to undergo elective RFA due to fifteen episodes of persistent AF and twelve electrical cardioversions. Past medical history included anterior wall ST-elevated myocardial infarction (STEMI), hypertension, and hyperthyroidism. Transesophageal echocardiography (TEE) excluded thrombus and revealed patent foramen ovale (PFO). Thyroid-stimulation hormone and thyroxine levels remained within normal range. Subsequently, the patient successfully underwent pulmonary veins isolation (PVI) by RFA with the assistance of advanced imaging technology. Post-operative examinations ruled out pericardial fluidor and other complications, therefore the patient was discharged. During the following months, the patient reported several AF recurrences, thus in November an elective redo RFA was executed. In the course of the procedure, the successful PVI was confirmed. However, new active foci from the posterior wall (PW) were discovered and isolated (PWI) from the left atrium (LA). To date, the patient has had no recurrence of AF.

Conclusions: The foregoing case proves that recurrent AF may originate not only in the PV, but also PW. Multiple episodes of AF resistant to standard cardioversion should prompt the decision to carefully seek active foci in less common locations.The addition of PWI to PVI during patient's first ablation may prove to improve prognosis for individuals with recurrent AF, however this practice still requires further study.

Therapeutic problem of inflammatory bowel diseases

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Tutor:PhD Liliana Łykowska-Szuber

Background: Ulcerative colitis belongs to the group of inflammatory bowel diseases. It is characterized by inflammation of the mucosa of the rectum or rectum and colon. The first symptoms of the disease are diarrhea and rectal bleeding. The disease is chronic, with exacerbation and remissions. Factors that trigger an exacerbation include psychological stress, medicaments and changes in diet. Medications used to treat the disease include aminosalicylates, glucocorticosteroids, immunosuppressants and biologics.

Case report: In November 2022, the patient, 29 years old, was admitted for significant anemia. The patient's self-feeling was average, she was passing 20 stools a day of liquid consistency with an admixture of blood and mucus. From her history, the patient was diagnosed with ulcerative colitis in 2020. She was initially treated with mesalazine, steroids and azithioprine. In 2020-2021, the patient participated in a clinical trial (brazicumab/wedolizumab/placebo) with complete clinical remission. In August 2021, the patient was hospitalized for an exacerbation. Colonoscopy showed inflammatory lesions of Mayo 3rd grade. In September 2021, the patient was qualified for biologic treatment with Flixabi. In December 2021, treatment was changed to Entyvio due to lack of improvement. In March 2022, colonoscopy showed lesions of Mayo grade 3rd. Due to lack of therapeutic effect, it was decided to change treatment with vedolizumab to ustekinumab.

Conclusions: Patients with inflammatory bowel disease face difficulties in daily functioning. In order to help patients, doctors are looking for various therapeutic methods to induce remission of the disease and reduce the number of exacerbations. An important role in the diagnostic and treatment process is played by interdisciplinary medicine and appropriate diet. Unfortunately, there are times when patients do not respond to therapies and treatment modifications and the use of new biological treatment programs are needed.

Autoimmune encephalitis as a complication of COVID-19 infection

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Background: COVID-19 infection is directly related to autoimmune encephalitis both by disrupting the immune system and by the high affinity to the nervous system that the virus exhibits. Autoimmune encephalitis symptoms fall into a wide range of both neurological and psychiatric disorders.

Case report: A 25-year-old Polish woman was admitted to the neurological clinic(15/03/2021) with the following symptoms: general weakness, non-specific joint pain, headache in the frontal area, progressive disorders of memory, consciousness, and mood - episodes of aggression and anger. The patient stated that she was suffering from a mild infection of the upper respiratory tract a couple of weeks earlier. The examination revealed extrapyramidal syndromes and hepatosplenomegaly. Additionally, EMG, EEG, and MR were performed - without deviation.
Determination of the level of IgG antibodies against the SARS-CoV2 virus by the immunoenzymatic method - positive result. A lumbar puncture was performed. The collected cerebrospinal fluid was tested for the presence of indirect immunofluorescence Anti-NMDA antibodies present (+), onconeural antibodies: anti-SOX1 present (+)
Diagnose: Autoimmune encephalitis with anti-NMDA and anti-SOX antibodies
Treatment: initially intravenously methylprednisolone 1g daily for 3 days, then continued orally - prednisone 60mg once a day. Then slow gradual reduction of prednisone, the introduction of memantine, and citicoline. In the course of the diagnosis, the patient undertook psychiatric treatment, during which she required hospitalization in a psychiatry clinic.
The patient responded well to the treatment, with partial mitigation in terms of both neurological and psychiatric symptoms. A persistent cogwheel rigidity in the upper and lower limbs and cognitive impairment remained (as of 07/11/2022).

Conclusions: Patients with autoimmune encephalitis require multiple diagnostics due to non-specific symptoms. The determination of onconeural antibodies is critical for the diagnosis, as in the aforementioned case. It requires demanding and long-term treatment, which not always is allowing for a complete withdrawal of symptoms.

Diet and lifestyle of a patient during systemic treatment of colorectal cancer in the context of secondary prevention of the disease

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Background: Systemic treatment of colorectal cancer is associated with a spectrum of side effects that can be mitigated by appropriate nutritional intervention. Proper nutrition and a healthy lifestyle of an oncological patient are the factors determining compliance with the principles of secondary prevention of cancers and improving the patient's length and quality of life.

Case report: 58 years old, woman, with actual body weight 71 kg, height 164 cm, (BMI 26.4), body weight before cancer diagnosis 85 kg (BMI 31.6). Colorectal cancer was diagnosed in April 2022. Surgery and chemotherapy were implemented. Currently, the palliative treatment is use (systemic, cytostatic treatment). Even the palliative treatment is incorporated the patient shows good somatic and mental well-being. She declares to follow the recommendations of the therapeutic team regarding the diet, which is based on the principles of an easily digestible diet. However, the patient suffer from symptoms that she cannot cope with: reduced appetite, nausea, dry mouth and diarrhoea). According to the patient - her current style of eating differs from the period before the cancer. She notices changes in food preferences. The patient does not undertake any physical activity, does not smoke cigarettes, but she smoked before the diagnosis of the cancer. According to the woman - the right model of nutrition can improved the course of the disease and may prevent its progression. In the patient's opinion, her current eating habits are much better than before the disease.

Conclusions: The patient's nutrition requires the support of a specialist - an oncological dietician. Priority should be given to nutritional measures to eliminate side effects during systemic treatment. In addition, the patient should be shown possible alternative solutions to existing nutritional problems and encouraged to implement adequate physical activity. It is important in this regard to outline the possible health benefits.

Breast cancer: dosimetric and treatment delivery evaluation of protons versus photons in whole breast radiotherapy in student's eye view

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Introduction: Planning teleradiotherapy treatment in young women with left breast cancer can be challenging. With younger diagnosed patients, the risk of side effects of radiotherapy increases, including those related to the cardiovascular system. It is important to consider the treatment strategy carefully, selecting the method that minimizes long-term undesirable effects.

Aim: The aim of the study was a dosimetric comparison of dose distributions in the context of the quality of treatment plans and treatment delivery parameters for the left breast and the level of doses in organs at risk (OAR), performed using the IMPT technique (proton beam) and the hybrid technique 3D-CRT+VMAT (photon beam) in student's eye view.

Material and methods: Treatment plans for 10 patients with the left breast after breast-conserving surgery for the photon technique performed in a radiotherapy center and the proton beam therapy data from the literature was analyzed. A total dose of 50 Gy per PTV was used for both treatments. The plans were created so that the coverage of PTV-V95 was ≥95% and PTV-V107 ≤2%. The following dosimetric and treatment delivery parameters were reviewed: the values of individual parameters for PTV: Dmax, Dmean, D95, V95, and V107. The effects of the techniques used on dose levels in critical organs, particularly the heart, lungs, and right breast, were also considered.

Results: Both techniques met the required PTV coverage and OARs sparing. The benefit of using IMPT compared to the photon technique was achieved - lower values for the heart and ipsilateral lung. However, the IMPT plans showed a significantly higher skin dose owing to the lack of a skin sparing effect in the proton beam.

Conclusions: Both techniques met the expected result. The comparison leads to an unequivocal conclusion about the rightness of using both photon and proton beams for treating whole breast cancer. Besides, both techniques were equally interesting for students.

Hope for a revolution in the treatment of inoperable lung cancer - a case study of a 66-year-old patient with advanced squamous cell carcinoma

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Introduction: Lung cancer is the most lethal malignant tumor in humans. The major contributor to its poor prognosis arises from the fact that symptoms appear often once the tumor mass is very large and the distant metastases are present. Moreover, the most common symptoms of lung cancer - i.e. cough, shortness of breath, chest pain and weight loss - are non-specific and are also associated with other common chronic diseases (chronic obstructive lung disease, heart failure, upper respiratory tract inflammation) which delays the proper diagnosis and implementation of appropriate treatment. There is a strong correlation between smoking habits and the risk of developing squamous cell carcinoma.

Case report: A 66 -years old male patient, smoking 30 cigarettes a day since the age of 16, was admitted to the Clinical Radiotherapy Department. A CT scan revealed a 7.5 cm tumor in the left lobe completely occluding the upper lobe bronchus and a nodular lesion in the right main bronchus, near the bronchial carina. A biopsy was performed, which revealed squamous cell carcinoma. Due to the inoperable nature of the lesions, the patient was qualified for radio-chemo immunotherapy.

Conclusion: Recent researches demonstrate significant clinical efficacy in the treatment of patients with advanced lung cancer of various histologies. This treatment method appears to establish a new course of action for inoperable lung cancer and offers hope for revolutionizing the treatment of patients with this disease. With the implementation of radioimmunotherapy, the survival rate of patients suffering from inoperable cancers may be significantly increased.

Epithelioid hemangioendothelioma - rare case of liver tumour

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Background: Epithelioid hemangioendothelioma (EHE) is an ultra rare type of liver tumour. Despite the liver, EHE can also occur in lungs, bones and other soft tissues. EHE is a malignant vascular tumour with a broad malignancy level between hemangioma and hemangiosarcoma. The clinical manifestation can vary - from asymptomatic patients to patients with weight loss and palpable mass. The diagnostic process is very demanding, due to the uncharacteristic radiologic image of EHE.

Case report: A 43 years old man was admitted to the hospital due to an abdominal pain in the right upper quadrant. The patient felt constant discomfort in the abdomen for 1,5 months. The patient had no comorbidities. In abdominal ultrasound a hypoechogenic lesion was found. The ultrasound image was ambiguous. The diagnostic process was broadened and a CT of the abdomen and pelvis was performed. The CT revealed a hypodense lesion, which image was characteristic for a focal cholangiocarcinoma (CCC). Moreover, metastatic lesions were found in a chest CT. However, according to the result of abdominal and pelvic MRT the lesion was most likely bening. A radiologist suggested a diagnosis of atypical angioma. CCC should also be taken into consideration due to the presence of metastatic lesions. PET-CT showed no active lesions. All tumour markers were in normal range. Wedge resection of the liver was performed, due to suspected malignant character of the lesion and unclear results of imaging tests. The histopathological examination enabled the final diagnosis of hepatic EHE. The patient started treatment with mTOR inhibitors.

Conclusions: Diagnostic process of EHE can be very challenging. A histopathological examination should be always performed, when the radiological results are uncharacteristic or inconsistent, in order to make a final diagnosis and to initiate an appropriate treatment.

Pancreatic adenocarcinoma - 64 year old female

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Background: Pancreatic adenocarcinoma is a serious condition with 5-year survival approximately 6%. Despite that fact there are no recommended imaging screening tests. One of approved treatment markers of pancreatic cancer is CA 19-9 which has a low positive predictive value and is used only to monitor response to treatment. There are various morphological variants of adenocarcinoma that influence the prognosis for a patient. Due to those facts the diagnosis of pancreatic cancer can be long and complex.

Case Report: 64 year old female patient was admitted to the hospital in September due to the symptoms of icterus, pruritis and subcostal pain on the right side. Computer tomography indicated the hypodense structure - cystic lesion in head of pancreas (8x11mm) and processus uncinatus (6/9mm) narrowing the common bile duct. CA19-9 marker negative. The endoscopic retrograde cholangiopancreatography (ERCP) was performed with stenting. Smear test was taken for cytology (atypical cells not enough for diagnosis). During next ERCP in November tissue section was performed-double pig tail protesis was introduced. Histopathology indicated inflammatory lesions. December admission: icterus, fever, abdominal pain. In ERCP occlusion of prothesis, replacement to Amsterdam and pig tail. No sections taken due to INR 2. In February emergency (ER) admission: abdominal pain, icterus, excessive night sweating, dark urine. ECPR was performed with Double-J prothesis placed in common hepatic duct, EUS biopsy was made (adenocarcinoma suspected). Next February ECPR with 2 double pig tail prothesis was performed. CT indicated the 22x15x20mm lesion in pancreatic head and enlarged local lymph nodes to 15mm. In Whipple pancreaticoduodenectomy 2cm tumor mass was extracted (duct adenocarcinoma NOS G2)

Conclusion: This case presents the complexity of pancreatic adenocarcinoma diagnosis and highlights the possible fast growth of the tumor.

The pitfalls of the dialysis catheter

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Background: A dialysis catheter is the prime invention, that can save people's lives in urgent situations – in need of hemodialysis. As every procedure they carry risk for patients. Besides the less common – hemorrhage, emphysema, thrombosis - the most common complication is infection, which will be covered in this paper.

Case report: An 80-year-old woman was referred to the Nephrology Department due to end-stage renal failure. She was in need of RRT and hemodialysis was chosen as the most suitable. Her arteriovenous fistula was prepared 2 months prior. Its cannulation wasn't successful, so the decision was made to install a dialysis catheter in the right internal jugular vein. It worked and the patient was administered to the hospital's dialysis center. About 2 months later the patient was referred to the Emergency Room because of fatigue and pain in the lumbosacral region. First lab tests raised the suspicion of sepsis - which was confirmed in the Nephrology Department. Staphylococcus aureus was cultured from blood and the catheter. The catheter as the sepsis' origin was removed. An MRI scan showed an epidural abscess. The patient was treated intensively - she had a lot of comorbidities – including diabetes, hypertension (both worsening her kidneys' condition). Sepsis was treated with numerous antibiotics. Dialysis using her arteriovenous fistula was started. The woman's condition was improving, abscesses were absorbed. When her state stabilized, she was infected with COVID-19 and was referred to the Isolation Department, from there she was discharged home in stable condition.

Conclusion: A dialysis catheter should be installed only when needed and removed as fast as possible. During that period the patient should be monitored, instructed about care of the catheter and when to go to the hospital. To conclude - the more the catheter remains in the body the bigger the threat for the patient's health it presents.

From a cold to a heart failure

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Background: Heart failure (HF) is a condition when the heart starts pumping blood poorly. Main symptoms are dyspnea and fatigue. HF can be life threatening but proper treatment can alleviate the symptoms and lifestyle changes can improve quality of life. There are an estimated 64 million people with HF worldwide, therefore it is important to recognize it and provide treatment on time to prevent lethal outcomes.

Case report: A 65-year-old diabetic woman came to the Emergency department. She claimed that 2 weeks ago she caught a cold and had a fever that went away but up till now she keeps coughing up phlegm, suffers from shortness of breath after laying down or walking faster. During evaluation her tonsils did not show any indication of a respiratory infection, her blood pressure was 179/117 mmHg and crepitation in the lungs was heard. X-ray revealed that there was fluid in both sides of pleura, enhanced vascular contour, hypoventilation areas on the right side, bigger heart's diameter and non-significant sclerosis of aorta. A CT scan showed venous stasis and ruled out pulmonary embolism along with pneumonia. Brain natriuretic peptide (BNP) concentration was 409,4 ng/l, electrocardiogram (ECG) showed poor R wave progression in V1-5 and atrial fibrillation. A congestive heart failure diagnosis was made. The woman was transferred to a second level hospital for further monitoring.

Conclusion: It is possible to lower one's risk to develop HR. People who are at risk should embrace healthier lifestyle habits and properly manage their already existing chronic illnesses such as diabetes, obesity and arterial hypertension. Physicians should always suspect HF when a patient presents with dyspnea and fatigue even when physical signs of HF may not be present. Echocardiogram, ECG and serum natriuretic peptide are essential for diagnosing HF.

Is it coronary artery disease or is it …? – case report

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Tutor:Prof., MD, PhD, Aleksandra Gąsecka

Background: Single coronary artery (SCA) is one of the rarest congenital coronary artery anomalies, with the incidence ranging from 0.01% to 0.07%. SCA can be either an isolated anomaly or associated with other congenital abnormalities such as bicuspid aortic valve. The malignant variant of SCA is the type in which SCA is located between the aorta and the pulmonary artery.

Case Report: An 83-year-old woman with suspected chronic coronary syndrome (CCS) was admitted to the cardiology department for elective coronary angiography. While performing the procedure, it was difficult to cannulate the left main artery in the left aortic sinus with JL4 and JL3.5 standard catheters. The right coronary ostium was engaged with a JR4 catheter, demonstrating a superdominant right coronary artery with additional left anterior descending and circumflex arteries arising from the right coronary ostium. There were no significant atherosclerotic lesions in any of the branches. The patient received conservative treatment and was discharged from the hospital 1 day later.
Based on the site of origin and anatomical distribution of the branches, SCA is classified into 2 main categories: "R," right type, and "L," left type. In 75% of the cases, the artery is located between the aorta and the pulmonary artery, leading to an increased risk of sudden cardiac death due to its compression.

Conclusions: An anomalous course of coronary artery should not be excluded in the diagnostic process even in elderly patients, who have been asymptomatic for most of their life. Medical practitioners performing coronary catheterization are ought to be capable of facing the challenges that may arise during the procedure due to the occurrence of the previously undiagnosed coronary artery anomaly.

A case of hereditary spherocytosis and secondary biliary cirrhosis

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Background: Hereditary spherocytosis (HS) is a relatively rare familial hemolytic disorder that has a various spectrum of clinical manifestation – from asymptomatic condition to fulminant hemolytic anemia. HS is associated with heterogeneous alterations in genes that encode red blood cell membrane proteins and results in spherocytic erythrocytes' shape making them more fragile. Significant severe hemolysis may develop hyperbilirubinemia which can cause additional complications. We present a case of hereditary spherocytosis leading to hyperbilirubinemia and eventually to secondary biliary cirrhosis.

Case report: A 20-year-old female suddenly felt nausea, vomited, had fever, pain under rib cage and progressively developed jaundice. Examination showed hyperbilirubinemia and acute hepatitis was suspected. Elevated liver enzymes and splenomegaly was also found, so the patient was sent to gastroenterologists. Higher levels of reticulocytes and abnormal coagulation tests were found. Also, some concretions in *ductus choledochus* were noticed. Patient underwent ERCP, papillosphincterotomy was done and multiple concretions spilled. 1 cm stone and many small stones were removed with a loop. Jaundice and bilirubinemia noticeably lowered and the pain was gone. Liver biopsy indicated primary sclerosing cholangitis and ursodeoxycholic acid with prednisolone was prescribed. Due to chronic anemia the patient was repeatedly treated by gastroenterologists. Spherocytes, hyperbilirubinemia, elevated liver enzymes and p-ANCA were found. Microspherocytic anemia and accelerated breakdown of erythrocytes was noticed. Second liver biopsy indicated incomplete cirrhosis. HS was diagnosed and laparoscopic splenectomy and cholecystectomy was performed. Ursodeoxycholic acid was continued. After 3 years laboratory tests were normal and third liver biopsy showed positive fibrosis dynamic.

Conclusions: Hereditary spherocytic hemolytic anemia in this case caused constant hyperbilirubinemia that conditioned hepato-choledocholithiasis and bilirubin bile stones. We can suspect that prolonged cholestasis due to hepatolithiasis predisposed secondary biliary cirrhosis. Splenectomy and cholecystectomy resulted in normal cholestatic markers and liver enzymes. After discontinued ursodeoxycholic acid, liver enzymes remain in normal range and the patient feels well.

The forgotten cause of anaemia: vitamin B12 deficiency

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Background: Megaloblastic anaemia (MA) is a condition characterized by lack of vitamin B12 and/or folic acid as well as reduced concentration of haemoglobin. Vitamin B12 deficiency causes ineffective erythropoiesis. Because of that erythroblasts in the bone marrow and macrocytes in peripheral circulation die earlier causing anaemia. Haemolysis prompts elevation of non-direct bilirubin but rarely affects total bilirubin count.

Case report: A 70-year-old female patient consulted a family doctor due to general weakness, lack of appetite, significant weight loss and jaundice that had appeared a few months ago. Bleeding, dark stools, fever were not observed. Complete blood count (CBC): Hg 45 mg/L, MCV 111.3 fl, MCH 39.6 pg, WBC $3.5x10^9$/L, PLT $79x10^9$/L, total bilirubin 49.19 µmol/L. Patient was referred to the hospital for the treatment of transfusion-level megaloblastic anaemia and clarification of the cause. Fibroesophagogastroduodenoscopy - without changes. After completing 3 packs of erythrocyte mass transfusions, haemoglobin reached 81 g/L, signs of tissue hypoxia regressed. A vitamin B12 concentration test showed a deficit. Cyanocobalamin was given to correct megaloblastic anaemia. In dynamics pancytopenia was observed, more markedly progressive thrombocytopenia. It is appropriate to perform a bone marrow puncture to determine the cause of pancytopenia. Haematologist recommended that the use of cyanocobalamin should be continued, repeating CBC, vitamin B12, folic acid tests. A positive dynamic of the disease was observed, Hg (45->85 mg/l), total bilirubin (49.19->20.76 µmol/L), non-direct bilirubin (8.52->4.1 µmol/l), vitamin B12- 37 pmol/l. The female remains actively monitored by the family doctor. The patient must keep using cyanocobalamin once a month throughout her life.

Conclusion: Treatment with high doses of vitamin B12 reduces symptoms of the haematological disease and improves patient's quality of life. It is always important to differentiate the cause of the anaemia in time so that appropriate treatment could be given as soon as possible and detrimental consequences could be avoided.

Correlation of Radiological Lung Changes and Clinical Status in Interstitial Lung Disease: A Case Report

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Background: Interstitial lung diseases damage the intercellular tissue around the air sacs in the lungs. Various diffuse changes can be found, such as the presence of fibrotic foci. Chest X-rays and CT scans without intravenous contrast help assess the correlation between visible changes and clinical condition.

Case report: An 83-year-old patient was hospitalized with a suspected interstitial lung disease. The patient had previously been hospitalized for symptoms: coughing, expectoration of yellowish sputum, dyspnea, and subfebrile fever. A chest X-ray showed interstitial, fibrotic changes, reduced airiness. A multidisciplinary council diagnosed an exacerbation of interstitial lung disease and prescribed glucocorticoid treatment. After starting the treatment, the patient's general condition improved, shortness of breath decreased, respiratory failure disappeared. The patient initially showed improvement and discharge home was considered. Four days later, he showed signs of subcutaneous emphysema and progressive respiratory failure. An urgent chest CT scan showed increased airiness of the lungs, a decrease in the volume of the former ground-glass areas, revealed multiple thickened interlobular septa, reticular changes, and tractional uncomplicated bronchiectasis, "honeycomb" appearance in the lower lobes. Subcutaneous emphysema, respiratory failure progressed. Repeated chest CT scan was performed, progressive intramuscular and subcutaneous emphysema, pneumomediastinum were found. The airiness of the lungs decreased, diffuse ground-glass areas with intralobular and interlobular septa appeared. Bronchomediastinal effusion from tractional parapleural bronchiectasis was suspected. Subcutaneous emphysema, pneumomediastinum, and pneumothorax were likely due to interstitial changes in the lungs that manifested as these clinical findings. The patient was transferred to the intensive care unit due to the progression of subcutaneous emphysema and died during treatment.

Conclusions: Interstitial lung disease can manifest in several radiological combinations. Positive radiological changes may not always correlate with the patient's objective clinical condition in interstitial lung disease. It is important to take into account patients' medical history, objective findings, radiological changes when assessing their condition.

ACUTE PANCREATITIS. CASE REPORT

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Background: Acute pancreatitis (AP) is a life-threatening condition associated with high mortality, being cholelithiasis and alcohol the main causes. It is diagnosed on the basis of clinical signs, increased levels of pancreatic enzymes in blood serum and specific radiological findings. Morphologically, AP can be divided into interstitial and necrotizing. The latter accounts for 5-10% of all AP cases, usually manifests as necrosis of the pancreas and peripancreatic tissue. The prognosis depends on the development of local and systemic complications such as organ failure and secondary infection of necrosis.

Case report: A 28-year-old man came to the emergency department due to severe abdominal pain radiating to the back, nausea and vomiting. Laboratory tests showed neutrophilic leukocytosis, CRP and lipase levels were significantly elevated. An abdominal ultrasound examination showed an increase in the size of the pancreas and uneven echogenicity of the pancreatic tissue. AP was suspected and the patient was hospitalised. CT scan confirmed the suspected diagnosis as there was visible large area of pancreatic necrosis, severity was scored out of 10 on a modified scale. The patient's condition remained serious, resulting in complications such as peripancreatic abscess, retroperitoneal phlegmon, colonic fistula, urinary tract infection, pneumonia, sepsis, ARDS, shock and MODS. Artificial ventilation, kidney replacement therapy, broad-spectrum antibiotic therapy were applied to the patient. The patient underwent multiple necrosectomy, drainage and lavage of peripancreatic abscesses. An ileostomy was formed after the colon fistula appeared. Despite treatment, the patient did not improve and died as a result of acute respiratory bleeding.

Conclusions: AP is a dangerous condition associated with high mortality and morbidity. Clinical signs of the disease, laboratory tests, abdominal ultrasound and CT scan findings are invaluable for early diagnosis. However, contrast-enhanced CT (CECT) remains the gold standard for AP, allowing classification of disease morphology and prediction of clinical severity.

Hepatocellular carcinoma manifestation as metastasis to the jaw

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Background: Hepatocellular carcinoma (HCC) is the most common primary liver tumor. It usually develops in the presence of chronic liver disease, mainly in patients with cirrhosis. Usually, the tumor itself is asymptomatic especially in an early detection stage. Symptoms and physical findings such as upper abdominal pain, weight loss, variceal bleeding are often due to cirrhosis. Generally, HCC is prone to metastasize to lungs (44%), portal vein (35%), and portal lymph nodes (27%). We present a case with atypical HCC metastases in the jaw.
Case report: A 67-year-old man was complaining of a lump on his left lower jaw and weight loss. The patient underwent CT ant MRI head scans both showing pathological masses on the branch of jaw in the gap of left masticatory muscles. Masses dislocated and deformed submandibular and parotid glands. Biopsy of a lump indicated metastatic HCC. Gastroenterologist examination found liver cirrhosis and positive hepatitis C virus. Another CT scan showed pathological lung tissue and a mass causing destruction of several ribs. Liver had multiple hypervascular components showing signs of HCC. An osteoclastic component was noticed in Th6 vertebra. Disseminated HCC was diagnosed and systemic therapy with sorafenib was prescribed. Repeated tests showed progress of disease, so cabozantinib was chosen. Radiation therapy was applied for the left jaw tumor for pain relief. Now the patient remains unwell and is basically left with symptomatic treatment.

Conclusions: This case represents an unique manifestation of late detected HCC with a mass on a face and other metastasis causing destruction of various bones in patient's body. Knowing that HCC is the 4th leading cause of deaths related to cancer in the world and in most cases is asymptomatic, awareness should be spread to clinicians to provide surveillance for high-risk patients with hepatitis C and cirrhosis to lower the rate of an advanced disease diagnosis.

Overcoming Clinical Challenges in the Diagnosis and Management of Multiple Primary Tumors: A Case Report

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Background: Multiple primary malignant tumors (MPMTs) are characterized by the diagnosis of more than one malignant disease, each histologically unrelated to the others. The incidence of MPMTs has increased in recent years, possibly due to improved diagnostic techniques, longer life expectancy, and increased long-term survival of cancer patients.

Case report: A 77-year-old woman underwent left mastectomy in 2013 for invasive ductal carcinoma, G2; ER(+), PR(+), HER2(-), Ki67-10%. Tamoxifen was prescribed, which was switched to anastrozole, but due to joint pain, tamoxifen was continued. A year after the operation, a biopsy confirmed squamous cell carcinoma in the anus. Chemoradiotherapy was applied to the anus. In 2017, pelvic MRI showed no pathological accumulation. In 2019, a colonoscopy revealed radiation proctosigmoiditis and a possible cecum polyp, which turned out to be an inflammatory regenerative polyp with reactive lymphoid hyperplasia. In 2021, a follow-up mammogram of the right breast showed no negative dynamics, BRCA1/2 gene 6-mutation testing was negative, and peripheral lymph node ultrasound showed no signs of pathology. Bone scintigraphy revealed no bone metastases. In 2022, the patient was consulted by oncologist after undergoing several follow-up tests (tumor markers, esophagogastroduodenoscopy, colonoscopy, pelvic CT). No signs of cancer recurrence or progression were found, and it was decided to perform an MRI to investigate changes in the pancreas. A month later, an MRI of the abdomen revealed local dilation of the pancreatic duct in the tail region, and a suspicious tumor, 1.3 x 1.0 cm in size, was found in the pancreas. The patient was referred to a surgical consultation. In 2023, the patient underwent adjuvant chemotherapy (FOLFIRINOX) and tolerated it without any complications.

Conclusions: For oncological patients, control tests are necessary not only for the monitoring of metastases or recurrence, but also for the probability of new, primary malignant tumors appearing.

PERIHILAR CHOLANGIOCARCINOMA - KLATSKIN TUMOR

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Background: Cholangiocarcinoma is a rare type of malignant tumor of the epithelial cells that form the bile ducts. Depending on the location of the affected bile ducts, cholangiocarcinoma can be intrahepatic or extrahepatic: perihilar (Klatskin tumor) and distal. Most often, the tumor is diagnosed after it has spread, and the prognosis is reserved. The aim of this case report is to provide an overview of the management of a perihilar cholangiocarcinoma case.

Case report: We present the case of a 70 years old man, with medical history of stage 2 COPD, bladder neoplasm with radical cystectomy and ureterostomy, admitted to the Gastroenterology Department for sclero-tegumentary jaundice, generalized pruritus, unintentional weight loss and pain in the right hypochondrium. A clinical examination revealed yellowish skin, paleness, and hepatomegaly of stiff consistency. The abdominal CT scan revealed dilated intrahepatic bile ducts. MRCP demonstrated marked dilation of the intrahepatic bile ducts, mostly perihilar, followed by a 4 cm section of amputation of the common hepatic duct due to circumferential parietal thickening. Downstream of the amputation zone, the common hepatic duct recalibrates (3-4 mm) to the level of the duodenal ampulla. The described appearance raises suspicion of type IV perihilar cholangiocarcinoma (Klatskin tumor). ERCP was performed, with the mounting of a 12 cm stent. Postoperatively, bilirubin decreased and the clinical evolution was favorable, with progressive improvement of jaundice and sclero-tegumentary pruritus. Soon after, the patient developed acute pancreatitis, which was successfully treated. Pathology confirmed the diagnosis of cholangiocarcinoma. The patient will undergo surgical examination to determine whether partial or complete excision of the tumor is possible.

Conclusions: We chose to present this case, of a patient with an interesting and frequently late diagnosed pathology, of the bile ducts. This is in order to emphasize the importance of early diagnosis and treatment in improving the quality of life of oncological patients.

Lynch Syndrome or Why it is sometimes better not to resemble your family

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Introduction: Lynch syndrome, also known as hereditary non-polyposis colorectal cancer syndrome (HNPCC) is the most common cause of inherited colorectal neoplasia. This condition is caused by genetic mutations in the mismatch repair genes: MLH1, MSH2, PMS2 and EPCAM. Depending on the mutated gene there is a distinct risk of developing another type of primary extracolonic cancer.

Case report: A 44-year-old woman, otherwise healthy until diagnosis, was admitted to the Oncology department for an ulcerative lesion discovered during colonoscopy. Histopathological examination and immunohistochemistry indicate high microsatellite instability (MSI-H) colorectal adenocarcinoma. Taking into consideration her young age and the fact that her mother was diagnosed with endometrial cancer , her uncle with colorectal cancer and she also has twelve children, the geneticist advised the patient to undertake an extended hereditary cancer panel testing. The result of the test was positive for PMS2 gene mutation, heterozygote, variant of uncertain significance (VUS). The final diagnosis is colon MSI-H adenocarcinoma PMS2 positive (Lynch syndrome). As this type of cancer is known to be unresponsive to 5-fluorouracil, the suggested treatment is immunotherapy. There are some recommendations the patient should consider: genetic counseling for her large family, prophylaxis of the other neoplasms linked to Lynch syndrome and psychotherapy.

Conclusions: The case, an autosomal dominant inherited condition, shows the great importance of the screening programmes, as this syndrome accounts for 2% to 4% of all colorectal cancer cases. Knowing that her mother, and her uncle also, were diagnosed with cancer, the patient should have undergone colonoscopy much earlier (the exact moment depends on the age her relatives discovered their cancer). The patient (PMS2 positive) has a lower risk for a second cancer (20-60%), compared to other variants. Although, there is a slightly lower risk, the patient has a significant number of children, which have a considerable chance of inheriting the mutated gene.

Non-surgical Case Report III

Scientific Committee

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Coordinator

Dominika Galli

Session Partner

Medcases

Case series of autoimmune encephalitis with anti-LGI-1 antibodies - importance of psychiatric manifestation.

Authors: Dominika Świerczewska, Karolina Pendrasik, Michalina Wiwatowska-Ligęza
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Tutor: Bartosz Bielecki MD, PhD

Background: Autoimmune encephalitis (AE) with anti-leucine-rich glioma inactivated-1 (LGI-1) antibodies is rare and not a fully known group of inflammatory diseases of the central nervous system. LGI-1 is a neural protein associated with Voltage Gated Potassium Channel (VGKC) and it plays an extremely important role in synaptic transmission. The deficiencies of this protein can lead to epileptic seizures and psychiatric symptoms, including cognitive deterioration.

Case reports:
Case 1: A 73-year-old man with rapidly progressive cognitive impairment, psychiatric symptoms and epilepsy. In addition, he suffered from persistent hyponatremia. The serological examination of the cerebrospinal fluid (CSF) and serum revealed anti - LGI-1 antibodies. Magnetic resonance imaging (MRI) showed subtle signal abnormalities in the insula in both brain hemispheres. The same lesion demonstrated restricted diffusion with low signal intensity on an ADC map. He was treated with sodium valproate and steroids.

Case 2: A 68-year-old woman with rapidly progressive dementia, positive psychiatric symptoms and epilepsy. Laboratory blood tests showed hyponatremia. Both the CSF and serum serological tests revealed anti- LGI-1 antibodies. Brain MRI revealed restricted diffusion in subcortical white matter with low signal intensity on ADC map. EEG showed diffuse slow theta waves without seizure activity. She was treated with steroids and plasmapheresis as well as anticonvulsants and antipsychotics.

Case 3: A 61-year-old man with progressive cognitive impairment and epileptic attack. Laboratory blood tests showed hyponatremia. MRI revealed hyperintensity of the medial temporal lobe on FLAIR. CSF analysis revealed the presence of anti-LGI-1 antibodies. EEG showed generalized seizure activity. Oncological screening was performed and revealed gastrointestinal stromal tumor (GIST).

Conclusions: Cognitive decline with productive symptoms may occur and dominate in the AE, consequently it can be misdiagnosed as a psychiatric disorder. Typical features of epilepsy are faciobrachial dystonic seizures (FBDS). Oncological screening is crucial due to common paraneoplastic syndromes. AEs respond well to immunotherapy. The better recognition will be principal for the early diagnosis, treatment and further studies.

A very early-onset familial Alzheimer's disease with PSEN1 mutation – a comparative case report of two Polish families

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Introduction: Early-onset familial Alzheimer's disease (EOFAD) is characterized by an occurrence in individuals younger than 65 years old with a positive family history of dementia. Here, we describe two families in which some members across different generations were affected by EOFAD with first symptoms in their 20s or 30s.

Case report:
First Family:
A 30-year old woman (J.C.), shortly after giving birth to her first child, presented with memory and concentration problems. Her mother and her mother's sister, died at the ages of 35 and 37 years old, respectively, due to AD confirmed by genetic testing and post-mortem examination which revealed a diffuse atrophy of cerebral hemispheres and senile plaques in the cortex. J.C.'s genetic tests revealed a P117L mutation in the PSEN1 gene, the same as was detected in her mother and aunt. Currently, at the age of 37 years old, she is bedridden, without verbal contact, and experiences myoclonuses. Overall, among 9 of her siblings and cousins, 3 are cognitively healthy and 6 experienced dementia symptoms, of whom 4 have already passed away due to this condition.
Second Family:
A 33-year old man (M.L.) started having cognitive problems, such as impaired concentration and forgetting words, due to which he lost his job. His mother died at the age of 40 years old due to AD which onset occurred 4 years prior. M.L.'s genetic tests revealed a P117R mutation in the PSEN1 gene, the same as was detected in his mother. Currently, at the age of 35 years old, his memory problems, agraphia and amnestic aphasia are aggravated and he experiences myoclonuses.

Conclusions: It is important to report cases of EOFAD, with a particular emphasis on genetic pedigree of particular families, onset symptoms and medical management. This would raise awareness on this condition among medical professionals and affected families.

The multidisciplinary approach and systemic treatment of epithelial ovarian cancer: a case report

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Background: Epithelial carcinoma is the most common type of ovarian cancer, with high-grade serous carcinoma (HGSC) as the most common subtype. The risk of ovarian cancer increases with age, while mutations in the BRCA genes increase the risk by 50%.
Treatment usually involves surgery and chemotherapy, consisting of platinum-based therapy and targeted therapy: anti-vascular endothelial growth factor therapy and poly ADP ribose polymerase (PARP) inhibitors.

Case report: We report a case of a 60-year-old female, who presented in October 2018 to the hospital for the classical triad of ovarian cancer symptoms: abdominal swelling, weight loss, and asthenia. The imagistic investigations showed a voluminous pelvic tumor mass, intraperitoneal metastases, and ascites. In December 2018, she was diagnosed with HGSC FIGO IIIC after complex ovarian surgery. The immunohistochemistry demonstrated the presence of hormonal receptors, with a proliferation index of 60%. Molecular tests showed the presence of BRCA1 mutation.
The patient started treatment in February 2019 with Bevacizumab/Paclitaxel/Carboplatin for 8 cycles, followed by Bevacizumab monotherapy, discontinued due to intestinal obstruction. After biochemical progression, chemotherapy was restarted, with Olaparib maintenance for almost 2 years. Several adverse effects during Olaparib treatment led to withholding or dose reduction. The rise of CA 125 determined the change of the treatment line with pegylated liposomal doxorubicin, then paclitaxel/gemcitabine. Imagistic progression through local recurrence and liver metastases was observed in August 2022. Since then, the patient has undergone hormonal treatment with Megestrol and chemotherapy (cyclophosphamide, etoposide), well tolerated.

Conclusions: The purpose of this case presentation is to emphasize the importance of sequencing treatments in ovarian cancer to achieve the highest progression-free survivals on each line and maximize overall survival. The particularities of this case may be discussed through the perspective of the acquired resistance to platinum and PARP inhibitors, the multiple intestinal obstructions, mainly biochemical progressions, and the potential for long-term survival.

Adult-type Ovarian Granulosa Cell Tumor in a young patient with multiple primary cancers

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Tutor: Mikołaj Zaborowski MD, PhD

Background: Ovarian Granulosa Cell Tumor (GCT) is a neoplasm originating from the sex cord-stromal cells of the ovary and represents about 2% of all ovarian tumors. This tumor is classified into juvenile GCT and adult GCT, which differ in their clinical course and prognosis. Adult-type granuloma is a hormonally active neoplasm characteristic of the peri-menopausal age. For a long time, the course is asymptomatic, and as a result, these tumors reach considerable size. Gastrointestinal symptoms, as well as, both secondary amenorrhea and metrorrhagia, are considered characteristic at a later stage of illness.

Case report: We present the case of a 37-year-old woman admitted to the Department of Gynecologic Oncology for a secondary absence of menstruation for two years. Her medical history includes acute lymphoblastic leukemia in childhood, papillary thyroid carcinoma, and a left adrenalectomy for a hormonally active adrenal adenoma. The patient additionally suffers from diabetes and obesity. Ultrasound examination revealed a polycystic cystic tumor with solid lesions. The patient was qualified for left ovariectomy. A median incision was performed, and intraoperatively a cystic tumor filling the minor pelvis, with an irregular surface and dimensions of 20 cm x 15 cm, was visualized. Histopathological examination confirmed the diagnosis of an adult-type GCT. The patient was scheduled for a total abdominal hysterectomy and bilateral salpingo-oophorectomy the following month.

Conclusions: The mainstay of treatment for adult-type ovarian granulosa cell tumor is radical surgery. The prognosis in low-grade tumors is good. So far, no risk factors for GCT have been classified. In our patient, the iatrogenic second primary malignancies as well as the presence of genetic mutations predisposing to tumorigenesis should be taken into account. Detection of multiple primary malignancies requires high alertness among both cancer patients and clinicians. Patients with a significant history of cancer must undergo systematic prophylactic screening.

Pregnancy complicated with placental abruption and premature birth in a patient with essential thrombocythemia - a case report.

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Introduction: Essential thrombocythemia (ET) is a myeloproliferative disorder of unknown etiology characterized by megakaryocytes overproduction in the bone marrow. That leads to an increased number of thrombocytes which may be a cause of thromboembolic disorders and more frequent miscarriages in the first trimester of pregnancy.

Case report: The patient is a 39-year-old female diagnosed with ET presenting a history of a miscarriage in the first trimester (8th week) in 2022 and thrombocythemia for approximately 3 years, reaching a maximum number of 519G/l. The patient had a positive result of V617F JAK2 gene mutation (NM_004972.3:c.1849G>T). She was treated with low-molecular-weight heparin (LMWH) and aspirin. Due to high blood pressure, reaching 170/110mmHg methyldopa was administered. During a routine follow-up in the hematology clinic, the woman mentioned pain in her abdomen and presented tiredness. She was transferred to Gynecology and Obstetrics Hospital. On the same day, the patient was diagnosed with placental abruption and the baby was delivered via cesarean section in the 29(+4) week of pregnancy.

Conclusions: Pregnancy in the context of myeloproliferative neoplasms (MPN) poses unique fetal and maternal challenges, with the first trimester fetal loss as the major complication.
Our case depicts a successful pregnancy in a patient with ET, in whom, despite appropriate treatment, complications still occurred.

Thrombosis of dural venous sinuses in the course of Mixed Phenotype Acute Leukemia treatment – a case report.

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Background: Mixed phenotype acute leukemia (MPAL) is characterised by the features of both myeloid and lymphoid cell lines. Overall incidence is about 2-5% of all acute leukemias. The diagnosis is unfavourable. Genetic categories of MPAL include KMT2A rearrangement or BCR-ABL fusion positive cases. Clinical features are similar as in other acute leukemias, although the occurrence of hiperleukocytosis is more visible due to higher extramedullary involvement. Among treatment methods, ALL-like or combined AML/ALL schemes are recommended. Allogenic HCT could be an option for patients with complete remission (CR).

Case report: A 36-year-old woman was admitted to the Department of Haematology and Bone Marrow Transplantation in Poznań in October 2022 due to enlarged lymph nodes, omalgia, bruises all over the body and splenomegaly. Performed examinations stated the diagnosis of MPAL with KMT2A rearrangement. The treatment was started according to PALG-ALL-7 regimen which consisted of chemotherapeuticals such as: daunorubicine, cytarabinum, pegasparagasum, etoposidum, methotrexatum and cyclophosphamidum. During the induction therapy, except of the common complications of chemotherapy, the patient reported numbness of limbs and dizziness. Radiological tests were performed and the woman was diagnosed with thrombosis of dural venous sinuses of the brain (superior saggital sinus and a proximal part of left transverse sinus) as a complication of haematological treatment. Anticoagulant treatment with enoxaparinum and substitution of antithrombin III were effectively implemented and the symptoms subsided compeletely. The patient was qualified for consolidation and was discharged in general good condition.

Conclusions: Apart from the effectiveness of chemotherapeutics, it is essential to pay attention to potential side effects. Some of them are unpredictable. The thrombosis of venous sinuses is life-threatening for patients and requires immediate treatment. Daily medical examination and monitoring of vital signs are crucial elements of therapy during the oncological treatment, helping to prevent poor outcomes.

Veno-occlusive disease/Sinusoidal obstruction syndrome as a life-threatening complication after stem cell transplantation – a case report

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Introduction: Veno-occlusive disease or sinusoidal obstruction syndrome (VOD/SOS) is a disorder following bone marrow transplantation, usually within three weeks post-transplant. Chemotherapeutic agents used during the whole treatment process lead to hepatic vessels' endothelium dysfunction, causing inflammation and microthromboses, progressively narrowing the venous lumen with its further consequences. Though the clinical picture usually contains hyperbilirubinemia, hepatomegaly and weight gain or ascites, the final diagnosis is unobvious and difficult to establish due to the condition's rarity and unspecific symptoms.

Case report: A 46-years-old woman was admitted to the Department of Hematology and Bone Marrow Transplantation, diagnosed with multiple myeloma in 2021. She was treated in the first line with VTD-regimen achieving Very-Good-Partial-Response – VGPR, followed by autologous stem-cell transplantation. Follow-up investigation revealed progression of the disease and Carflizomib with dexamethasone regimen was introduced. Subsequently progression to plasma cell leukaemia with unfavourable cytogentic risk group (del17p(+);t(4,14)(+);amp1q(+)) has been diagnosed. V-DTPACE regimens were used, followed by allogeneic stem cell transplantation from match sibling donor. In the post-transplant period during pancytopenia, the deterioration of general condition occurred leading to multiple organ dysfunction syndrome. Reduced ejection fraction, increasing heart insufficiency, renal insufficiency, followed by liver failure - manifested with increased bilirubin and aminotransferases' levels, prompted the admission to Intensive Care Unit. Despite the symptom-directed therapy was continued, hyperbilirubinemia and ascites progressed. The VOD/SOS was diagnosed according to EBMT criteria and defibrotide treatment was implemented. After fourteen days of treatment an improvement of general condition was observed and the patient was discharged from ICU. The therapy was continued on the Hematology ward. In the evaluation three months after transplant complete remission with positive MRD (minimal residual disease) was confirmed.

Conclusions: VOD/SOS should be considered during differential diagnosis in post-transplant patients to improve early detection of the disease. Early introduction of directed therapy with defibrotide may be crucial in this life-threatening complication.

Transformation of Hodgkin lymphoma (HL) into primary mediastinal B-cell lymphoma (PMBCL)

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Background: Hodgkin Lymphoma (HL) has two main subtypes – classic and nodular lymphocyte predominant Hodgkin's lymphoma (NLPHL). Although transformation to a non-Hodgkin lymphoma is rare, most cases concern NLPHL. Unfortunately, the epidemiological data of classic HL transformation is scarce and limited to singular reported literature cases.

Case report: We report a clinical case of a 42-year-old woman diagnosed with a 79x71x97 mm pathologic mass in the anterior mediastinum in computed tomography (CT) two years ago. A performed biopsy followed by histopathological examination confirmed the presence of grade 2 nodular sclerosis HL (depleted lymphocytes subtype), stage II bulky disease. At the time of the diagnosis patient occurred vena cava superior symptoms and jugular vein widening. The treatment started with an ABVD chemotherapy regimen. Following 2 cycles of ABVD, patient experienced relief of clinical symptoms. Follow-up PET-CT revealed no metabolic response. She was switched to an BEACOPP-esc, also with no response – the treatment was continued using a second-line DHAP regimen.Further deterioration was observed resulting from the progression of the tumor mass in the mediastinum - tracheal stenosis with dyspnoea, vocal cord paralysis and thyroid infiltration.. The patient was qualified for brentuximab-vedotin therapeutic programme with no response after 3 cycles. Salvage radiotherapy, tracheal stenting and nivolumab were used. Another cervical lymph node biopsy and a re-analysis of the old material were performed to redefine the diagnosis. The obtained results showed the presence of PMBCL. The patient also started rituximab treatment. After 24 weeks dynamic regression of disease. Patient was qualified to allo-HSCT, after which regression persists.

Conclusions: Transformation of classic Hodgkin lymphoma into primary mediastinal B-cell one is rare but possible. It is essential to perform another biopsy if the treatment response differs from the predicted one. In our case, a lack of response occurred due to early HL transformation to PMBCL.

Lymphomas involving breasts or breast cancer? Case series

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Background: Breast lymphoma is a rare disease accounting for 0.4% of all breast malignancies, less than 1% of non-Hodgkin's lymphomas (NHL). Breast involvement may be isolated or may be a part of disseminated disease. The first before mentioned cases are called primary breast lymphomas (PBL). The clinical presentation of PBLs is similar to the carcinoma, which may be the reason of diagnostic pitfalls. PBL treatment include immunochemotherapy / radiotherapy. Moreover, in contrary to the carcinomas, surgical treatment is not recommended because it offers no benefit as regards survival or recurrence risk. Herein, we present a series of 3 patients treated in Department of Hematology in Poznań: 2 with PBLs and one presenting with breast lymphoma as a part of systemic disease. All patients were diagnosed after excisional biopsy followed by histopathological examination

Case report: Patient 1- 46 years old woman with 7x4,5 cm tumor in the upper- external quadrant of the left breast. Histopathology revealed diffuse large B cell lymphoma. She received 6 courses of CHOP-R immunochemotherapy combined with intrathecal Methotrexate as a primary prophylaxis of CNS involvement. She remains in complete remision after the treatment completion.
Patient 2- 43 years old woman with multiple involvements isolated to the breast. Histopathology confirmed marginal zone lymphoma. The patient received 6 courses of CHOP-R immunochemotherapy and underwent bilateral radiotherapy. According to the follow-up she remains in complete remission.
Patient 3- 18 years- old woman with rapidly increasing bilateral breasts tumors, of a Burkitt lymphoma histopathology. Moreover, multiple involvements of other extranodal sites like CNS, liver was revealed. The patient was refractory to the CODOX-M-R/ IVAC-R therapy and ultimately died due to the brain invagination.

Conclusion: NHL may involve all organs. Excisional biopsy followed by histopathology with broad panel of immunohistochemistry is crucial for is crucial for proper differential diagnosis and consecutive treatment.

Biological treatment of psoriasis in a a patient with chronic lymphocytic leukemia

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Background: Psoriasis is a chronic inflammatory disease that is characterized by specific skin lesions. Treatment of this condition remains a therapeutic challenge. The choice of method depends on many factors, including the form of the disease and its severity, the patient's age and comorbidities. Indications for the use of biological drugs are, inter alia, severe psoriasis, inefficiency of previously used systemic treatment, and psoriatic arthritis. Monoclonal antibodies, one of the biological drugs, include, among others, ustekinumab, which targets IL-12/23, and guselkumab, which targets IL-23. Typically, contraindications to biological treatment include active or latent tuberculosis, clinically significant infections, and a current or history of cancer in the past 5 years. Chronic lymphocytic leukemia is in most cases an incurable disease. A new treatment option for CLL is the combination of venetoclax with rituximab. By presenting the case of our patient, we intend to show that in some cases biological treatment may be altered because of the patient's cancerous disease.

Case Report: We present a case of a 58 - year old patient admitted to the Department of Dermatology, Allergology and Venereology MUG, treated with biological drugs due to severe plaque psoriasis and psoriatic arthritis. The treatment has been modified because of the patient's developed chronic lymphocytic leukemia. Initially, the treatment of psoriasis was based on the drug ustekinumab. Due to the diagnosis of B-CLL, this medicine was changed to guselkumab. In addition, after the diagnosis of hematological malignancy, the patient also received treatment with rituximab and venetoclax.

Conclusions: In patients with severe psoriasis diagnosed with neoplasm and treated with biologics, it is worth considering changing the treatment, but it is not always necessary. In the case of a patient treated with ustekinumab, switching to guselkumab enabled the patient to remain in remission of psoriasis, while obtaining a treatment for B-CLL.

A 66-year-old man with severe diabetic foot ulcer with osteomyelitis and Charcot foot

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Abstract

Diabetes mellitus is a disease that affects millions around the globe. It also comes with a major complication, diabetic foot ulcers. Lower extremities having little to no vascularity in diabetic people leads to wounds that are unable to heal on their own. These wounds later become infected and cause osteomyelitis, a condition in which the infection in soft tissues of the lower extremities spread to the bones of the foot. Charcot arthropathy is one of the more serious foot issues that can arise from diabetic neuropathy. The soft tissues, joints, and bones of the foot or ankle are all impacted by Charcot. The joints in the foot or ankle might dislocate when the bones deteriorate and become brittle. Diabetes patients who have their soft tissues and bones infected might even have to get their extremities amputated if not managed right on time.

We describe the case of a 66-year-old man with type 1 diabetes mellitus who presented to the emergency department with increasing pain in the right foot. There was a hyperemic discharge coming out of his wound which increased gradually over time. The patient's been using Lantus and Novorapid and his blood glucose measurement at the time of admission was 466.

Our patient said that he was hospitalized in the intensive care unit due to diabetic ketoacidosis 20 days before he applied to our emergency department, and his wounds, discharge, pain and redness increased after this incident. To our knowledge, there has been no evidence presented, regarding the effect of diabetic ketoacidosis on the exacerbation of diabetic foot ulcer wounds and infection.

Brachytherapy as the organ-sparing treatment for nasal cavity carcinoma

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Background: Squamous cell carcinoma (SCC) is the most common histological subtype of all tumors within the nose and paranasal sinuses, accounting for over 50% of cases. The most common location of these tumors is the nasal cavity itself. Surgery is still the first line of treatment for nasal cancer in many cancer centers. Unfortunately, it is often associated with a large cosmetic and functional defect, which is often unacceptable for patients. For many of them, interventional radiotherapy (brachytherapy) may be a method that allows for full recovery and preservation of nasal architecture.

Case Report: We report a 39-year-old man who was admitted to the Brachytherapy Department due to a biopsy-confirmed SCC of the right nasal cavity. CT scan revealed a solid tumor with maximum dimensions of 23x21x31 mm covering the anterior portion of the nasal septum and nasal roof mucosa. The patient was qualified for high-dose-rate interstitial brachytherapy. During general anesthesia, 13 applicators were inserted into the tumor and surrounding tissues. After planning the dose distribution, 50.4 Gy per CTV (Clinical Target Volume) was administered in 10 days. The treatment was conducted successfully without any complications. During the first follow-up visit, remission of tumor was reported as well as acute radiation toxicity in the form of epitheliolysis during healing with fibrinization. The last craniofacial MR examination performed 29 months after treatment showed no loco-regional recurrence. The fibroscopy examination in the last reported follow-up visit confirmed complete remission persisting 35 months post brachytherapy.

Conclusions: In presented case, the treatment performed with the use of interventional radiotherapy allowed for complete remission, whilst preserving the nose, which is immensely important from the viewpoint of function and cosmetics.

A Case for the Future: Understanding the Causal Relationship of Neurodegenerative Brain Pathologies and the Bioprotective effects of Lithium treatment

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Background: With greater understanding of the neurodegenerative pathology of Long-Term Depression (LTD) synaptic plasticity, emerging and converging incidence of neurodegenerative diseases among chronically ill patients are being identified. Conditions such a long-term Bipolar Disorder have not only co-incidence but causative properties in the development of other neurodegenerative brain disorders.

Case Report: We present the case of a 61 year old man suffering from persistent bouts of depression, hypomania, and mania diagnosed with Bipolar Depression Type 1 at 25 years old. The patient has been on long-term management through various pharmacotherapies–including Lithium, Valproic Acid, Olanzapine, Quetiapine, etc.–displayed over the course of his current fourth month stay in hospital and also his many previous hospital stays. He also self-reports a past history of Electroconvulsive Therapy (ECT) during initial or subsequent hospitalizations with Bipolar mania abroad whilst living in Germany during adolescence and young adulthood.
Even with these considerations, his case is significant as we can see a clear diagnosis of Bipolar Type 1 in a duration of longer than 10 years, genetic predisposition with maternal and sibling psychopathologies also present, and co-incidence of Parkinson's Disease. Cases like this can help establish a clear linkage between atrophic anatomical changes seen in CT imaging of his brain: dilation of the ventricle system and enlargement of the fluid spaces over cerebral cortex–and the onset of his Parksonian dementia.

Conclusion: The frequency growing and intensity of his manic states and depressive episode switches is indicative of his worsening condition, likely due to the co-diagnosis of Parkinson's disease dementia. His condition seems to be deteriorating to a new diagnosis of Rapid Cycling Bipolar. It is also important to determine clear timelines of the atrophic changes to identify what role the bioprotective effects of the GSK3β inhibition of lithium treatment has played in this patient.

Treatment resistant Mycosis Fungoides

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Background: Mycosis Fungoides (MF) is the most common type of cutaneous T-cell lymphoma. At the early stages it should be treated topically to control skin lesions. Aggressive therapy is used in patients with relapsed or refractory disease. Current treatment options are wide, however, have high relapse rates and do not give long remission periods. It is suggested in the literature, that pregnancy might worsen the course of MF.

Case report: Female patient was referred to the Department of Lymphoproliferative Disease with a history of persistent erythematous exfoliating skin lesions appearing on the trunk, upper and lower limbs. She was previously treated in the dermatology department with topical corticosteroids and pimecrolimus. During admission, except from the above mentioned plaques, a tumorous lesion was present on the left thigh. Histopathological examination and immunofixation confirmed the diagnosis of MF (CD3+, CD4+, CD7+, CD30-). The patient was 18 weeks pregnant at that time. Initially, she was given oral steroids. Further treatment was planned after the delivery.
Three months later, skin lesions progressed and it was decided to give the first course of chemotherapy before delivery. The patient was qualified for CHOP regimen with lower doses. After the first course of treatment skin lesions regressed. The patient was in good condition. Three weeks later, she delivered the baby by cesarean section. After 6 cycles of CHOP regimen skin condition did not improve, thus the chemotherapy was changed to gemcitabine. During the treatment, patient complained of dermal pain. Skin lesions partially progressed. The treatment was changed to Brentuximab, but after four months there was no response. The patient was given chlorambucil. Interferon alpha is planned for further treatment.

Conclusions: Although there are many potential treatment options for MF, the disease might remain resistant. Special attention should be paid to pregnant women, as pregnancy may worsen the clinical presentation of MF.

Coexistence of fetal congenital cystic adenomatoid malformation and pulmonary sequestration in a pregnant patient with pregestational diabetes mellitus.

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Background: Pregestational diabestes mellitus (PGDM) is a well-known risk factor for congenital abnormalities, in particular heart and neural tube defects. Women with PGDM, as compared to the healthy population, have 2- to 9-fold higher risk for having offspring with birth defects. Congenital thoracic malformations (CTM), such as pulmonary sequestration and congenital cystic adenomatoid malformation (CCAM), are not a typical form of diabetic embryopathy. Therapeutic options in the above-mentioned coexistence depend on CCAM Volume Ratio (CVR) index.

Case Report: A 26 year-old women (gravida 2, para 2) with PGDM type 1 first presented in the Clinic at 7+2/7 weeks of gestation. During anomaly scan at 20+3/7 weeks, mixed type of CCAM located in the left lung and causing mediastinal shift to the right side was detected. Dimensions of the lesion were 48x22x25mm and the initial CVR index was 0.69. The lesion contained several cysts with the largest diameter of 6.0 mm and a single feeding vessel arising from the descending aorta was visible. As the fetus did not present with edema, CVR was low and no large cysts were detected, conservative therapy was introduced. The patient was monitored on a weekly basis and at 25 + 4/7 weeks of gestation steroids were administered. During follow-up examinations, regression of cysts was observed, CVR ranged from 0.30 to 0.61 and at 32+2/7 weeks of pregnancy no lesions could be visualized. The pregnancy course was uneventful until 35 + 0/7 weeks when the patient developed severe preeclampsia with thrombocytopenia, impaired vision and anuria. Emergency Cesarean section was performed and a female newborn weighing 3675g in a moderately good condition was delivered.

Conclusions: Although CTM are not typical for pregnant patients with PGDM, they should be always taken into consideration during ultrasound examination. A proper qualification for invasive or conservative therapy is essential for fetal outcomes.

Re-treatment with PARP inhibitor in patients with recurrent epithelial ovarian cancer - case report

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Background: PARP inhibitors have transformed the treatment landscape in front-line and recurrent high-grade serous ovarian cancer. They are used in the maintenance therapy of ovarian cancer, following response to platinum-based treatment. Prospective data from the OReO/ENGOT OV-38 trial showed that patients may benefit from a re-treatment with PARPi after response to platinum-based chemotherapy.

Case Report: A 43 year old female patient was complaining of general weakness, menorrhea and pain in the lower back radiating to the leg. Her aunt was diagnosed with ovarian cancer at 43 years old. An ultrasound showed a vascularized solid-cystic lesion, 80 mm. She was diagnosed with ovarian cancer FIGO Ic grade 3 and underwent total hysterectomy with adnexectomy, appendectomy and subtotal omentectomy followed by 6 cycles of carboplatin and paclitaxel. After 9 years, the patient had a recurrence and she received 6 cycles of chemotherapy and qualified for Olaparib treatment 400 mg twice per day as a part of clinical trial. The treatment was stopped two years later after an enlarged retroperitoneal lymph node on the right side was discovered. The patient received 3 cycles of chemotherapy and pelvis radiotherapy. After two months she was diagnosed with invasive breast carcinoma NST and underwent Madden Mastectomy and treatment with Letrozol. She received five cycles of chemotherapy. The patient had a relapse of ovarian cancer. An exploratory laparotomy showed infiltration of the peritoneum. Four cycles of chemotherapy were administered. The genetic tests showed germline RAD51C heterozygous and somatic TP53 in/del exon 3 mutation. Due to deficit in homologous recombination, she was qualified for retreatment with PARP inhibitor, Niraparib. After receiving Niraparib, she had a drop in platelets and hemoglobin. The treatment was discontinued because of a recurrence after a month. However, the patient responded well to retreatment with carboplatin.

Conclusion: This case report shows concurrent breast cancer and epithelial ovarian cancer in patient with germline mutation in RAD51C gene. The patient received unsuccessful re-treatment with PARPi, however responded to repeated carboplatin therapy.

Infective endocarditis complicated by septic pulmonary embolism, severe pneumonia and severe tricuspid regurgitation in a drug-addicted patient.

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Tutor: Katarzyna Kurnicka MD, PhD

Background: Right heart infective endocarditis (IE) most commonly affects intravenous drug addicts, but can also occur in patients with implanted electrodes, central line insertion or HIV infection. It accounts for about 5-10% of cases of IE. It most often involves the tricuspid valve.

Case Report: We present a 37-year-old male, addicted to intravenous heroin, benzodiazepines and alcohol, on replacement methadone therapy, who was admitted with severe pneumonia and significantly elevated inflammatory parameters. Blood cultures revealed *Streptococcus* infection. Initial therapy with meropenem and vancomycin had transiently good effect, however the patient's condition was quite severe, with tachycardia, hypotension and low saturation, 88%. Angio-CT showed embolic material in the lobar and segmental arteries of the left lung and anticoagulant treatment was instituted.Transthoracic echocardiography revealed a large abnormal echo attached to the tricuspid valve (36 x 17mm in size) corresponding to a large vegetation. Despite therapy, in control angio-CT a progression of pulmonary embolism, and right lung organizing abscess were found. After more than 2 months of treatment lung image improved significantly, but unfortunately control echocardiography showed serious tricuspid valve destruction and severe tricuspid regurgitation (TR). After hospitalization for 70 days, the patient was discharged in optimal clinical status, and urgently referred for cardiac surgery consultation. Due to severe TR and the risk of right ventricle dysfunction his further prognosis is uncertain.

Conclusion: Septic pulmonary embolism is a consequence of tricuspid valve IE requiring long-term antibiotic therapy and anticoagulant treatment. Surgical treatment of severe TR should be considered in cases of right heart failure that responds poorly to diuretic therapy or large vegetations after episodes of recurrent pulmonary embolism. The decision to implant an artificial valve in drug addicts is often difficult because of their frequent tendency to relapse, and the risk of recurrent IE is high.

A fetal pathology recurring for the second time in a pregnant woman – bilateral renal agenesis. Case report.

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Tutor: Zita Strelcovienė MD

Backgroud: Bilateral renal agenesis is a rare disorder in which both kidneys in the fetus fail to develop. In this pathology, fetus does not produce urine, therefore, anhydramnios is formed that leads to secondary lung hypoplasia – a condition incompatible with life. The frequency of this pathology in the world is 1 in 5000 pregnancies.

Case report: A 35-year-old woman presented to Lithuanian University of Health Sciences Hospital, Kaunas clinics for screening of chromosomal abnormalities in the first trimester of pregnancy. Indication – maternal age, fetal abnormalities in the previous pregnancy and suspected fetal dysplasia (nonvisible fetal bladder, hypoechoic nasal bone). The patient has a history of 5 pregnancies, one of which was terminated at 21 weeks of pregnancy due to the bilateral renal agenesis of the fetus. A combined test did not increased risk for trisomies. A repeated ultrasound examinations at 15 and 18 weeks confirm the diagnosis of bilateral renal agenesis - urinary bladder, kidneys and their blood vessels are not visible, prominent oligohydroamnios. The patient was consulted by a geneticist and underwent amniocentesis. The fetal DNA showed a normal karyotype (46, XY). A multidisciplinary team decided to perform a medical termination of pregnancy. Indication - fetal pathology incompatible with life. Histopathological examination of the fetus confirmed the diagnosis of fetal bilateral renal agenesis. The patient and her family members were recommended to undergo abdominal ultrasonography to evaluate the renal anatomy and to consult a geneticist.

Conclusions: This case presents a fetal pathology recurring for the second time in a pregnant woman – bilateral renal agenesis, which is a rare, incompatible with life malformation of the fetus. Absent kidneys, renal vessels, urinary bladder and prominent oligohydroamnios/anhydroamnios are the ultrasound features of bilateral renal agenesis.

Pregnancy with Paroxysmal Nocturnal Hemoglobinuria: A case report

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Tutor: Goda Jakovlevaite MD, Gitana Ramoniene PhD

Background: Paroxysmal nocturnal hemoglobinuria (PNH) is a rare, acquired disease, arising from the mutation of clonal hematopoietic stem cells, with an estimated incidence of 1 to 5 cases per million individuals. This disease is caused by mutations in hematopoietic stem cells leading to pancytopenia and a predisposition for thromboembolic events or excessive bleeding. The condition is diagnosed based on clinical findings and laboratory tests. In pregnancy, these manifestations can be amplified, leading to increased neonatal and maternal morbidity and mortality.

Case report: The reported case is a 29-year-old woman, 33 weeks pregnant with her second child. Patient stated that she had anemia as long as she can remember, but no additional tests were done. During her first pregnancy, a paroxysmal nocturnal hemoglobinuria clone was detected in flow cytometry. Because of deteriorating cytopenia, she was induced at 33 weeks. A healthy baby was born, no complications during the delivery. Before the second pregnancy she hadn't visited a specialist for planning the care and was admitted to the department of obstetrics for deteriorating thrombocytopenia and anemia. She was induced at 33 weeks and 3 days. Labor was successful, no complications recorded, amount of blood lost during delivery was in normal ranges.

Conclusions: This case report shows two successful pregnancies with PNH, no Eculizumab treatment and no treatment between the two pregnancies. It emphasises the importance of evaluating blood test results in PNH to make decisions in planning of the delivery. It is important to continue to share experiences with cases of pregnant patients with PNH to establish guidelines and learn from one another.

Managing a Rare Breast Cancer in a Male Patient: A Case Report

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Tutor: Jurgita Gudaitiene PhD

Background: Male breast tumour is a rare pathology, fewer than 1% of all breast malignancies**.** Invasive ductal carcinoma is the most common histological type of breast tumor, other rare variants such as ductal carcinoma in situ are also possible.

Case report: In 2014, the patient underwent surgery for dermatofibrosarcoma of the lumbar region, and in 2015, enlarged groin lymph nodes with reactive changes were removed, histologically- infiltrative ductal carcinoma, G2; ER(+), PR(+), HER2(0). In 2018, he underwent a radical axillary lymph node excision, unilateral simple mastectomy, and axillary sentinel lymph node biopsy, during which infiltrative ductal carcinoma of the right breast with a component of high-grade nuclear polymorphism (DIN3) ductal carcinoma in situ was found. Adjuvant chemotherapy, radiation therapy, and hormonal therapy with tamoxifen were used. In 2021, a hardening appeared in the right armpit. The patient underwent a breast MRI, which revealed a suspicious mass in the lower part of the right axilla, histologically- infiltrative ductal carcinoma, G2; ER(+), PR(+), HER2(-), Ki67>50%. Further testing found metastases of high metabolic activity in multiple areas: upper lobe of the left lung, mediastinal lymph nodes, liver, left adrenal gland, and multiple bones. It was assessed that the 49-year-old patient had a rare malignant breast tumor. The first line treatment (goserelin+letrozole+ribociclib) was given. Dynamics were negative, new metabolic activity in bones appeared, other changes regressed. An increase in Ca27.29 was observed. Second line treatment (alpelisib+fulvestrant) was given. Positive dynamics of the patient's clinical condition were observed, with regression of bone pain, Ca27.29. The right iliac bone biopsy was performed, histologically - spread of breast ductal carcinoma, ER(+), PR(-), HER2(3+). Treatment with docetaxel, pertuzumab/transtuzumab, and anti-HER2 therapy were considered.

Conclusions: It is important to monitor the patient's condition and perform bone scintigraphy, CT, PET/CT, and MRI examinations to evaluate the course of the disease and adjust chemotherapy treatment.

A case of Steele-Richardson-Olszewski syndrome.

Author: Egle Vaisnoraite, Agne Baliunaite
Affiliation: Lithuanian University of Health Sciences
Tutor: Aurimas Rapalavicius

Background: Progressive supranuclear palsy (PSP) also known as Steele-Richardson-Olszewski syndrome is a rare neurological disorder that affects your balance, cause supranuclear gaze palsy, dysarthria and dysphagia. It is a neurogenerative disease with an unknown cause that involves the accumulation of tau protein within the brain. Approximately 6 per 100000 people are diagnosed with PSP annually and the mean age of onset for this syndrome is 65.

Case report: In 2020 57-year-old female came to the Emergency department because of a fall. A CT scan of the brain did not show any damage, the wound was sutured and the patient was discharged. After 6 months the female started presenting changes in personality. She gradually started having issues with her vision, walking and speech. She was sent to the neurologist for a consultation. During evaluation the neurologist found that she cannot look up, has dysphonia, increased muscle tone in the limbs, impaired amplitude of alternating movements in the hands and feet. She also could not turn around 360 degrees and do a tandem gait. MRI showed hyperintensity in midbrain and pontine tegmentum, reduction of the volume of the midbrain, the upper contour concaved inwards. In frontal, parietal lobes and deeper white matter small hyperintensive parts were seen, most likely of angiopathic origin. The patient was prescribed with bensarazide in combination with levodopa. Regardless, her condition keeps getting worse. Now the woman is in a wheelchair, her speech is barely understandable to others and she cannot do anything on her own.

Conclusion: PSP is a complex condition that affects the brain. Patients, who are diagnosed with it usually die in 6 to 9 years. There is no cure for this syndrome or drugs that provide significant symptomatic benefits but multidisciplinary interventions are essential in promoting longer independence in daily living.

DIAGNOSTIC CHALLENGES OF VILLARET SYNDROME IN AN ELDERLY MAN WITH HEAVY MEDICAL HISTORY

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Background: Otalgia is often a diagnostic challenge due to the complexity of innervation of ear structures, covering a large anatomical area, including the brain, spine, skull base, airways, salivary glands, paranasal sinuses, face, orbits, deep spaces of the neck and skin. Villaret syndrome is a rare neurological symptom with a unilateral course involving cranial nerves- IX, X, XI, XII. It can be caused by cranial base lesions including both primary tumors and metastatic localization.

Case Report: A 73-year-old patient was admitted to the Emergency Department due to severe ear pain worsened by neurological symptoms: confusion, tongue division to the right, diplopia, and photophobia. Moreover, he presented with nausea and vomiting. His medical history revealed uncontrolled diabetes, atrial hypertension, cardiac insufficiency, chronic renal failure, and colon cancer. He has had a history of otalgia for 10 months and also he has been reporting dysphagia and ocular symptoms for 3 weeks. He had been treated with antibiotics for otitis without any clinical improvement. Being admitted to the Department of Otolaryngology his physical examination showed nerve palsies involving cranial nerves IX, X, XI, and XII.
Computed tomography revealed a tumor infiltration in the base of the skull, with a probable point of origin in the upper pharynx, infiltrating the lower surface of the temporal bone pyramid. A biopsy of the nasopharynx ruled out neoplastic lesions and confirmed chronic inflammation due to aspergillosis.

Conclusions: Differential diagnosis of ear pain should consist of laryngological, neurological, and oncological causes, especially when the ear pain is not responsive to standard treatment. Villaret's syndrome results from dysfunction of IX, X, XI, XII cranial nerves and the cervical sympathetic chain. Aspergillosis is an extremely rare cause of Vilarette syndrome and there are only a few case descriptions reported so far. The diagnosis requires strong cooperation between neurological and otolaryngological teams.

Pediatric Case Report

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Kawasaki Disease - Importance of Early Diagnosis and Proper Management

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Background: Kawasaki disease that primarily affects children younger than 5 years causes vasculitis which may result in cardiovascular morbidity if not adequately treated.
On July 10, 2022, a 2-year-old male was admitted to the Iashvili Children's Central Hospital with a 12-day history of a high fever and following history.
For 2 days he was treated at home symptomatically, on June 30, he was admitted to the regional hospital, with high fever and sore throat. Acute tonsillitis was diagnosed upon tonsillar hypertrophy and cervical lymphadenopathy and oral cefixime and amoxicillin was given. On July 2, the patient developed conjunctivitis and a macular rash on his back, IV ceftriaxone and meropenem was started. On July 9, he developed pain and swelling of ankle joint and was referred to our clinic.
On admission the patient had fever (39.0 °C), oropharyngeal erythema, swelling of ankle joint and left cervical lymphadenopathy (>2,5 cm). Labs revealed thrombocytosis and granulocytosis, levels of ESR, CRP and ferritin were significantly high. No bacterial growth was detected in any of his culture. EBV and COVID-19 serum antigen levels were negative, echocardiography revealed dilatation of LMCA (3,17mm) and small effusion in the pericardial sac. Kawasaki disease was diagnosed.
Treatment with aspirin and prednisolone was started as IVIG was not available. Five days later IVIG was initiated, fever subsided on the second day and by the tenth day, all acute phase reactants had steadily declined. Patient was discharged. On follow-up LCMA dilatation was less (2,3mm).

Conclusion: We hope this case report will remind pediatricians to consider Kawasaki disease whenever a child has a high fever lasting longer than five days and realize that not all symptoms may occur simultaneously. Although IVIG is advised in the first 10 days. Our case showed that even later initiating of IVIG still may prevent development of coronary artery aneurysm.

Fungal infections - difficulties in treatment monitoring

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Background: Neutropenic patients receiving chemotherapy are at high risk of fungal infections. Patients with acute lymphoblastic leukemia (ALL) are particularly susceptible to fungal diseases. Magnetic Resonance Imaging (MRI) is the leading method for diagnosis fungal liver infections with the high detection rate, however, other hepatic abnormalities may look similar at imaging results.

Case Report: We present a case report of a four-year-old patient diagnosed with common ALL. She was treated with ALLIC 2009 protocol with good initial answer.
After two months of treatment, the patient had episodes of neutropenic fever. She was treated with empiric antibiotics. Because the symptoms did not subside, a chest CT was performed. It showed inflammatory changes in lungs - supposedly fungal infection. Mannan antigen was later found in blood. The girl received amphotericin. A month later, numerous hepatic abscesses were found on the ultrasound examination. Intrahepatic fungal-like lesions were described in MRI. Based on the clinical presentation and imaging results hepatic fungal infection was diagnosed. Caspofungin and voriconazole were added to the treatment. Fever and signs of inflammation still persisted, therefore steroids were added to the treatment with improvement. Chemotherapy was continued despite fungal infection.
After one year of antifungal treatment, abdominal MRI was performed. Disseminated lesions in the liver, which might be an equivalent to fungal infection, were described. Due to the length of antifungal treatment, voriconazole concentration in the blood being under the therapeutical level and stable inflammatory markers at that time, it was decided to withheld the treatment and perform a hepatic biopsy. Histopathological examination did not confirm fungal infection. The lesions in the liver were regenerative nodules. The patient was discharged from the hospital in good condition.

Conclusions: Hepatic fungal infection is a life-threatening condition in immunocompromised hematooncological patients and it should be diagnosed quickly. Imaging monitoring of treatment may not be sufficient.

Pediatric Inflammatory Multisystem Syndrome (PIMS) or severe sepsis? – A difficult diagnosis in an eight-year-old girl with a serious condition

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Tutor: Jolanta Sołtysiak, M.D., Ph.D

Introduction: Pediatric Inflammatory Multisystem Syndrome (PIMS) is a rare and recently described condition that develops around a month after a child is infected with COVID-19 and that has attracted the attention of pediatricians. It presents with multi-organ dysfunction and could be very similar to sepsis, just as in the case discussed here.

Case presentation: The patient is an eight-year-old girl who presented to the family doctor's office with fever and pain in the lower limbs that prevented her from walking. Later she was admitted to the hospital in a medium to severe state: she was lethargic with cracked lips, raspberry tong, hyperesthesia on examination and with tender bright red nodular lesions on her limbs along with small petechiae on her legs and peeling skin on her toes. Hence, she was exhibiting most of the clinical features of PIMS. She also had abdominal pain and some edema of the eyelids. Blood tests showed high inflammatory parameters, features of acute kidney injury, anemia, lymphopenia, thrombocytopenia and hyponatremia. She was also negative for influenza A and COVID-19 but positive for influenza B. A Throat swab and blood cultures were also taken. Moreover, further blood tests revealed an increase in D-dimmer, fibrinogen, LDH, NT-proBNP and troponin I levels. PIMS was then suspected, and gamma globulins were given with little improvement in the patient's condition. Furthermore, two antibiotics were also given concurrently. However, bacterial cultures were positive for streptococcus and treatment with penicillin was implemented. Eventually, the diagnosis was severe sepsis with multi-organ dysfunction.

Conclusion: PIMS and sepsis could share similar presentations and are both life threatening. In this case, a blood culture revealed sepsis in a child exhibiting manifestations of PIMS. Henceforth, whenever PIMS is suspected, blood culture should be evaluated to rule out sepsis.

A child with Dent's disease 1 presenting with abrupt onset of muscle cramping and hyperthermia

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Tutor: MD, PhD Beata Banaszak

Background: Dent's disease is a renal tubular disorder characterized by proximal tubule defect resulting in low-weight proteinuria, hypercalciuria, phosphaturia, impaired urinary acidification, nephrolithiasis/nephrocalcinosis and progressive renal failure. This disease is linked with mutations in either the CLCN5 (Dent's disease 1) or OCLR1 (Dent's disease 2) genes located on chromosome Xp11.22 and Xq25 respectively, or with no mutations in either gene (Dent's disease 3).

Case report: We would like to present a life-threatening episode in a 2,5-year-old boy with a deletion in chromosome Xp11.23-p11.22, features of facial dysmorphia and a history of transient respiratory distress, grade 2 intraventricular hemorrhage and posterior urethral valve corrected. On admission, the child was afebrile and tearful with an abrupt onset of muscle cramping, forearms and calves redness and swelling. Blood tests revealed hyponatremia, hypochloremia, hypokalemia, hypocalcemia and hypomagnesemia. Within the next two hours patient's condition deteriorated. Severe muscle twitching followed by diffuse muscle spasm and opisthotonos posturing, temperature rising up to 40,50C, despite receiving antipyretics, tachycardia and tachypnea were reported. Finally generalized tonic-clonic seizures were observed. Due to severe presentation, our patient was empirically treated for sepsis with intravenous antibiotics and fluids. The patient showed dramatic improvement in symptoms after the aggressive electrolyte repletion and his vital signs returned to normal values. In the life-threatening emergency that occurred in our patient, Dent's disease led to multiple electrolyte abnormalities resulting in acute tetany that subsequently caused exertional rhabdomyolysis, a potentially fatal syndrome in which uncontrolled skeletal muscle hypermetabolism generated hyperthermia and muscle breakdown.

Conclusions: This case emphasizes the importance of considering tetany as a diagnosis in a patient with unstable vital signs and diffuse muscle spasms. Especially in ones with pre-existing medical conditions contributing to electrolyte disturbances.

Lymphocytic colitis: An unexpected cause of chronic diarrhea in paediatric patient

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Background: Lymphocytic colitis, a histologic form of microscopic colitis, was recognized and first described four decades ago. Microscopic colitis typically manifests with chronic watery non-bloody diarrhea, abnormal inflammatory histopathological findings, but normal endoscopy results. As it is mainly a condition of the adults, paediatric data are limited. Very few cases of lymphocytic colitis have been reported in the paediatric population and are available in the medical literature.

Case report: We describe a 5-years old male patient with psychomotor development disorder, vitiligo and nephrotic syndrome admitted to hospital for further diagnostics of chronic diarrhea. Persistent, watery stools (4 to 5 per day) have been presented for one year. During steroid therapy due to nephrotic syndrome gastrointestinal symptoms were masked and diarrhea withdrawal was observed, but reoccurred after discontinuation of the treatment. During the hospitalization, blood tests (including serology of coeliac disease), and fecal calprotectin test remained normal. Carbohydrate intolerance was excluded. The macroscopic picture in gastroscopy and colonoscopy showed no abnormalities. The result of the histopathological examination from colonoscopy finally confirmed the diagnosis of lymphocytic colitis.

Conclusions: Lymphocytic colitis should be considered in differential diagnosis of chronic watery diarrhea in paediatric patients with no macroscopic abnormalities in endoscopic examination.

Nasal Glial Heterotopia in a 5-month-old girl: A Case Report and A Review of Literature

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Introduction: Nasal Glial Heterotopia (NGH) is a rare congenital mass commonly mistaken for a nasal polyp. In this case report we focus on the challenges of appropriate imaging techniques as well as the appropriate treatment method.

Case presentation: A 5-month-old girl presented with a mass in the left nasal cavity originating most likely from the roof of the nose. The mass was noted by the patient's guardian in the first 2 weeks of life. A CT scan with contrast and an MRI were performed in another facility showing, in addition, a possible defect of the floor of the anterior cranial fossa. We performed an endoscopy upon admission to confirm the location, size and possible origin of the mass, followed by a total transnasal endoscopic resection under general anaesthesia. The post-operative site revealed two possible skull base defects which were not able to be confirmed in the imaging studies. The excised mass was sent for histopathological examination which confirmed the diagnosis. There were no complications on the follow-up visits and no CSF leak was noted, the nasal patency was good and a completely healed surgical site was observed in endoscopy.

Conclusions: Differential diagnosis including mainly other congenital lesions of the nose relies strongly on radiological investigation. An appropriate choice of imaging studies is crucial for preparation for surgery, which is the only treatment. Children with NGH will usually be examined initially by paediatricians before being referred to otolaryngologists, therefore awareness about NGH in both specialties is beneficial. Additionally, challenges in radiological imaging in infants should be taken into account so that radiologists, paediatricians and otolaryngologists may work together to establish a proper diagnosis and treatment.

GnRH-dependent precocious puberty in 6-year-old girl after incomplete resection and radiotherapy of craniopharyngioma - case report

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Tutor: Monika Obara-Moszyńska, Assoc. Prof., MD, PhD

Background: Precocious puberty is defined as the appearance of secondary sexual features in girls before the age of 8. It results either from earlier activation of the hypothalamic-pituitary-gonadal axis or autonomic release of sex hormones. These 2 types are classified accordingly as gonadotropin-releasing hormone (GnRH) dependent and GnRH-independent precocious puberty. GnRH-dependent precocious puberty may become a consequence of CNS tumors, malformations, radiotherapy, inflammation, or increased intracranial pressure.

Case report: A 6-year-old girl was admitted to the Department of Pediatric Endocrinology because of breast enlargement, lasting several weeks for diagnostics. The girl's medical history revealed that she was a premature infant from twin pregnancy. Her psychomotor development was normal. Since the age of 3, the girl complained of episodic headaches and vomiting, which resulted in diagnostics at the Department of Neurology. Head MRI revealed a large colloid cyst in 3rd ventricle, which was incompletely resected and histopathologically assessed as craniopharyngioma adamantinomatous type. The girl underwent radiotherapy (54Gy), which was followed by regular oncologic controls.
On admission, the physical examination revealed: height 121cm (50-75 centiles), weight 29,5kg (90-97 centiles), pubertal stage Tanner 3 (Th3, Ax1, Pub1/2). Elevated estradiol, LH and FSH after LH-RH stimulation, and pubertal picture of uterus and ovaries on ultrasound confirmed GnRH-dependent precocious puberty. Bone age was accelerated (10 years). Other hormonal tests revealed complete growth hormone insufficiency with preserved other hormonal axes. The girl started long-acting GnRH-analog triptorelin therapy with a positive response.

Conclusions: Craniopharyngiomas most often present with dysfunction of hypothalamus and pituitary, which leads to combined pituitary hormonal insufficiency. The presented case shows that craniopharyngioma and surgical therapy combined with radiotherapy can induce an opposite effect which is GnRH-dependent precocious puberty. Probably the girl's growth is normal due to accelerated development depending on pubertal onset and overweight and possible insulin and leptin influence.

Iatrogenic puncture of brachial artery complicated by upper extremity ischemia in a premature newborn

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Tutor: Prof. Jan Mazela, MD, PhD

Background: Vascular access in a newborn might constitute a challenging task, especially when diameters of the vessels are considered. Complications usually resemble those observed in adults: thrombosis, infection, bleeding, ischemia. The key to avoid all of the above is correct catheter placement.

Case report: We present a case of a female infant born prematurely as a second twin by emergency caesarean section at 28+6 weeks gestational age. The pregnancy was complicated by arterial hypertension and hyperthyroidism. At birth, adaptation to extrauterine life was moderately difficult, with an Apgar score of 6/7/8, respectively at 1'/3'/5', and Neopuff ventilation. The child was admitted to Neonatal Intensive Care Unit (NICU) due to prematurity and respiratory distress syndrome. During the hospitalisation, the newborn developed necrotising enterocolitis, anaemia, jaundice, stage 1 retinopathy of prematurity and grade 1 intraventricular haemorrhage. On the 26th day of the NICU stay, after an attempt of starting an IV line in right axillary fossa, the staff noticed cyanosis and subsequent pallor of right upper extremity. Doppler ultrasound revealed compromised blood flow in brachial artery. Pulse in cubital fossa was absent, capillary refill time delayed and fingers mobility impaired. A therapy of pentoxifylline, enoxaparin, warm compresses and adequate limb position was administered. The condition of the limb improved, except for the third fingertip, which became necrotic. The necrosis is currently healing.

Conclusions: Every attempt of an IV line placement should be guided by ultrasound imaging, which greatly reduces the risk of complications. However, the use of sonography does not release professionals from careful observation of the patient as well as the vascular access location.

Diagnostic difficulties associated with IgG4-related orbital disease (IgG4-ROD) in a child; a case report

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Tutors: Anna Chmielarz-Czarnocińska MD, PhD, Prof. Anna Gotz-Więckowska MD, PhD

Background: IgG4-related disease (IgG4-RD) is a rare systemic fibro-inflammatory disease affecting different organs. The disease is characterized by infiltration of IgG4-positive plasma cells in the tissues, mostly with fibrotic abnormalities and often elevated IgG4 serum levels. IgG4-related orbital disease (IgG4-ROD) is the most common manifestation of IgG4-RD in the pediatric population and can imitate various conditions. Our case describes a 3-year-old girl with isolated IgG4-ROD with a difficult diagnostic process.

Case report: A 3-year-old girl was referred to the pediatric ophthalmology clinic due to a 2-month history of painless right upper eyelid swelling. On ultrasound, a hypoechoic space was visible on the temporal side, initially giving rise to suspicion of a vascular lesion. Hirschberg test, cover test, visual acuity, eye movements and fundoscopic examination were all normal. On MRI, most changes were seen in the right lacrimal gland. A biopsy of the lesion showed inflammatory infiltration composed of lymphocytes, plasma cells, eosinophils and neutrophils. 20% of the plasma cells were IgG4 positive. Our sample did not meet the diagnostic criteria for IgG4-RD, although an increased serum IgG4 level of 701,00 mg/l (norm < 537,00 mg/l) was found. For treatment, methylprednisolone was initiated with a good initial response, although after tapering, disease recurrence was observed. Based on the evidence, the diagnosis of possible IgG4-ROD was undertaken.

Conclusions: IgG4-RD is a relatively newly discovered disease. Due to its rarity, the exact prevalence is unknown and requires further investigation. There is no consensus on the diagnosis of IgG4-RD and IgG4-ROD in the pediatric population, thus a personalized approach is necessary. It is essential to rule out other diseases such as lymphoma and cellulitis. Corticosteroids are the recommended first-line treatment for IgG4-ROD, although recurrence is usually expected, making additional therapy with steroid-sparing agents necessary.

Late identification of conditions incompatible with life in a neonate: holoprosencephaly and other significant cephalic abnormalities

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Tutor: Katarzyna Wróblewska-Seniuk, M.D., Ph.D.

Background: Holoprosencephaly (HPE) is a congenital condition where the brain fails to divide into separate lobes presenting in 0.4% of embryos, with less than 3% of these cases surviving to term. Even more rare is the incidence of HPE without chromosomal abnormalities or predisposing maternal factors.

Case Report: The neonate was born at 36+6 weeks of gestation with a birth weight of 2525g. Maternal history was negative for diabetes, alcohol, smoking, and teratogenic drugs during pregnancy, whilst paternal history noted only diabetes. This was the second pregnancy: the first child was delivered in 2016 with a normal birth weight and no congenital illnesses.
There was suspicion of a central nervous system anomaly, but a definitive diagnosis was not given. Array Comparative Genomic Hybridization (aCGH) screening of chromosome pairs 1-22 was performed in-utero with normal findings. The patient was delivered C-section because of the suspected CNS anomaly and because the mother had previous CS. On physical examination, facial anomalies consistent with HPE were identified, including hypotelorism and a single nostril trumpet nose. MRI revealed microcephaly, microencephaly, pachygyria, and the most severe form of HPE - alobar holoprosencephaly: complete lack of forebrain division, absence of corpus callosum and third ventricle, a fusion of the thalamus, and a single common dorsal ventricle. The shift from intensive care to comfort care was initiated as alobar HPE is a lethal condition, and the patient was transferred to palliative care. The parents have been referred to the genetic outpatient clinic for further testing. Smith-Lemli-Opitz syndrome should also be excluded.

Conclusion: Current prenatal screening methods failed to identify the patient's lethal abnormalities. For parents expecting a relatively healthy newborn, this extra preparation time afforded from screening is paramount to the immediacy of initiating comfort care so the family can accept the prognosis and the patient can pass away calmly.

Challenges of genetic counselling in 46,XY disorder of sex development

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Background: Disorders of sex development (DSD) present a diagnostic challenge due to a wide range of a phenotypic spectrum and pose complicated clinical management. The etiology is multifactorial and is linked with the atypical development of chromosomal, gonadal, and/or phenotypic sex. Although some of the 46, XY gonadal dysgenesis carry mutations in the SRY gene, additional sex-determining genes and nuclear transcription factors such as NR5A1 play a role in the reproductive development. The NR5A1 variant interrupts proper testicular development leading to ovarian development leading to ovotesticular/testicular DSD in cases with 46,XX or partial gonadal dysgenesis in cases with 46,XY karyotype.

Case report: A 6-month-old child, whose assigned sex was female at birth, presented to the Department of Pediatric Endocrinology due to atypical external genitalia. Most prominent features included the genital tubercle measuring 15 mm, a proximal urethral opening, palpable gonads in labioscrotal folds and no labioscrotal fusion present with the external genitalia score (EGS) being 3.5. Standard hormonal diagnosis and sequencing for DSD-related genes was performed. Results confirmed normal testicular function with lower levels of AMH and ACTH. Genetic evaluation revealed 46, XY karyotype. Pelvic ultrasound showed gonads of testicular origin within inguinal canals and no Müllerian structures present.

Conclusions: A difficult matter of contention in DSD is the assignment to the more appropriate gender and gender of rearing from a parent's perspective, especially in patients with ambiguous genitalia. This family underwent genetic counselling with a multidisciplinary team to discuss decisions regarding gonadal management, gender identity, fertility, risk of gonadal malignancy, social acceptance and hormonal therapy if gonadectomy was to proceed. An individualized approach was encouraged and the family came to the decision to preserve female sex and gonadectomy was performed. Further discussion should be encouraged to investigate the degree of patient involvement in the final decision of gender.

Rare Reaction to Vaccines in a 2-Month-Old Infant: A Case Report

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Tutor: MD Jolanta Sauserienė

Background: Adverse reactions to vaccines in infants are not uncommon, but most are mild and include fever, injection site pain, erythema, edema, irritability, nausea, and vomiting. However, in some cases, adverse reactions of unexplained etiology can occur, leading to a sudden rash without signs or symptoms of anaphylaxis.

Case report: We present a rare case of an adverse reaction to a vaccination in a 2-month-old boy. The patient had no previous adverse reactions to immunization and was born at full term, growing well and being fed with mother's milk. The boy's father has a condition called nevus flammeus. During the visit, the infant received Pentaxim, Synflorix, and Rotarix vaccines. Just 5-7 minutes after the injections, he became lethargic, turned pale, stopped crying, and started moaning. Purpura began to appear on the face and head area, and petechiae appeared on the face. Despite the severity of the reaction, it was not classified as anaphylactic shock, but the boy was referred to and observed at the pediatric emergency room. Complete blood count (CBC): PLT 493x 10^9/l- pediatric norm. The condition remained stable, the infant only experienced irritability and a subfebrile temperature. A skin allergen test for egg white was performed as a screening test due to potential sensitization to vaccine components. The test result was negative. If adverse reactions to vaccinations are not clarified, further vaccination is recommended in an inpatient unit.

Conclusions: Careful follow-up vaccination and monitoring are required in cases of adverse reactions to vaccines, and it is necessary to investigate the cause of these reactions, perform a detailed blood test, and blood smear in case of recurrence of similar adverse reactions. Therefore, it is essential to inform parents about the possibility of adverse reactions to vaccines and closely monitor infants after immunization.

Poster Session

Scientific Committee

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elmex meridol Colgate PROFESSIONAL ORAL HEALTH

The importance of a second opinion – from tumour to pseudoaneurysm: a case report

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Background: A pseudoaneurysm is an accumulation of blood in a balloon-shaped deformity, induced by a loss of integrity in the blood vessel wall, albeit involving one or two strata, compared to a true aneurysm, which affects all three. This affliction can heal on its own and disappear, or produce fatal hemorrhage. Computed tomography angiography serves as a strictly diagnostic imaging test that combines the benefits of CT scan and those of conventional angiography to produce highly detailed representations of the blood vessels. It can display narrowed, abnormally dilated, and blocked areas as well as fatty plaque build-up along their course.

Case Report: A 70-year-old previously diagnosed with a retroperitoneal tumor presents in a scheduled regime for a CT-guided biopsy. The current complaint involves abdominal pain that started abruptly and irradiates in the lumbar region. Heredocolateral and personal pathological history along with clinical exam findings are nonrelevant. CT Angio brings to light a retroperitoneal collection inside the psoas muscle, 34/27 mm in size, cuffing an abdominal aorta pseudoaneurysm with a size of 33/22 mm. Signs of somewhat recent bleeding are found. Aorto-iliac atheromatosis, with right common iliac artery stenosis of up to 50% is discovered. Liver segment II and VII hyper uptake zones are exposed as well, and a biliary cyst in segment VI is observed. Bilateral lesions of the adrenal glands are visible, identified as adrenal adenoma.

Conclusions: It is of utmost importance to always thoroughly investigate the patient, especially before doing invasive procedures that might put their lives in danger, in case of misdiagnosis. This case here shows a fortunate instance, where a supplementary imaging test unveils a completely different pathology saving the patient from undergoing a potentially life-threatening procedure, in the circumstance that the pseudoaneurysm ruptured during the biopsy for the supposed tumor.

Mowat – Wilson syndrome in neonatal patient

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Background: Mowat-Wilson syndrome is a rare autosomal dominant genetic disease caused by mutations in ZEB2 gene. The syndrome is associated with Hirschsprung disease and various congenital defects.

Case Report: On October 5, 2022, a 9-days old male from gravida I para I, was admitted to the M.Iashvili Children's Central Hospital with a significant birth history. The main complaints during admission were feeding intolerance, permanent bloating, constipation, abdominal distention. CT scan of the abdomen was performed which revealed a dilated large intestine with signs of HSCR. Cysts were found in spleen, kidneys and adrenal glands. Biopsy of the colon showed agangliosis and HSCR was diagnosed on the 14th day of admission. On 31 October sepsis was suspected due to the presence of pale, mottled skin; swollen belly; T-38,5; tachypnea and tachycardia.

On physical examination dysembryogenic patterns were noticed: distinctive facial phenotype (hypertelorism, low-set ears and uplifted earlobes, prominent triangular chin, sunken orbits) transverse simian crease and hypospadia. Laboratory tests showed increased infection markers PLT(62K mcl), WBC(54,7K mcl), CRP(343 mg/l). Blood culture was positive on Klebsiella Pneumoniae and Pantoea Agglomerans. Echocardiography showed ASD, VSD and PDA. Additional brain CT showed atrophic changes in subarachnoid spaces and widened aqueduct of Sylvius. Based on the clinical features, histopathological results and radiography, Mowat-Wilson syndrome was suspected. Genetic testing for ZEB2 gene was performed. Mutation analysis revealed deletion of exon 2 in ZEB2 gene, which confirmed MWS.

The patient underwent a laparoscopic radical operation for HSCR. Due to bacterial sepsis treatment started with meropenem/fosmicin-S(21 days)+vancomycin(45mg x every 3 hour)+fluconazole(2 weeks), hydrocortisone(IV,5mg x 3 times a day). Patient is on oxygen therapy.

He was discharged with normal consciousness, spontaneous breathing and sterile blood. Enteral nutrition is given with a hydrolyzed artificial mixture. For continues surgical treatment of congenital malformations patient was transmitted to Jo Ann's medical center.

Conclusions: Our case highlighted the typical clinical presentation of Mowat-Wilson syndrome. We hope this work will emphasize the importance of the phenotypic spectrum of MWS, its correlation with the ZEB2 gene and clinical manifestation. With this case report, we wish to contribute to further investigations about this new and rare syndrome.

Ulnar nerve compression neuropathy caused by additional anconeus epitrochlearis muscle – a rare clinical case report

Authors: Anna Ferdynus, Michał Górecki
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Background: A cubital tunnel syndrome (CuTS) is a common disorder and the second most common compressive neuropathy after carpal tunnel syndrome, usually with unknown causes. There are reports that it can also be associated with metabolic or systemic disease, trauma, elbow deformity, arthritis, tumour, hypertrophic medial head of the triceps, and rarely anconeus epitrochlearis muscle. The literature describes the anconeus epitrochlearis muscle as one of the causes of cubital tunnel syndrome, but patients diagnosed with this additional muscle are rarely encountered.

Case Report: A 23-year-old male patient with intermittent symptoms of ulnar nerve neuropathy, including grip strength weakness and paresthesias of the ring and little finger exacerbated during office work, was admitted to the Hand Surgery Department. On physical examination, he presented with medial elbow pain, loss of sensation in the ulnar nerve area of the hand and weakened flexor digitorum profundus of the 4th and 5th fingers without any muscle atrophy. Ultrasonographic examination showed signs of compression of the ulnar nerve at the level of cubital tunnel and Guyon's canal as well as presence of an additional muscle mass covering the nerve medially. Based on those findings the muscle mass was suspected to be an anconeus epicondylaris muscle. The muscle was excised with improvement of symptoms.

Conclusions: The presence of the anconeus epicondylaris muscle is suspected when younger patients have rapidly aggravated and activity-related cubital tunnel symptoms with a palpable mass on the cubital tunnel area.

Lynch Syndrome or Why it is sometimes better not to resemble your family

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Tutor: Assoc. Prof. Andreea Catana, MD, PhD

Background: Lynch syndrome, also known as hereditary non-polyposis colorectal cancer syndrome (HNPCC) is the most common cause of inherited colorectal neoplasia. This condition is caused by genetic mutations in the mismatch repair genes: MLH1, MSH2, PMS2 and EPCAM. Depending on the mutated gene there is a distinct risk of developing another type of primary extracolonic cancer.

Case Report: A 44-year-old woman, otherwise healthy until diagnosis, was admitted to the Oncology department for an ulcerative lesion discovered during colonoscopy. Histopathological examination and immunohistochemistry indicate high microsatellite instability (MSI-H) colorectal adenocarcinoma. Taking into consideration her young age and the fact that her mother was diagnosed with endometrial cancer and her uncle with colorectal cancer, the geneticist advised the patient to undertake an extended hereditary cancer panel testing. The result of the test was positive for PMS2 gene mutation, heterozygote, variant of uncertain significance (VUS). The final diagnosis is colon MSI-H adenocarcinoma PMS2 positive (Lynch syndrome). As this type of cancer is known to be unresponsive to 5-fluorouracil, the suggested treatment is immunotherapy. There are some recommendations the patient should consider: genetic counseling for her family, prophylaxis of the other neoplasms linked to Lynch syndrome, psychotherapy.

Conclusions: The case, an autosomal dominant inherited condition, shows the great importance of the screening programmes, as this syndrome accounts for 2% to 4% of all colorectal cancer cases. Knowing that her mother, and her uncle also, were diagnosed with cancer, the patient should have undergone colonoscopy much earlier (the exact moment depends on the age her relatives discovered their cancer). The patient (PMS2 positive) has a lower risk for a second cancer (20-60%), compared to other variants. Although, there is a slightly lower risk, this variant is VUS, which means that its effect on other systems and organs is unknown, so the patient should be closely supervised.

Atypical case report of a knife lodged in the Glabella

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Tutors: Aleksy Nowak, MD, Łukasz Słowik, DDS and Chairman Krzysztof Osmola, DDS, MD, PhD

Background: Craniofacial penetrations secondary to foreign bodies, such as knives, are rare, life-threatening injuries requiring multidisciplinary medical care. This uncommon case details management approach for a lodged knife in the Glabella, with an anterior wall of the frontal sinus penetration.

Case Report: Conscious, 49-year-old male was transferred from a regional hospital to the emergency department with a knife stuck in his Glabella. The mechanism of injury was unknown, with the patient claiming that he had fallen. The patient's medical history revealed hypertension and alcoholism were noted. Laboratory blood work and a CT scan of the craniofacial region was performed, it revealed a knife lodged in the frontal sinus penetrating the anterior wall. The knife did not injure the posterior wall of the frontal sinus. Consultation with a neurosurgeon, determined that neurosurgical intervention was not required. The patient was transferred to the Maxillofacial Department for surgery under general anesthesia. During surgery, the knife was immobile, and several attempts by the surgeons were required to remove the knife. Following removal, the surgeons detected a missing part of the tip. The patient was then transferred under general anesthesia for an additional CT scan, which did not show a foreign body. The surgeons proceeded with wound closure and discharged the patient the next day in good condition. Upon follow-up appointment, the patient reported pain near the frontal sinus, and a CT scan was ordered. Unfortunately, correspondence with the patient was lost after the follow-up.

Conclusions: Life-threatening injuries due to foreign bodies in situ of craniofacial regions require prompt sequential assessment. Heightening awareness from the first responders and on-call physicians is required to prevent the possibility of improper management, which might lead to neurological deficits and vascular trauma.

Kleefstra syndrome – dental manifestations and needs: a case report

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Tutor: Prof. Anna Surdacka, DDS, PhD

Background: Kleefstra syndrome (KS) is a rare genetic disorder (prevalence <1/1 000 000) characterised by autistic spectrum disorder (ASD), childhood hypotonia and seizures. KS has a clinically recognisable phenotype caused by a heterozygous mutation in the EHMT1 gene (607001), which is located within the region of the chromosome 9q34.3 deletion syndrome. A typical facial appearance includes microcephaly, arched eyebrows, synophrism, hypertelorism, short nose, midface hypoplasia, prognathism and tongue protrusion.

Case Report: This case report presents a 19-year-old female with KS from a dentist's perspective. The patient demonstrates limited mouth opening with a slight deviation of the mandible on the left side. The tongue is unusually large – macroglossia. A generalised inflammatory gingival enlargement is most likely a response to local irritants like microbial deposits (plaque and calculus) but is enhanced by the patient's mouth breathing habit. Anterior open bite malocclusion is visible and also mandibular prognathism. Dental anomalies were diagnosed by digital panoramic radiograph, including dilaceration tooth 24 and taurodontism. The patient is qualified to be treated under general anaesthesia with multiple extractions, restorations, hygienisation procedures and tooth remineralisation. This individual should also be considered for orthodontic treatment and an eventual tongue reduction procedure.

Conclusions: Elaboration and introduction to praxis principles of dental care in children and young adults with rare diseases are needed. Unfortunately, dental treatment is still not an integral part of taking care of disabled children and youth with chronic diseases.

Vascular occluders in the treatment of haemoptysis – case series

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Tutor: Marcin Waligóra, MD, PhD

Background: Haemoptysis is coughing up blood from the respiratory tract, most often secondary to diseases of the lung parenchyma and bronchi. Intense hemoptysis and its expectoration led to the spreading blood through the respiratory tract, impairing gas exchange and obstruction of the respiratory tract. Life-threatening haemoptysis is coughing up> 150 mL of blood per day. Untreated life-threatening haemoptysis can cause respiratory failure and is associated with significant mortality. Transcatheter arterial embolization (TAE) is an effective treatment option for haemoptysis, where vascular occluders can be used. Below we present four case reports of patients requiring TAE of the bronchial artery embolization (BAE) at a reference center.

Case Report: In 2021, intense haemoptysis was diagnosed in four patients (58-year-old female with massive bronchiectasis, 66 years old female and two males aged 45 and 31 with Eisenmenger syndrome), which was complicated by severe dyspnea and led to urgent hospitalization. In these patients, due to the unidentified source of bleeding during bronchoscopy, chest computed angiotomography revealed arteriovenous fistulas connected to hemorrhagic areas of lung tissue in the distal sections of the bronchial arteries. Patients were qualified for urgent BAE. The procedures were performed via cannulation of the femoral artery(6F). Selective angiography was performed with the right Amplatz catheter and the appropriate diameter of the vascular occluder was selected. Then, BAE of the proximal sections of the bronchial arteries was performed using the Amplatzer Vascular Plug (AVP). The procedures were without complications, including no neurological complications, and no recurrence of haemoptysis were observed during at least 6 months of follow-up.

Conclusions: BAE procedures are a promising technique of transcatheter treatment that can stop the life-threatening haemoptysis. If unsuccessful in conservative and endoscopic treatment, could aggravate respiratory failure, require surgical lobectomy of a bleeding lung, or lead to death.

Hook penetration through the submandibular area and oral cavity in an immunocompromised patient

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Background: Traumatic lacerations to the craniofacial area in immunocompromised older patients have a higher risk of developing infections. This case presents a rare hook penetration in the submandibular area and oral cavity leading to wound infection.

Case Report: A 73-year-old female on oral anticoagulants with reports of dizziness was admitted to the emergency department with a hook lodged in her mandible. The foreign body was stuck in the submandibular area and penetrated the tissues into the oral cavity, 3mm from the facial vein. The patient's airway was secured with a nasopharyngeal tube. Her medical records noted a tumor of the lungs and the sub-temporal fossa, as well as atrial fibrillation, mitral valve replacement, CABG, and Hashimoto's disease. A blood test, CT scan and x-ray were performed. A tetanus shot and antibiotics were administered for prophylaxis. The hook was removed during surgery, and lacerations of the maxillary alveolar mucosa, the oral floor and subcutaneous tissue were sutured. After five days, the patient was discharged in good condition with prescribed antibiotic prophylaxis. Five days later, the patient was again admitted to the department for pus and wound infection, and minor wound dehiscence due to the patient's lack of dressing change at home. The patient came in for dressing changes and wound healing improved.

Conclusions: The location of craniofacial injuries poses challenges for surgeons due to the inflammatory response of surrounding tissues, the size of lodged objects, and surgical access. Additional vigilance is required for patients that are older and immunocompromised in postoperative management. Immunocompromised patients have delayed wound healing and a higher risk of infection. Following doctor's recommendations and coming in for follow-ups is vital to prevent a higher risk of infection—the development of infections, which can be life-threatening.

Golden Session

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1. Basic Life Sciences

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Intracellular and exofacial globotriaozilceramide accumulation in circulating lymphocytes of Fabry patients

2. Public Health

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ChatGPT a tool for assisted studying or sourceof misleading medical information? AI performance on Polish Medical Final Examination (LEK)

3. Pharmacy

Zuzanna Granek

Small-Molecule PERK Inhibitor Provides Neuroprotection in Parkinson's Disease Cellular Model

4. Ophthalmology, Laryngology & Dentistry Surgery

Andrzej Bałoniak

Recovery following Total Hip Arthroplasty using the minimally invasive Direct Superior Approach – functional outcomes and patient satisfaction at 6-8 weeks postoperatively.

5. Gynecology and Obstetrics

Natalia Kwiatkowska

Complete blood count parameters as prognostic markers of ovarian cancer recurrence

6. Oncology, Hematology and Radiotherapy

Błażej Ochman

Differences between lung adenocarcinoma or squamous cell lung carcinoma patients in tumor characteristics, the incidence of comorbidities, and the 5-year survival depending on tobacco smoking status.

7. Neurology, Neurosurgery and Psychiatry

Magdalena Węglewska

The inflammatory and coagulation parameters predict outcome in cervical artery dissection

23rd ICYMS Winners

Zuzanna Granek

Small-Molecule PERK Inhibitor Provides Neuroprotection in Parkinson's Disease Cellular Model

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