20th BIMC

20th Bialystok International Medical Congress for Young Scientists

24-25 April 2026

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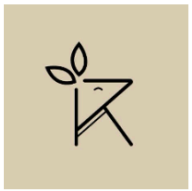
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RARE DISEASES
AND
BASIC SCIENCE
SESSION

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Title: When Technology Changes the Biological Story: Next-Generation Proteomics Reveals Deeper Molecular Alterations Signals Missed by Earlier Mass Spectrometry in PACS2 Syndrome

Author(s): Agata Jędryka; Jakub Zdzienicki; Arkadiusz Żbikowski; Justyna Klimaszewska; Tomasz Kowalczyk

Tutor(s): dr Dominik Cysewski

Abstract: Introduction: A major analytical challenge in proteomics is the wide dynamic range of protein abundance, which limits the detectability of less abundant proteins in complex tissue samples. This is particularly relevant in rare disease research, where biologically meaningful molecular changes may be difficult to resolve. In PACS2 syndrome, the molecular consequences of the heterozygous E209K variant may also be relatively subtle, further increasing the need for sensitive analytical workflows. Although recent studies have demonstrated substantial analytical gains of Orbitrap Astral-based DIA in selected matrices, the impact of such platform changes on tissue-resolved proteome coverage and differential protein detection in PACS2-related pathology has not, to our knowledge, been evaluated in a dedicated cross-tissue setting. The aim of this study was to compare the analytical performance of Orbitrap Fusion and Orbitrap Astral platforms in protein identification across multiple tissues in a PACS2 syndrome mouse model. Materials and methods: Liver, kidney, spleen, heart, cerebellum, and hippocampus tissues were collected from PACS2E209K/WT and PACS2WT/WT animals (n = 6 per group). Proteomic analyses were performed using Orbitrap Fusion (OF) and Orbitrap Astral (OA) instruments. Approximately 1 µg of protein with 140-min gradients was analyzed on OF, whereas 100 ng with 13-min gradients was used for OA. Data were processed with Spectronaut18 (Biognosys). Results: Comparative analysis showed consistently higher protein identification on the OA platform across all analyzed tissues. Although the magnitude of improvement varied across tissues, OA consistently increased proteome depth, yielding approximately 50–150% more protein identifications than OF; for example, in the hippocampus, protein identifications increased from 4.4k using OF to 9.4k using OA. In addition to improved proteome depth, the newer-generation platform enabled the detection of markedly more significantly altered proteins in several tissues. In some cases, this revealed molecular differences that were not captured using the earlier-generation instrument. Altogether, these findings indicate that improved analytical sensitivity and scan performance substantially affect both proteome coverage and the ability to detect disease-associated molecular alterations. Conclusion: High-sensitivity, newer-generation DIA proteomics markedly expands tissue proteome coverage and improves the detection of differential proteins, even at lower sample input and with shorter gradients. In rare disease research, these gains are not only technical but also biological, as they increase the resolution at which subtle, tissue-specific molecular effects can be detected and interpreted. Our results indicate that platform generation can materially influence mechanistic insight derived from proteomic studies of PACS2-related pathology.

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Title: Beyond the brain: histopathological and molecular evidence of lung involvement in a murine model of PACS2 syndrome

Author(s): Gabriela Żynel, Krystian Czołpiński, Jakub Zdzienicki, Małgorzata Mackiewicz, Małgorzata Kośla

Tutor(s): MSc Arkadiusz Żbikowski

Abstract: Phosphofurin acidic cluster sorting protein 2 (PACS2) is an important regulator of cellular homeostasis, involved in membrane trafficking, mitochondria–endoplasmic reticulum contacts, calcium signaling, apoptosis, and lipid metabolism. Pathogenic PACS2 missense variants, particularly E209K and E211K, are associated with developmental and epileptic encephalopathy 66 (DEE66), also known as PACS2 syndrome. Although the clinical presentation is dominated by neurological features, the broad cellular functions of PACS2 suggest that its dysfunction may extend beyond the central nervous system. To explore potential extra-neural involvement, we investigated lung tissue in a PACS2E209K/WT mouse model. Lungs were collected from PACS2E209K/WT and PACS2WT/WT mice (n = 6 per group). In this study, we used animals aged 10–12 weeks, corresponding approximately to young adulthood in humans (~20 years of age), and mice aged approximately 72 weeks, corresponding to middle-aged adults (50–60 years of age). The younger group was used for histological assessment by H&E staining, analysis of remodeling-related gene expression by qPCR, including collagens, metalloproteinases (MMPs), and tissue inhibitors of metalloproteinases (TIMPs), as well as proteomic profiling. Older animals were used for the structural evaluation of lung tissue. Histological examination of young adult PACS2E209K/WT mice did not reveal overt pathological abnormalities. However, qPCR analysis showed a general upward trend in the expression of remodeling-associated genes, with statistically significant changes detected for collagen III, MMP25, and TIMP1. Proteomic profiling further indicated molecular alterations in the lungs of PACS2E209K/WT mice. In older animals, these changes were accompanied by structural abnormalities, including lymphoid tissue infiltration. Our results indicate that PACS2 syndrome, although clinically manifested primarily in a neuronal manner, extends beyond the brain and affects other tissues, including the lungs. We provide both molecular and structural evidence supporting this observation. PACS2 plays a universal role in cellular function across multiple tissues, therefore, the E209K mutation alters the cellular phenotype not only in cells of the central nervous system. Acknowledgements We would like to express our gratitude to the technical staff of the Experimental Medicine Center, Medical University of Bialystok, Poland, for their support in maintaining the PACS2E209K/WT colony at MUB.

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Title: Molecular evidence of liver involvement in a PACS2 syndrome mouse model

Author(s): Gabriela Żynel, Krystian Czołpiński, Agata Jędryka, Magdalena Kućkowska, Arkadiusz Żbikowski

Tutor(s): Dr Dominik Cysewski

Abstract: PACS2 syndrome is an ultra-rare genetic disorder caused by de novo mutation c.625G>A (p.Glu209Lys; E209K) or c.631G>A (p.Glu211Lys; E211K) within PACS2 gene. The clinical manifestations of this syndrome are primarily associated with neuronal dysfunction, including seizures, neurodevelopmental delay, delayed speech and motor development, and behavioral abnormalities. However, because PACS2 is not exclusively expressed in the brain, the presence of the PACS2E209K variant is likely to manifest in other organs as well. Clinical reports indicate that only a small number of patients exhibit additional organ involvement, such as cardiac or renal dysfunction. This observation may be explained by the very young age and limited size of the studied population. According to the PACS2 Research Foundation, approximately 150 cases have been confirmed to date. Therefore, we hypothesize that the pathogenic PACS2E209K variant may also affect other tissues. In this study, we examined liver structure and molecular phenotype. Tissues were collected from PACS2E209K/WT and PACS2WT/WT mice (n=6 per group). We performed histological analysis (H&E), assessed the expression of remodeling-related genes (qPCR), and conducted proteomic profiling of liver tissue obtained from 10–12-week-old animals. In addition, histological examination (H&E) was performed on older animals samples (~72 weeks). The younger group corresponds to young adults (approximately 20 year old patients), whereas the older group represents middle-aged adults (approximately 50–60 year old patients). No structural abnormalities were detected by microscopic evaluation in the younger group. However, qPCR analysis revealed increased expression of collagen III, metalloproteinase 12, and tissue inhibitor of metalloproteinase 1. In parallel, proteomic profiling identified more than 600 proteins that were significantly up- or downregulated in livers from PACS2E209K/WT mice, indicating substantial molecular remodeling despite the absence of overt histopathological changes at this age. In older animals, we observed unusual perivascular inflammatory cell infiltration, suggesting that early molecular abnormalities may be followed by age-dependent structural changes. Our results suggest that the PACS2 E209K variant also affects liver tissue, despite the lack of clinical data regarding this organ. Pathological processes were visible only on genes and proteins expression level. However, it is worth noting that we used advanced technology, which enables the detection of more subtle changes. We can also conclude that PACS2 syndrome is a condition that progresses with age. Microscopic evaluation of 72-week-old animals showed that PACS2E209K/WT mice exhibit greater inflammatory cell infiltration than control animals. Acknowledgements We would like to express our gratitude to the Experimental Medicine Center (Medical University of Bialystok, Poland) technical staff for their help in maintaining the PACS2E209K/WT colony at MUB

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Title: Autophagy-related proteomics reveals lysosomal remodeling associated with C19orf12 mutations in MPAN

Author(s): Barbara Pakuła, Agata Wydrych, Magdalena Lebiedzinska-Arciszewska, Marta Skowrońska, Mariusz R. Wieckowski

Tutor(s): Prof. Dr hab. Mariusz R. Więckowski

Abstract: Mitochondrial Membrane Protein-Associated Neurodegeneration (MPAN) is the third most common genetically defined subtype of Neurodegeneration with Brain Iron Accumulation (NBIA), a group of rare, clinically heterogeneous disorders. The MPAN pathomechanism, including the link between C19orf12 mutations, iron accumulation, and metabolic alterations, remains poorly understood. While earlier study pointed to impaired autophagy in MPAN, a comprehensive understanding remains elusive. Here, we investigated the autophagy-linked proteome in primary fibroblasts derived from 18 MPAN patients and identified distinct alterations in autophagy-related protein expression. Importantly, a subset of these proteomic changes showed significant associations with disease severity, highlighting their potential as biomarkers of clinical progression. Functional analyses revealed increased lysosomal acidification as the most consistently affected autophagy-related process in MPAN fibroblasts. In parallel, MPAN cells exhibited enhanced autophagic capacity compared to controls, pointing to a complex remodeling rather than a uniform impairment of the autophagy pathway. Notably, both proteomic and functional alterations were associated with C19orf12 mutation zygosity, underscoring its modulatory role in disease-relevant cellular pathways. Given the emerging use of autophagy modulation as a therapeutic strategy in related synucleinopathies, and the close interplay between the autophagy-lysosomal pathway and cellular iron homeostasis, we investigated whether enhancing autophagic activity alters iron handling in MPAN cells.

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Title: Asprosin Dynamics during rhGH Therapy in Growth Hormone Deficiency: A Longitudinal Study in a Rare Disease Population

Author(s): Julia Zając, Angelika Buczynska-Backiel, Anna Popławska-Kita, Adam Kretowski, Maria Kościuszko

Tutor(s): M.Sc. Eng.

Abstract: Growth hormone deficiency (GHD) is a rare endocrine disorder associated with metabolic disturbances, including impaired glucose and lipid metabolism, increased adiposity, and elevated cardiovascular risk. Although recombinant human growth hormone (rhGH) therapy improves these abnormalities, the role of asprosin, a recently identified adipokine involved in glucose regulation in monitoring treatment response remains unclear. The aim of this study was to evaluate longitudinal changes in circulating asprosin levels and their associations with metabolic, hormonal, and body composition parameters in patients with GHD undergoing rhGH therapy. A prospective analysis was performed at baseline and after 6, 12, and 24 months of treatment. Due to non-normal distribution, nonparametric methods were applied. Changes over time were assessed using the Wilcoxon signed-rank test. To evaluate the overall treatment effect while accounting for repeated measures and inter-individual variability, a mixed-effects model (REML) was used. Associations were analyzed using Spearman's correlation. Mean asprosin levels decreased from 55.78 ± 44.28 at baseline to 41.46 ± 28.21 at 12 months and 41.68 ± 33.32 at 24 months. The reduction was significant at 12 months ($p = 0.0268$) and 24 months ($p = 0.0033$), but not at 6 months ($p = 0.1281$) . The mixed-effects model demonstrated a significant effect of treatment over time ($F(3,59) = 2.785$; $p = 0.0486$), confirming that asprosin levels changed significantly during therapy . Substantial inter-individual variability was observed, with higher between-subject variance (SD = 33.29) compared to residual variance (SD = 18.40), and a highly significant model fit ($\chi^2 = 58.91$; $p < 0.0001$), supporting the validity of the model . Across all time points, asprosin showed a consistent negative correlation with glucose ($r = –0.454$, $–0.528$, $–0.757$, and $–0.524$; all $p < 0.05$). A significant negative association with IGF-1 was observed at 12 months ($r = –0.545$; $p = 0.019$) and 24 months ($r = –0.619$; $p = 0.015$). At 24 months, a strong negative correlation with height was noted ($r = –0.783$; $p = 0.028$). At 6 months, asprosin positively correlated with VAI ($r = 0.736$; $p = 0.013$), total cholesterol ($r = 0.574$; $p = 0.008$), and triglycerides ($r = 0.515$; $p = 0.024$). At 12 months, correlations were observed with VAI ($r = 0.485$; $p = 0.041$) and LDL ($r = 0.613$; $p = 0.007$), while at 24 months with HDL ($r = 0.714$; $p = 0.040$). Negative correlations with fat mass were identified at 12 months ($r = –0.588$; $p = 0.010$) and 24 months ($r = –0.333$; $p = 0.028$). No significant associations were found with bone mineral density parameters. Asprosin levels decrease significantly during rhGH therapy and show consistent negative associations with glucose and IGF-1, as well as dynamic relationships with lipid parameters and fat mass. These findings indicate that higher asprosin levels are linked to a less favorable metabolic profile, while their reduction reflects improvement in glucos

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Title: Toll-Like Receptor Expression in Neutrophils in Children with Inborn Errors of Immunity: Potential Relevance for Functional Diagnostics

Author(s): Aleksandra Jurczuk

Tutor(s): Marzena Garley, Assoc. Prof., PhD, MSc

Abstract: Inborn errors of immunity (IEIs) represent a heterogeneous group of genetic disorders associated with impaired immune system function and increased susceptibility to recurrent and severe infections. Toll-like receptors (TLRs), a family of pattern recognition receptors, constitute a key component of innate immunity. Their activation initiates signaling cascades responsible for the induction of inflammatory responses and the coordination of innate and adaptive immune mechanisms. Neutrophils are among the major effector cells of the innate immune system and play a crucial role in the first line of defense against pathogens. These cells express multiple TLRs involved in pathogen recognition and activation of immune responses. In recent years, increasing attention has been paid to the variability of TLR expression and its potential role in the development and course of immune-related disorders. Alterations in the expression or function of these receptors may result in impaired neutrophil activation and consequently contribute to increased susceptibility to infections or dysregulated inflammatory responses. The aim of this study was to evaluate the expression of selected Toll-like receptors in neutrophils of children with suspected or diagnosed immune disorders and to investigate whether their expression profile may be associated with specific clinical phenotypes. Particular attention was given to receptors involved in the recognition of extracellular pathogens. The study includes pediatric patients hospitalized due to immune dysfunctions, including neutropenia, recurrent skin abscesses, and recurrent oral aphthae. The analysis of TLR expression was interpreted in relation to clinical data and routine diagnostic tests evaluating neutrophil function. A better understanding of the variability of Toll-like receptor expression in neutrophils may contribute to improved insight into the mechanisms underlying pediatric inborn errors of immunity. In the future, these findings may support the development of more precise functional diagnostic tools and facilitate a more accurate characterization of immunological phenotypes in pediatric patients.

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Title: In vitro antiplatelet effect of the new HNO-releasing compound in the method of whole blood aggregation in rats, without effect on overall plasma clotting.

Author(s): Amelia Włostowska, Mateusz Brzósko, Paweł Osiennik, Joanna Kirmuć

Tutor(s): dr hab. Karol Kramkowski

Abstract: Thromboembolic complications of cardiovascular diseases and cancer are among the leading causes of death worldwide. Therefore, the search for candidates for new antithrombotic drugs with an improved efficacy and safety profile is warranted. According to literature data [Smulik-Izydorczyk 2024, Kemp-Harper 2021; Sun 2020], nitroxyl (HNO), a gaseous transmitter, may possess significant antithrombotic potential. The aim of this study was to evaluate the effect of the new HNO donor with an N-hydroxydansylamide structure (DAN-HNO) on platelet aggregation in whole blood and on the overall coagulation potential (OCP), hemostatic potential (OHP), and fibrinolytic potential (OFP) of plasma. The studies were conducted in vitro using the blood of Wistar rats [He, 1999; K. Kramkowski 2012]. The control group (Veh) consisted of the solvent (DMSO 1%). Additionally, the effect of inactivated DAN-PA at a concentration of 10-3 M was assessed. Maximal amplitude of the aggregation curve was evaluated at 10 th minute after collagen stimulation and shown as a percentage of control value. OCP and OHP were evaluated as a sum of optical density increases after filtered (0.22 μm) plasma recalcination with calcium chloride in microplate reader (λ=405 nm); for OHP in the presence of recombined tissue plasmin activator (t-PA), while OFP was calculated as (OCP-OHP)/OCP]x100%. Gaussian distribution of the data was assessed using the Shapiro–Wilk test, followed by the nonparametric Kruskal–Wallis test with Dunn's post hoc test. Results are presented as median [IQR, interquartile range Q_1–Q_3]. The substance, tested in a concentration range of 10-3, 10-4, 10-5, 10-6, 10-7, 10-8, 10-9, inhibited collagen-induced aggregation 5 μL/mL in a concentration-dependent manner and statistically significantly, respectively, to 0.02[0.12]***^; 0.00[0.35]***; 0.93 [0.87]; 0.55[0.51]; 0.92[0.54]; 0.85[0.41]; 0.94[0.73] 0.52[0.61] relative to the control value (0.93[1.01]%) and Inactive 10-3 (0.52[0.61]%); ***p<0.001 vs Veh, ^p<0.05 vs Inactive. In the assessment of plasma coagulation after recalcination, no effect of the test substance was observed on any of the parameters assessed (OCP, OHP, OFP). DAN-PA inhibits platelet aggregation in whole blood but has no effect on general parameters of plasma coagulation and fibrinolysis. This indicates a platelet-dependent mechanism of action of DAN-PA in vitro.

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Title: Antiplatelet properties of a new HNO donor in vitro assessed by platelet secretion and aggregation in platelet-rich plasma in rat.

Author(s): Mateusz Brzósko, Julia Radziszewska, Paweł Osiennik, Joanna Kirmuć

Tutor(s): dr hab. Karol Kramkowski

Abstract: HNO (nitroxyl) is an gaseous signaling molecule with probable antiplatelet effects [Sun, 2020; Kemp Harper, 2021; Sumlik-Izydorczyk, 2024]. For pharmacological research purposes, a new HNO donor with a half-life of 33 minutes was synthesized, based on a dansylamide structure (DAN-HNO). The aim of the study was to evaluate the effect of DAN-HNO on platelet ATP secretion and platelet aggregation measured, respectively, as luminescence following reaction in the presence of luciferase, and as a change in solution transparency according to the Born optical method. For ATP secretion area under the curve (AUC), while for aggregation maximal amplitude were evaluated, both at 10th minute after collagen stimulation (7 µl/ml). DAN-HNO was used at concentrations of: 10^{-3}, 10^{-4}, 10^{-5}, 10^{-6}, 10^{-7}, 10^{-8}, 10^{-9}; additionally, inactivated DAN-HNO at a concentration of 10^{-3} M was applied. In the control group, the solvent (DMSO) was used at a final concentration of 1%. Gaussian distribution of the data was assessed using the Shapiro–Wilk test, followed by the nonparametric Kruskal–Wallis test with Dunn's post hoc test. Results are presented as median [IQR, interquartile range Q_1–Q_3]. DAN-HNO significantly inhibited ATP secretion in a concentration-dependent manner (0,0 [0,3]*** ^^^; 0.35 [1.57]**; 1.45 [4.70]; 2.45 [6.23]; 2.70 [4.90]; 2.80 [6.93]) compared to the VEH group (3.35 [7.08], **p<0.01; ***p<0.001) and the inactive group (^^^p<0.001); n=26–34. Moreover, DAN-HNO also significantly inhibited platelet aggregation in a concentration-dependent manner, decreased platelet aggregation (2.5 [5.75] ***^^^; 10 [10.5]***; 39.5 [44.5]*; 45 [25]; 57 [26]; 56.50 [27.75]; 60.5 [29.25] vs. VEH 61.00 [21] group (*p<0.05; ***p<0.001) and inactive group 50.00 [25], (^^^p<0.00; n=26–34). In summary, HNO released from the studied donor exerts a strong antiplatelet effect in vitro.

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Title: Antithrombotic potential of a dansyl Piloty's Acid derivative in thromboelastometric studies in rat in vitro.

Author(s): Amelia Włostowska, Julia Radziszewska, Paweł Osiennik, Joanna Kirmuć

Tutor(s): dr hab. Karol Kramkowski

Abstract: Compounds releasing HNO (Nitroxyl) may exhibit antithrombotic in platelet-dependent mechanism [Smulik-Izydorczyk, 2024]. In recent years, syntheses of HNO donors based on structure Piloty's Acid (PA) were done. The study aimed to evaluate the ex vivo antithrombotic potential of a DMSO soluble N-hydroxydansyloamide (DAN-HNO,T1/2=33 min.) in 3,1% citrate blood of healthy Wistar rats using rotational thromboelastometry (ROTEM). DAN-HNO was used at final concentration of 10-3, 10-4, 10-5, 10-6, 10-7, 10-8, 10-9, while 1% (final) DMSO was used in control group. Inactivated DAN-HNO (10-3M, final) incapable to HNO release was also used. DAN-HNO statistically significantly and in dose-dependent manner changed in row thromboelastometric parameters compared to both the control (VEH) and inactivated DAN-HNO groups. Increases were observed in CT, LOT, ML%, and LT, while decreases were noted in α, A10, MCF, CFT, LI30,45,60, AUC and CLR. This indicates a significant inhibition of activity inhibition of platelet activity, resulting in the attenuation of coagulation processes (CT, CFT, α, A10, MCF, G, AUC) and the enhancement of fibrinolysis (LI30, LI45, LI60, ML, LOT, LT, CLR). Statistical analysis was performed using parametric ANOVA with Bonferroni correction (n =20) and data are shown as Mean+/- SEM. Shorts: CT- Clotting Time, CFT - Clot Formation Time, LOT - Lysis Onset Time, ML% - Maximum Lysis, LT - Lysis Time, α - Alpha Angle, A10–Amplitude at 10 minutes, MCF - Maximum Clot Firmness, AUC - Area Under the Curve, LI30,45,60 - Lysis Index at 30,45,60 minutes, G - clot strength, CLR - Clot Lysis Rate. In conclusion, this study demonstrates the antithrombotic potential of new HNO donors as characterized by thromboelastometry.

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Title: Engineering a new class of bioactive dressing for Epidermolysis Bullosa and hardly healing wounds

Author(s): Bartosz Hanczaruk, Krystian Czołpiński

Tutor(s): Dr hab. Andrzej Eljaszewicz

Abstract: Epidermolysis bullosa (EB) comprises a group of inherited skin fragility disorders caused by mutations in genes responsible for dermal–epidermal adhesion. These defects render the skin highly susceptible to mechanical trauma, resulting in recurrent blistering, chronic non-healing wounds, persistent inflammation, and progressive fibrosis. Current therapeutic strategies remain largely supportive and focus on symptom management, pain control, and prevention of infection, without effectively addressing impaired tissue healing. To overcome these limitations, we are developing a bioactive human skin-based biological dressing functionalized with mesenchymal stem cells, designed to promote tissue regeneration and modulate the inflammatory microenvironment characteristic of EB wounds. The dressing is based on a decellularized skin, namely human acellular dermal matrix (hADM) obtained from excess skin tissue collected during bariatric surgery. Tissue was processed using a combined NaCl/SDS decellularization protocol, followed by extensive washing and terminal sterilization using 35 kGy e-beam irradiation. The resulting scaffold preserves native extracellular matrix architecture and biomechanical properties, providing a bioactive platform supporting cell migration and tissue remodeling. Extracellular vesicles (EVs) were isolated from preconditioned adipose tissue–derived mesenchymal stromal cells using differential centrifugation and characterized prior to incorporation. The biological scaffold was subsequently functionalized with MSC-derived EVs to enhance its immunomodulatory and pro-regenerative properties. This combined approach aims to reduce excessive inflammation, promote re-epithelialization, support angiogenesis, and improve matrix remodeling in chronic EB-associated wounds. Our preclinical experiments demonstrated that human skin–derived biological dressings accelerate wound healing, modulate macrophage polarization, and improve tissue regeneration in hard-to-heal wounds. EVs represent a next-generation strategy to further enhance anti-inflammatory signaling and regenerative potential while maintaining safety and storage advantages over cell-based therapy (formerly tested in both preclinical settings and phase I/II clinical trials). The EV-functionalized human skin–derived dressing represents a promising therapeutic platform for supportive treatment of chronic wounds in Epidermolysis Bullosa. This bioactive scaffold-based approach may improve wound-healing outcomes, reduce disease burden, and provide a scalable, clinically translatable solution for patients with severe skin fragility disorders and hard-to-heal wounds.

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Title: Oxidative Stress, Antioxidant Defense, and Apoptosis Markers in Colorectal Cancer: A Comparative Study

Author(s): Stanislaw Krokosz, Maria Obrycka, Gabriela Borkowska, Virginia Lis, Anna Zalewska

Tutor(s): Prof. dr hab. n med. Anna Zalewska

Abstract: This study aimed to evaluate oxidative stress, antioxidant defense, and apoptosis-related markers in colorectal cancer by comparing tumor tissues with adjacent histologically normal tissues obtained from patients undergoing elective surgical resection. Paired samples were collected intraoperatively and subjected to biochemical analysis. The concentrations of total protein [µg/mL], caspase activity [µmol pNA/min/mL], superoxide dismutase (SOD) [U/L], catalase (CAT) [U/L], 4-hydroxynonenal (4-HNE) [µM], malondialdehyde (MDA) [µM], sulfhydryl groups (SS) [µg/mL], total antioxidant capacity (TAC, Trolox mmol/L), total oxidant status (TOS, µmol H2O2 Eq/L), and advanced glycation end products (AGE, AFU) were determined using standardized spectrophotometric and fluorometric methods. Tumor tissues demonstrated significantly increased levels of oxidative stress markers, including MDA, 4-HNE, TOS, and AGE, compared to normal tissues. In parallel, antioxidant parameters such as SOD, CAT, TAC, and SS were markedly reduced in cancerous samples, indicating impaired redox homeostasis. Caspase activity was altered in tumor tissues, suggesting dysregulation of apoptosis pathways. Total protein levels differed between groups, reflecting metabolic and structural changes associated with malignancy. These findings confirm that colorectal cancer tissue is characterized by enhanced oxidative damage and compromised antioxidant defense mechanisms. The observed imbalance between pro-oxidant and antioxidant systems may contribute to tumor progression and cellular dysfunction. Furthermore, alterations in caspase activity highlight the role of apoptosis dysregulation in colorectal carcinogenesis. In future studies, we plan to extend these analyses to non-invasive biological materials, including saliva and blood, to evaluate the potential of these biomarkers for clinical application.

BASIC SCIENCE SESSION

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Title: COMP in Colorectal Cancer - Associations with selected Cytokines, Immune Checkpoint Molecules, MSI status, and Mutational Profile

Author(s): Anna Kot, Piotr Limanówka, Wiktor Wagner, Dominika Koszewska, Błażej Ochman

Tutor(s): Elżbieta Świętochowska, PhD; Dariusz Waniczek, PhD; Monika Szrot, PhD; Jerzy Piecuch, PhD

Abstract: Introduction: Cartilage oligomeric matrix protein (COMP) is an extracellular matrix glycoprotein involved in apoptosis prevention. Research shows that COMP could be a potential biomarker of colorectal cancer (CRC) development, but its exact role in CRC is unclear. The aim of this study was to evaluate the concentration of COMP in CRC tissues compared to the surgical margins and to examine the associations between COMP expression and MSI status, mutations in the KRAS, NRAS, BRAF, and PIK3CA genes, TILs, as well as the expression of selected cytokines, immune checkpoint proteins, and TNM staging parameters. Material and methods: COMP concentrations were determined using the ELISA in homogenates of colorectal cancer tissue and surgical margins obtained from 107 patients. Similarly, ELISA was used to measure concentrations of selected immune checkpoint molecules in CRC samples. TIL levels were evaluated semi-quantitatively via H&E staining; MSI status was determined using IHC. The concentration of 48 cytokines, chemokines, and growth factors was evaluated using the cytokine screening Bio-Plex panel in a group of 54 colorectal cancer tissue samples. RT-PCR was used to analyze mutations of the investigated genes in a subset of 87 patients. Results: The concentrations of COMP protein were significantly higher in CRC tissues compared to the margins ($p<0,001$). Moreover, increased expression of COMP correlated with T ($p<0,05$) and N parameters ($p<0,01$) from the TNM scale. COMP was also significantly upregulated in MSS tumors compared with MSI-H CRC. Additionally, there was a negative association between COMP expression levels and TILs. Notably, COMP expression was negatively associated with HHLA2 levels, while a positive correlation was observed between COMP and SIGLEC, TIM-3, and galectin-9. We did not observe any significant associations between COMP expression and mutations in the KRAS, NRAS, BRAF, and PIK3CA genes. Conclusions: COMP upregulation is associated with more advanced CRC stage, lymph node involvement, and microsatellite stability. COMP expression is likely regulated independently of mutations in the KRAS, NRAS, BRAF, and PIK3CA genes. The correlations between COMP and TILs, as well as immune checkpoint proteins, may suggest the immunomodulating role of the molecule in CRC. COMP could thus be further explored as a potential therapeutic target for the disease.

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Title: Biotransformation of Cetraria islandica Water Extract by Human Fecal Microbiota and Its Impact on Microbial Composition

Author(s): Urszula Kuszel, Aleksandra Komendo, Zuzanna Gurzyńska

Tutor(s): Katarzyna Jakimiuk, PhD; Prof. Michał Tomczyk

Abstract: INTRODUCTION Lichens are known to produce a wide range of bioactive secondary metabolites with potential nutraceutical properties. Cetraria islandica, traditionally used in herbal medicine, may have antimicrobial, anti-inflammatory and antioxidant effects. Increasing evidence suggests that many plant-derived compounds interact with the human gut microbiota, where they can undergo microbial biotransformation, leading to the formation of new metabolites with altered biological activity. At the same time, such compounds may influence the composition and metabolic activity of microbial communities. However, the interaction between Cetraria islandica extracts and human gut microbiota remains insufficiently investigated. AIM OF STUDY The aim of this study was to investigate the in vitro biotransformation of a water extract from Cetraria islandica by human fecal microbiota under anaerobic conditions and to evaluate its impact on the composition of the microbial community compared with a control sample not exposed to the extract. MATERIAL AND METHODS A water extract of Cetraria islandica was subjected to ex vivo metabolism with human fecal microbiota under anaerobic conditions to simulate the intestinal environment. After incubation, samples were collected using the Omnigen system for microbial DNA stabilization. Genomic DNA was then isolated and analyzed using next-generation sequencing (NGS) to determine changes in microbiota composition between extract-treated and control samples. RESULTS Biotransformation of Cetraria islandica extract (CIE) showed a highly personalized impact on the gut microbiota. In Donors 1 and 2, it exhibited a distinct prebiotic effect, promoting a significant increase in the Anaerostipes genus (up to ~6.0%) – a key butyrate producer that was not dominant in the control samples. Conversely, Donor 3 showed a dysbiotic response. Instead of stimulating commensals, a rapid surge of the opportunistic pathobiont Escherichia-Shigella was observed, increasing from 5.24 ± 0.15% in the control to 16.62 ± 0,97% after CIE exposure. CONCLUSIONS Cetraria islandica extract demonstrates the potential to act as a selective prebiotic capable of promoting butyrate-producing bacteria. However, this effect is strongly dependent on the donor’s initial microbiota profile. Under specific conditions, its administration may promote the expansion of pathobionts, highlighting the necessity for personalized supplementation and further research on safety and dosage.

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Title: Microbial Biotransformation of Fragaria vesca Leaf Extract: Effects on Phenolic Profile and Antioxidant Activity

Author(s): Aleksandra Komendo, Urszula Kuszel, Zuzanna Gurzyńska

Tutor(s): Katarzyna Jakimiuk, PhD; Prof. Michał Tomczyk

Abstract: INTRODUCTION Leaves of Fragaria vesca contain flavonoids, phenolic acids, and proanthocyanidins, which are associated with various biological activities, including antioxidant and anti-inflammatory effects. Microbial transformation may modify their chemical structure, potentially altering their bioavailability and biological activity. Therefore, studying the microbial metabolism of plant extracts may provide important insight into their actual physiological effects. AIM OF THE STUDY The aim of this study was to evaluate the biotransformation of an ethanolic extract from Fragaria vesca leaves by human fecal microbiota and to assess changes in total phenolic content (TPC), total flavonoid content (TFC), total phenolic acids content (TPAC), and antioxidant activity before and after microbial metabolism. MATERIALS AND METHODS An ethanolic extract of Fragaria vesca leaves (FV) was prepared and subjected to ex vivo incubation with human fecal microbiota under unaerobic conditions. After microbial metabolism, wateric (F1), water-methanolic (F2) and methanolic fractions (F3) were isolated using SPE method. Spectrophotometric analyses were performed to determine TPC, TFC, and TPAC, and the antioxidant activity (DPPH and FRAP) of the extract metabolites was evaluated and compared with the values obtained before microbial transformation. RESULTS After microbial biotransformation, all obtained fractions F1-F3 showed a decrease in the total flavonoid content (TFC) compared to the crude extract (27.45 µg Q/mg dry extract), with the highest value for the F3 equal to 6.47 µg Q/mg dry extract. A similar trend was observed in the case of antioxidant activity (DPPH test), where the FV showed the highest activity (26.66 µg Q/mg dry extract), while the fractions showed reduced values of 14.95 (F1), 12.08 (F2) and 25.77 (F3) µg Q/mg dry extract. Among the fractions, the methanol fraction retained the highest TFC content and antioxidant activity after biotransformation. CONCLUSIONS Microbial biotransformation of the extract resulted in a significant reduction of flavonoid content, suggesting degradation or conversion of these compounds by microbiota. Despite this decrease, the methanolic fraction preserved relatively high antioxidant activity, indicating the formation or retention of bioactive metabolites. These findings suggest that microbial metabolism may modify rather than completely diminish the bioactivity of plant-derived compounds. Overall, the results highlight the importance of considering microbiota-driven transformations when evaluating the functional properties of plant extracts.

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Title: Comparative evaluation of differential expression pipelines for transcriptomic profiling of high-grade serous ovarian cancer

Author(s): Dominika Zubrycka

Tutor(s): Karolina Chwiałkowska, PhD

Abstract: Ovarian cancer is one of the most lethal gynaecological malignancies, frequently diagnosed at an advanced stage and associated with poor survival outcomes. Transcriptomic profiling by RNA sequencing (RNA-Seq) provides a powerful approach to identify differentially expressed genes (DEGs) and dysregulated biological pathways that may underlie tumour development and influence patient prognosis. However, the choice of statistical method for differential expression analysis can substantially affect results, and a systematic comparison of widely used tools remains important for ensuring the reproducibility and reliability of findings. Raw RNA-Seq read counts from 79 cancerous and 43 non-cancerous ovarian tissue samples were analyzed. Low-expression genes were filtered using a CPM ≥ 1 threshold in at least 5 samples per group. Differential expression analysis was performed using DESeq2 and limma-voom (TMM normalization, voomWithQualityWeights), with sequencing batch included as a covariate. Genes were considered differentially expressed at $|\log2FC| \geq 1$ and FDR ≤ 0.05. Pathway enrichment was performed using ORA and GSEA (WebGestaltR) against GO Biological Process, KEGG, and WikiPathways databases. DESeq2 identified 4,075 upregulated and 2,288 downregulated genes, while limma-voom detected 3,794 upregulated and 3,395 downregulated genes. Concordance was high for upregulated genes (87.75% of DESeq2 / 94.25% of limma-voom DEGs shared), but markedly lower for downregulated genes (98.86% of DESeq2 / 66.63% of limma-voom DEGs shared), indicating that limma-voom detected a substantially broader set of downregulated genes, whereas DESeq2 identified proportionally more upregulated DEGs. No directionally discordant genes were observed. Both methods consistently identified enrichment of mitotic and chromosomal segregation pathways among upregulated genes, reflecting enhanced proliferative activity characteristic of ovarian cancer. Negatively enriched pathways showed greater divergence, consistent with the difference in downregulated DEG counts and suggesting differential sensitivity between pipelines. These results demonstrate that while DESeq2 and limma-voom show strong agreement for upregulated genes, notable differences emerge in the detection of transcriptional suppression. Pipeline selection should therefore be carefully considered in transcriptomic studies of ovarian cancer, particularly when investigating downregulated biological processes.

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Title: The impact of immune checkpoint inhibitors on glioblastoma proliferation and cytokine secretion in a PBMC co-culture model

Author(s): Jakub Szczerbicki, Tymoteusz Walicki, Aleksandra Opęchowska, Sandra Murawska

Tutor(s): Assoc. Prof. Kamil Grubczak, MD, PhD, Aleksandra Starosz, MSc, PhD

Abstract: Background: Glioblastoma (GBM) is a highly aggressive primary brain tumor characterized by profound cellular heterogeneity, limited blood-brain barrier permeability, and a severely immunosuppressive tumor microenvironment (TME). These factors, coupled with immune system exhaustion within the tumor stroma, critically impede conventional therapeutic efficacy. Consequently, immune checkpoint inhibitors (ICIs) targeting CTLA-4, PD-1, and PD-L1 have emerged as prospective therapeutic strategies, although their specific effectiveness in GBM requires further elucidation. Aim: This study aimed to evaluate the in vitro response of a glioblastoma cell line co-cultured with peripheral blood mononuclear cells (PBMCs) under the pharmacological influence of specific ICIs. Materials and Methods: U-87 MG glioma cells were maintained in both direct and indirect (membrane-separated) co-cultures with PBMCs, supplemented with anti-CTLA-4, anti-PD-1, or anti-PD-L1 antibodies. Following a 48-hour incubation period, tumor cells were harvested for flow cytometric assessment of viability and proliferation, while culture supernatants were analyzed for cytokine secretion profiles. Results: The presence of PBMCs significantly attenuated glioma cell proliferation. This tumor-suppressive effect was predominantly observed in direct co-culture configurations, indicating the fundamental necessity of physical intercellular contact. While the introduction of ICIs did not cumulatively enhance this primary inhibitory effect, anti-CTLA-4 and anti-PD-1 antibodies demonstrated a capacity to restrict proliferation within the indirect co-culture system. Furthermore, checkpoint blockade distinctly modulated the local inflammatory milieu: anti-PD-1 and anti-PD-L1 antibodies induced a slight reduction in IFN-γ and TNF-α secretion, whereas anti-CTLA-4 promoted an increased release of IFN-γ, IL-6, and IL-10. Conclusions: Immune-mediated antitumor activity against glioblastoma in vitro is fundamentally driven by direct cellular interactions rather than the direct antiproliferative actions of ICIs. Nevertheless, checkpoint blockade significantly alters the inflammatory characteristics of the microenvironment. Comprehensive in vivo studies remain imperative to fully ascertain the therapeutic viability of ICIs in glioblastoma management.

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Title: Targeted Therapy in Gastric Cancer: Focus on HER2 and VEGF Pathways

Author(s): Alicja Bielska

Tutor(s): Prof. Anna Bielawska

Abstract: Gastric cancer is one of the most common malignancies worldwide, representing a major public health challenge with approximately one million new cases diagnosed annually. Major risk factors include Helicobacter pylori infection, advanced age, smoking, alcohol consumption, obesity, and genetic predisposition. Familial aggregation occurs in ~10% of cases, with germline mutations detected in 1-3% of patients. Gastroscopy remains the primary diagnostic modality, enabling lesion visualization and histopathological sampling. Targeted therapy employs agents that selectively inhibit molecular drivers of tumor growth, sparing healthy tissues unlike conventional chemotherapy. In gastric cancer, monoclonal antibodies primarily target EGFR/HER2 and VEGF/VEGFR pathways. HER2 overexpression/amplification, present in 7.3-20.2% of cases, correlates with aggressive disease. The ToGA trial established trastuzumab plus chemotherapy as first-line standard for HER2-positive advanced gastric cancer. Emerging options include antibody-drug conjugates like trastuzumab deruxtecan, which improve response and survival. VEGF pathway inhibition curbs tumor angiogenesis; bevacizumab with irinotecan/cisplatin yielded 65% response and 12.3-month median survival in a 47-patient metastatic cohort. The RAINBOW trial confirmed ramucirumab plus paclitaxel superior in second-line therapy. Targeted therapies have transformed personalized oncology for select gastric cancer patients.

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Title: Varied CEACAM-1 expression in different platelet activation status

Author(s): Sandra Budziak

Tutor(s): dr hab. Natalia Bielicka, dr hab. Anna Gromotowicz-Popławska, dr hab. Tomasz Misztal, prof. Ewa Chabielska

Abstract: INTRODUCTION CEACAM-1 is a carcinoembryonic antigen cell adhesion molecule present on the surface of platelets, epithelial and vascular cells. It has been shown that CEACAM-1 knockout mice exhibit increased platelet activity. In our previous study, we demonstrated that PECAM-1 is a marker of reversible platelet activation. During that project, using flow cytometry, we showed that CEACAM-1 colocalizes with irreversibly activated platelets. AIM Therefore, the aim of this study was to evaluate whether CEACAM-1 could serve as a marker of irreversible platelet activity. METHODS Expression of annexin V (ANX; a marker of irreversible activation) and CEACAM-1 in ADP-activated platelets were assessed by flow cytometry. Extracellular and intracellular CEACAM-1 were analysed using a platelet adhesion model on poly-L-lysine. Platelet spreading on collagen or fibrinogen (early phase of primary hemostasis) was also studied. Two thrombosis models were used: thrombus formation on collagen fibres and fibrin clot formation from recalcified platelet-rich plasma. RESULTS In flow cytometry experiment, platelets were pre-activated by ADP, which resulted in the migration of phosphatidylserine (PS) to the outside of the membrane. The ratio of CEACAM-1-positive to ANX-positive platelets increased after ASA treatment in a dose-dependent manner. On the other hand, the CEACAM-1/ANX ratio in glucose-treated platelets was unaffected by ASA. In the model of platelet adhesion on poly-L-lysine, where permeabilized platelets were not activated, ASA treatment significantly increased the ratio of the area of CEACAM-1 to the area of glycoprotein Ib (GPIb; a marker of the platelet membrane). However, in the integrin-dependent model of platelet spreading on collagen or fibrinogen, CEACAM-1 was not detectable in permeabilized platelets, as well as the PS, which was not exposed in this hemostasis phase. CEACAM-1 was also undetectable in platelets within thrombus formed after platelet-rich plasma recalcification. Nevertheless, permeabilization after 24h (when integrin-dependent platelet contraction occurred) revealed CEACAM-1 in platelets due to cytoskeletal reorganisation. These findings indicate that CEACAM-1 is externalized before platelet shape change and internalized during integrin-dependent processes. In the model of thrombus formation on collagen, CEACAM-1 was detected on the platelet surface; however, the ratio of CEACAM-1-positive platelets to ANX-positive platelets was unaffected by glucose and ASA treatment, probably due to the presence of different platelet populations in the thrombus, including platelets with slightly changed shape and with shape significantly altered by integrin activation. CONCLUSIONS Our study showed that CEACAM-1 cannot serve as a reliable marker of platelets activation. However, these experiments provide new information about CEACAM-1 biology and its role in the regulation of platelet activity.

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Title: Light-Controlled Anticoagulation Using Photoswitchable Block Copolymers: From Plasma Screening to Whole-Blood Validation

Author(s): Karol Depczyński

Tutor(s): dr hab. n. farm. Bartłomiej Kałaska

Abstract: Introduction Anticoagulant drugs are essential for the prevention and treatment of thromboembolic disorders. However, their clinical use is limited by bleeding risk and the lack of rapid, controllable reversal strategies. In many cases, available antidotes are either ineffective or only partially effective. Photopharmacology offers a promising solution by enabling external regulation of biological activity using light. This approach relies on photoswitches - molecules that reversibly change configuration upon irradiation with specific wavelengths - allowing precise activation or deactivation of drug effects without systemic antidotes. We employed arylazopyrazole (AAP)-based photoswitch (PS1) incorporated into block copolymers. PS1 shows efficient trans-to-cis isomerization under 340-365 nm light and cis-to-trans reversal under 530 nm light, with high thermal stability. Objective This study aimed to screen a library of synthetic block polymers with photoswitchable anticoagulant properties, select the most active candidates in plasma, and validate reversible light-controlled anticoagulant activity in whole blood from Wistar rats. Methods Block copolymers were synthesized by reversible addition-fragmentation chain transfer (RAFT) polymerization with different degrees of PS1 substitution on PAA carboxyl groups. Photoresponsivenes was confirmed by UV-Vis spectroscopy. To evaluate photocontrollable anticoagulant activity, activated partial thromboplastin time (aPTT) was measured in two experimental settings: (1) in rat plasma to determine IC_{50} values and assess concentration-dependent effects, and (2) in whole blood to validate light-controlled modulation of coagulation. Results Plasma screening identified structure-dependent anticoagulant activity and enabled selection of two lead copolymers, PSSS 58 -b-P(AA 31 -co-AA/PS1 2) and PSSS 58 -b-P(AA 60 -co-AA/PS1 6), which showed the most pronounced photoresponsive anticoagulant effects. Both polymers exhibited strong anticoagulant activity, with higher potency observed for the trans isomers compared to the cis forms. In whole blood, both selected polymers in the non-irradiated trans configuration induced maximal anticoagulant activity, prolonging aPTT beyond the apparatus measurement limit (>300 s). Irradiation at 340–365 nm, resulting in trans-to-cis isomerization, markedly reduced anticoagulant activity, with aPTT values approaching those of control (~35 s). Subsequent exposure to 530 nm light restored the trans configuration and fully re-established anticoagulant activity Conclusions Photoswitchable polymers are promising candidates for on-demand, reversible anticoagulation. Light-controlled modulation of activity may improve the controllability of anticoagulant therapy and should be further evaluated in biocompatibility and in vivo studies.

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Title: Identification of potential prognostic miRNA biomarkers in ovarian cancer using survival analysis and the Kaplan-Meier estimator

Author(s): Grzegorz Dorabialski

Tutor(s): Dr Karolina Chwiałkowska

Abstract: Ovarian cancer remains one of the most lethal gynecological malignancies, primarily due to its asymptomatic development in early stages and frequent disease recurrences. MicroRNAs (miRNAs) are small, non-coding RNA molecules that regulate gene expression and play a crucial role in oncogenesis. They show tremendous potential as stable tissue biomarkers. The aim of this study was to evaluate the prognostic value of a panel of 40 selected miRNA transcripts in the context of overall survival (OS) in patients with ovarian cancer. Clinical and microtranscriptomic (smallRNA-Seq) data from 77 patients with ovarian cancer were analyzed. To binarize miRNA expression levels, optimal cut-off points were determined using the maximally selected rank statistics method or based on the median. Differences in survival probabilities were assessed using the Kaplan-Meier estimator and the log-rank test. The hazard ratio for death (HR for OS) was estimated using a univariate Cox proportional hazards model. Statistical analyses were performed in the R environment. Univariate Cox analysis revealed, among other findings, that a higher expression level of the most discriminating candidate miRNA, in terms of effect size (provisionally designated as miRNA-1), significantly reduces the risk of death (HR = 0.139, 95% CI: 0.05-0.41, p = 0.0004). Conversely, a high level of another mature miRNA molecule (miRNA-2) correlated with decreased overall survival (HR = 5.43, 95% CI: 2.00-14.72, p = 0.0009). Due to ongoing intellectual property protection procedures, the exact identifiers and sequences of the identified biomarkers cannot be disclosed at this stage. The identified mature miRNA molecules show significant potential as prognostic biomarkers in ovarian cancer. In the future, their profiling may support clinical risk stratification of patients and facilitate personalized therapeutic decision-making.

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Title: Spectral edge filters improve contrast sensitivity and visual performance in retinitis pigmentosa: a laboratory and real-world study

Author(s): Jan Machaliński

Tutor(s): dr. n. med. i n. o zdr. Marta P. Wiącek

Abstract: Background: Retinitis pigmentosa (RP) is a progressive inherited retinal degeneration characterized by early dysfunction of rod photoreceptors. Symptoms such as night blindness, reduced contrast sensitivity, and visual impairment under low-illumination conditions significantly affect everyday activities, including education and professional work. Spectral optical filters have been proposed as a supportive strategy to improve visual performance by modifying the spectral composition of incoming light and reducing glare. However, objective evidence of their functional benefit remains limited. The aim of this study was to evaluate the effect of edge filters on visual performance in patients with RP under different lighting and glare conditions. Methods: The study consisted of two phases. In the first phase, 24 patients with RP underwent laboratory-based visual testing. Binocular best-corrected visual acuity (BCVA) and contrast sensitivity (CS) were measured under photopic and mesopic conditions, with and without glare. Glare stimuli were applied at different illumination levels (10 and 135 lux for photopic conditions; 1 and 28 lux for mesopic conditions) using the Functional Vision Analyzer (Optec 6500). Each patient was tested while wearing ten different edge filters. In the second phase, lasting two weeks, patients tested 2–4 filters that provided the best laboratory results during daily activities. Patient-reported outcomes were assessed before and after the testing period using validated questionnaires evaluating quality of life (NEI VFQ-25), visual activities (VAQ), photophobia (KUMC-8, UPSIS-17), crepuscular vision (NVQ), and patient satisfaction. Results: Edge filters did not significantly change BCVA under photopic conditions but improved visual acuity in mesopic conditions and during mesopic glare exposure. Several filters improved contrast sensitivity, particularly at medium and lower contrast levels and in the presence of glare. The most frequently selected filters were ML LLR, C1, ML 500, and ML 511, with ML LLR and C1 demonstrating the most consistent improvements in contrast sensitivity. Patient-reported outcomes showed significant improvements in contrast perception in NVQ ($p = 0.039$) and in the overall score and mobility domain of UPSIS-17 ($p = 0.04$ and $p = 0.001$). In NEI VFQ-25, significant improvements were observed in several domains, including general vision, distance activities, social functioning, driving, color vision, peripheral vision, and the overall score. Conclusions: Edge optical filters may improve selected aspects of visual function in patients with RP, particularly contrast sensitivity and visual performance under low-illumination conditions. Appropriately selected spectral filters may therefore represent a useful non-invasive strategy for improving functional vision and quality of life in individuals with RP.

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Title: SOX2, OCT4, and NANOG knockdown activate cell cycle checkpoints, promote invasion, and induce apoptosis in glioblastoma cells.

Author(s): Natalia Wyroba

Tutor(s): Lukasz Antkowiak MD PhD

Abstract: Background SOX2, OCT4, and NANOG transcription factors are critically important in promoting glioma stem cell (GSC) stemness and in increasing glioblastoma (GBM) aggressiveness. Given their crucial role in GBM maintenance, this study aimed to investigate the impact of SOX2, OCT4, and NANOG gene knockdown on the oncogenic potential of GBM cells. Methods U251MG and U87MG cell lines were transfected with siRNAs targeting SOX2, OCT4, and NANOG. Then an RT-qPCR was performed for the selected genes associated with cell cycle regulation, apoptosis, invasiveness, and differentiation. Relative gene expression was obtained by normalizing to the endogenous human TATA-binding protein and the difference in threshold cycle between the treated and untreated cells. Results Knockdown of SOX2, OCT4, and NANOG induced overexpression of CDKN1A and CDKN1B and downregulation of MELK, with variable changes in CDC25A expression. Conversely, marked overexpression of CDC20 was particularly prominent after SOX2 knockdown, indicating division under cell cycle checkpoint activation. Differentiation markers (GFAP, TUBB3, EZH2, PTBP3) were modulated in a cell-line-dependent manner, consistent with transcriptional state remodeling rather than uniform terminal differentiation. Upregulation of FasL, CASP3, CASP8, CASP9, and BID indicates activation of both the intrinsic and extrinsic apoptotic pathways. Conversely, SOX2 knockdown in U87MG and U251MG lines, as well as NANOG knockdown in U251MG line, produced a response indicative of more prominent intrinsic/mitochondrial apoptotic pathway activation, as reflected by CASP9, BID upregulation with CASP8 and CASP3 downregulation. The knockdown of SOX2, OCT4, and NANOG induces invasiveness in both cell lines studied, via a proangiogenic genetic shift (HIF1A, VEGF, FLT1, and KDR) and matrix remodeling (MMP9 and MMP13). Conclusions Knockdown of SOX2, OCT4, and NANOG induced transcriptional remodeling of the cell-cycle checkpoint, with a concurrent shift toward cellular plasticity and stress-induced invasion via angiogenesis and matrix degradation. Conversely, multifold activation of apoptotic pathways indicates an apoptosis-permissive transcriptional state. Further research is warranted to define the optimal molecular targets and their potential role in the strategy to mitigate tumor aggressiveness.

CLINICAL SCIENCES

PUBLIC HEALTH, PSYCHIATRY AND INFECTIOUS DISEASES

SESSION

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Title: “Through the Forest to Health” - a pilot project supporting psychological well-being

Author(s): Emilia Niedźwiecka, Iga Włodarczyk, Jakub Tomczyk

Tutor(s): PhD Alicja Karwowska

Abstract: Mental health problems among medical students are becoming an increasingly significant public health challenge. High academic demands, chronic stress, and emotional burden contribute to a higher prevalence of depressive and anxiety symptoms in this population. To analyze the growing mental health issues among medical students, a nationwide anonymous survey was conducted among over 1600 students from 24 Polish universities. The results revealed a considerable psychological burden - 20% of students at the Medical University of Białystok reported a formal diagnosis of depression, and approximately 40% met DSM-5 criteria, exceeding rates observed in the age-matched general population. Moreover, many students reported chronic fatigue, low mood, and suicidal thoughts. Based on these observations the project “Through the Forest to Health” was implemented. The project was aimed at improving students’ psychological well-being. The initiative was directed at university students in Białystok, particularly those attending the Medical University of Białystok. The project comprised four structured forest-based activities: an educational walk, canvas painting, a team-based outdoor game, and guided physical exercise. Participants completed questionnaires based on the Profile of Mood States (POMS) before and after each activity, allowing assessment of the interventions’ effects on mood and psychological well-being. Data analysis showed that participation in forest-based activities was associated with improved mood, reduced negative emotions, increased relaxation, and greater willingness to engage socially. The findings highlight the urgent need to support mental health among medical students, and structured activities in natural environments may serve as an effective and accessible complement to professional psychological care. The positive reception of the project among students suggests that similar initiatives could be successfully implemented within academic settings.

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Title: Analysis of occupational exposure to potentially infectious material among healthcare workers: An 11-year retrospective study.

Author(s): Szczepan Wąsik

Tutor(s): mgr Mariusz Rozwandowicz

Abstract: Introduction: Occupational exposure to potentially infectious biological material remains a critical safety issue in healthcare settings. Such incidents pose a significant threat to healthcare workers, as the probability of viral or bacterial transmission can profoundly impact the health and lives of both the exposed individuals and their close contacts. Exposure risks affect a wide range of personnel, including frontline medical professionals collecting biological samples, surgical teams performing invasive procedures, and non-medical staff mishandling infectious waste. Among various mechanisms, needlestick and sharps injuries represent the most severe risk. Specifically, hollow-bore needles are associated with the highest transmission rates; they not only breach the skin barrier but can also carry a significant volume of infectious material within their lumen, increasing the viral load during an incident. Aim of the study: The primary aim of this study was to monitor and analyze the 11-year trend of occupational exposures (2010–2021) at the MUW Central Clinical Hospital. The study further aimed to evaluate the nature of these incidents and identify the professional groups most susceptible to accidental exposure. Materials and Methods: Data were retrieved from the mandatory internal exposure registry of the MUW Central Clinical Hospital. The analysis, conducted using Microsoft Excel, covered a total of 906 registered incidents. Exposures were meticulously categorized by year, gender, professional group, and the specific nature of the event (e.g., needlestick, laceration, splash, or skin contamination). Furthermore, needlestick injuries were sub-classified by instrument type and, where documented, the presence or absence of a needle lumen to assess specific risk factors. Results: Throughout the 11-year period, a total of 906 occupational exposure incidents were recorded. The data revealed a significant 74% downward trend in annual cases, decreasing from 112 in 2010 to 29 in 2021. Demographic analysis showed that women accounted for 85% of all reported cases (n=772). Nursing staff were the most frequently affected professional group, followed by physicians, who notably exhibited an upward trend in exposures between 2013 and 2018 before stabilizing. Needlestick injuries were the predominant mechanism, accounting for 77% of all cases (n=698), with 182 incidents involving hollow-bore needles. Epidemiological screening identified 90 cases of infected sources or seroconversions. While HCV remained the dominant pathogen, HIV detections exceeded other pathogens for the first time in 2020. Co-infections were identified in 11.1% of cases. Conclusions: The predominance of women and nursing staff in the registry likely reflects the demographic structure of the healthcare workforce and the high-risk nature of routine clinical duties, such as blood collection. The 74% decline in incidents is a positive indicator of improved adherence to safety protoc

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Title: More than Just Fatigue: The Link Between ADHD Diagnosis and Energy Drink Consumption

Author(s): Helena Żórawska, Paweł Niczyporuk

Tutor(s): Dr hab. n. med. Marzena Wojewódzka-Żelezniakowicz; dr n. med. Marcin Żórawski, dr n.med. Paweł Jastrzębski, dr.n.med. Magdalena Tomczyk

Abstract: Background: Energy drink (ED) consumption is a growing phenomenon among medical students. While caffeine is commonly used to combat fatigue, its role as a stimulant for individuals with neurodevelopmental disorders is significant. This study investigates the correlation between a clinical diagnosis of ADHD and ED consumption patterns, focusing on whether these drinks are used to manage symptoms in a high-pressure academic environment. Materials and Methods: A cross-sectional study was conducted among 1089 Polish medical students. Participants were categorized based on their ADHD diagnosis status. Data regarding the frequency of energy drink consumption, underlying motivations, and experienced side effects were collected. Statistical analysis was performed using the Chi-square ($\chi 2$) test, with significance set at $p < 0.05$. Results: Of 1089 participants, 11.9% (n=129) reported an ADHD diagnosis. A significant association was found between ADHD and consumption frequency ($\chi 2(5)=29.88, p<0.0001$), with the ADHD cohort consuming EDs at least weekly more often than their non-ADHD peers (67.4% vs. 46.5%). Motivations also differed significantly ($\chi 2(8)=22.15, p=0.004$); students with ADHD were nearly twice as likely to cite 'improving concentration and focus' as their primary reason (20.2% vs. 11.0%). The ADHD group also reported a higher incidence of adverse effects, including insomnia ($p = 0.02$) and anxiety/irritability ($p = 0.01$). Conclusion: Our findings indicate that medical students with ADHD have a significantly higher reliance on energy drinks compared to their peers. The frequent use of EDs to enhance concentration suggests that these students may be using caffeine as a compensatory mechanism for ADHD-related deficits, which concurrently increases the risk of adverse psychiatric effects.

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Title: Wind Direction and Air Mass Origin in Relation to Psycho-pathology and Inflammation in Schizophrenia: A Pilot Study

Author(s): Dominika Jabłonka, Oliwia Froń

Tutor(s): Stefan Modzelewski, MD

Abstract: Background: Schizophrenia is a severe and clinically heterogeneous mental disorder with an unpredictable course. Growing evidence indicates that immune dysregulation and environmental factors, including weather conditions, may influence symptom exacerbations. Although seasonality has been repeatedly described, the impact of specific meteorological variables - particularly wind direction as a proxy for distinct air masses - remains insufficiently explored, and biochemical correlates of weather exposure are rarely examined. Methods: This cross-sectional observational study included 65 patients with schizophrenia assessed between January and October 2025. Psychopathology was evaluated using the Positive and Negative Syndrome Scale (PANSS). Serum levels of TNF-α, IFN-γ, IL-6, and IL-4 were measured. Meteorological data were obtained from the nearest standardized weather station. Wind direction was decomposed into meridional (north–south) and zonal (east–west) vector components using trigonometric transformation, and three-day averaged exposure was analyzed. Linear regression models weighted by wind directional stability examined associations between wind components and PANSS scores, adjusting for medication dose, age, sex, BMI, and smoking. Exploratory analyses assessed relation-ships between wind direction and cytokine concentrations. Results: Northerly winds were associated with higher total PANSS scores and more severe negative symptoms, whereas no significant associations were observed for positive symptoms. Northerly and westerly winds correlated with higher TNF-α levels, and westerly winds were additionally associated with IFN-γ. Conclusions: Wind direction may represent a composite environmental factor linking meteorological conditions with symptom severity and immune activation in schizophrenia, supporting future development of weather-informed predictive models.

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Title: Mobility in Depression: Association of Geriatric Depression Scale Scores with Timed Up and Go Performance

Author(s): Udodirim Uduh

Tutor(s): Serena Stephenson, MD, Bartlomiej Soltysik, MD, PhD

Abstract: Introduction: Depression is well established as a contributor to psychomotor slowing. Additionally, it is a recognized geriatric syndrome, which may lead to frailty. However, the association between depression and functional decline in older adults remains less clearly defined. Aim of the study: To assess the relationship between depressive symptoms and mobility in hospitalized older adults using Geriatric Depression Scale (GDS) scores and Timed Up and Go (TUG) test results. Materials and Methods: This retrospective study included 175 hospitalized patients, aged 60 years or older, from the geriatric department at the Central Teaching Hospital in Lodz, Poland. Patients who were assessed for depression and had documented TUG tests as well as GDS scores were included in this study. Descriptive statistics were calculated, and the Shapiro-Wilk test confirmed non-normal distribution. Continuous variables were analyzed using the Mann-Whitney U test, and categorical variables using Fisher's exact test. A general linear model with sigma-restricted parameterization, stratified by age and sex, was used to analyze the relationship between depressive symptoms and functional performance. Statistical significance was set at $p \leq 0.05$. Statistical analyses were conducted using Statistica 13.1 software. Results: Among 175 patients, 80 had depression (53 women, 27 men) and 95 did not (60 women, 35 men). Median TUG times were significantly longer in depressed (16.00 [11.7-25.0] sec) than in non-depressed patients (13.0 [9.0-18.0] sec). This relationship was similarly seen when the median TUG times were compared between depressed women (16.0 [12.0-30.0] sec) and men (15.0 [11.0-20.0] sec) with non-depressed females (14.0 [10.5-20.0] sec) and males (10.0 [8.0-17.0] sec). These comparisons were statistically significant ($p<0.05$) overall and among men, but not among women ($p=0.06$). The general linear model showed that higher GDS scores were significantly associated with slower TUG performance ($B=0.58$, $SE=0.215$, $t=2.70$, $p=0.008$, 95% CI: 0.20-1.00), indicating that each one-point increase in GDS corresponded to a 0.58-second increase in TUG time. The standardized effect was moderate (Beta coefficient=0.20, 95% CI: 0.054-0.347), meaning that a one standard deviation increase in GDS scores corresponds to a 0.20 standard deviation increase in TUG time. Conclusion: Higher depressive symptoms were associated with slower TUG performance, suggesting an association between depressive symptoms and poorer mobility in hospitalized geriatric patients. Since slowed mobility may be associated with unrecognized depression, these findings highlight the importance of assessing both mood and functional mobility to identify at-risk hospitalized individuals and guide early interventions.

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Title: Problematic Social Media Use and Depressive Symptoms in Young Adults

Author(s): Ernestas Gertas

Tutor(s): Danielė Vyčienė, MD

Abstract: Background and Aim: The rapid expansion of digital communication platforms has raised increasing concerns regarding the potential impact of excessive social media use on mental health in young adults. Emerging evidence suggests that maladaptive patterns of online engagement may contribute to emotional dysregulation, sleep disturbances, and depressive symptomatology. The aim of this study was to evaluate clinical manifestations of depressive symptoms associated with problematic social media use and to review contemporary literature addressing behavioral and psychosocial determinants of digital overuse. Methodology: This study presents an analysis of two clinical cases of young adults presenting with depressive symptoms potentially associated with excessive social media engagement. Clinical data were collected after obtaining informed consent and anonymizing patient information. Psychiatric evaluation included structured clinical interviews and standardized screening tools for depressive symptom severity. Additionally, a literature review was performed using PubMed and Medscape databases with the following keywords: problematic social media use, depression, behavioral addiction, digital mental health, young adults. Peer-reviewed articles published between 2019 and 2024 were analyzed. Results: Two clinical cases were evaluated. The first patient, a 22-year-old female university student, presented with persistent low mood, sleep disruption, reduced concentration, and decreased academic productivity. The patient reported daily social media use exceeding five hours, including frequent nocturnal engagement. Clinical assessment revealed moderate depressive symptom severity. Behavioral modification strategies focusing on digital hygiene and reduction of screen exposure were implemented, resulting in gradual improvement in mood and sleep quality.The second patient, a 24-year-old male student, presented with irritability, emotional fatigue, and impaired academic performance. The patient reported compulsive social media checking behaviors accompanied by fear of missing out (FOMO). Daily usage exceeded four hours. Screening evaluation indicated mild-to-moderate depressive symptomatology. Following psychoeducation and implementation of structured limitations on social media use, the patient demonstrated improvement in emotional regulation and overall well-being. Conclusions: Problematic social media use may represent a clinically relevant behavioral risk factor contributing to depressive symptom development in young adults. Early identification of maladaptive digital engagement patterns may facilitate preventive mental health interventions and support improved psychological outcomes. Further longitudinal research is required to clarify causal mechanisms and inform evidence-based clinical guidelines. Keywords: problematic social media use, depressive symptoms, behavioral addiction, young adults, digital mental health, clinical case analysis.

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Title: Are Poles ready for reimbursement policy? Knowledge and emotions of in vitro fertilization among Polish people.

Author(s): Wiktoria Lisińska, Ewa Słomka, Aleksandra Walendzik, Zuzanna Kobalczyk

Tutor(s): Katarzyna Kwas MD, Grzegorz Guzowski MD, PhD; prof. Piotr Sieroszewski MD, PhD

Abstract: Introduction: When natural conception is difficult or impossible, individuals and couples might utilize the medical treatment known as in vitro fertilization (IVF) to help conceive a child. In this procedure, the egg is fertilized with sperm outside the body in a lab, and the resultant embryo is subsequently implanted into the uterus. Recent changes to Poland's reimbursement laws have made public awareness and understanding of in vitro fertilization (IVF) even more important.This study aims to assess the level of knowledge and awareness of in vitro fertilization (IVF) among Polish people. Methods: The study was conducted using a structured survey to assess the knowledge and perceptions of in vitro fertilization (IVF) among the general Polish population. The questionnaire consisted of 48 multiple-choice and open-ended questions divided into three main sections: sociodemographic characteristics, factual knowledge about IVF, and ethical considerations. Statistica 13.3 was used for all statistical analyses. Results:The study involved 276 respondents; 77,9% (n=215) of respondents were women and 22,1% (n=61) were men. The average age of the respondents was approximately 34 years (SD = 13,22). The average length of time spent trying to get pregnant was 11 months (SD = 21,22). 40% of respondents confirmed that they know people who have used IVF, and one in ten women who have already given birth have used IVF. 67% of people consider the topic of IVF to be controversial, and as many as 21% believe that the disposal of unused embryos is a violation of the right to life. 72% of respondents support the reimbursement of in vitro treatments with public funds. Only 29% of people believe they have either good or excellent knowledge about in vitro. Conclusions: Knowledge about in vitro fertilization among the Polish population remains limited, and the topic continues to generate controversy and misunderstanding.

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Title: Title: Title: Pre-travel vaccination and malaria chemoprophylaxis among patients attending a travel medicine clinic in Białystok in 2025

Author(s): Agata Rzeszuto

Tutor(s): Doktor Habilitowany Maciej Kondrusik

Abstract: Analysis of consultations at the Tropical Diseases Clinic of the University Clinical Hospital in Białystok in 2025 Aim: The aim of the study was to evaluate the structure of pre-travel consultations, the scope of recommended vaccinations, and the use of antimalarial chemoprophylaxis among patients preparing for travel to tropical regions in 2025. Material and methods: The study was based on the analysis of medical records from the Tropical Diseases Clinic at the University Clinical Hospital in Białystok. Data from patients attending pre-travel consultations in 2025 were reviewed, including demographic characteristics, travel destinations, administered vaccinations, and recommended malaria chemoprophylaxis. Results: In 2025, a total of 475 consultations related to pre-travel preventive measures were conducted. The clinic was attended by 304 patients, including 179 women and 125 men, with a mean age of 41 years. Among them, 162 patients attended the clinic for the first time and had not previously received recommended travel vaccinations. The most common travel destination was Asia (n = 176), followed by Africa (n = 84) and South America (n = 24). Vaccination profiles differed depending on the destination region. Among travelers to Africa, the most frequently administered vaccines were against hepatitis A (57.1%), yellow fever (57.1%), typhoid fever (53.6%), and combined diphtheria–tetanus–pertussis–polio (51.2%). Antimalarial chemoprophylaxis was recommended to 60.7% of patients traveling to this region. Among travelers to Asia, hepatitis A vaccination was administered most frequently (66.8%), followed by typhoid fever (57.7%), Japanese encephalitis (43.3%), and combined diphtheria–tetanus–pertussis–polio vaccination (45.7%). Antimalarial chemoprophylaxis was recommended to 53.8% of patients. In the group traveling to South America, the most common vaccinations included yellow fever (75%), typhoid fever (70.8%), and hepatitis A (62.5%). Antimalarial chemoprophylaxis was recommended to 47.8% of travelers. A considerable number of patients received booster immunization with the combined diphtheria–tetanus–pertussis–polio vaccine to complete routine vaccination schedules before travel. Vaccination against meningococcal disease was most frequently recommended for travelers to Africa, while cholera vaccination was administered selectively depending on travel conditions and epidemiological risk. Conclusions: The findings indicate that the selection of vaccinations prior to travel should be closely tailored to the destination region and associated epidemiological risks. Vaccinations against food- and water-borne diseases, particularly hepatitis A and typhoid fever, played a key role in pre-travel prevention. These results highlight the importance of individualized consultations in travel medicine clinics to ensure appropriate risk assessment and effective preventive strategies before international travel.

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Title: Sexually transmitted infections awareness among university students in Poznań

Author(s): Tatiana Antczak, Jakub Dyś, Aleksandra Styperek, Julia Wojciechowska

Tutor(s): Natalia Welc, MD, Prof. Adriana Polańska, MD, PhD

Abstract: Sexually transmitted infections (STIs) remain a major public health concern, particularly among young adults. Limited knowledge and engagement in risky sexual behaviors may contribute to increasing infection rates among students. This study assessed awareness, knowledge, and preventive behaviors related to STIs, including HIV and HPV, among university students in Poznań. An online survey was conducted among 784 students over a two-month period. The questionnaire included demographics, university affiliation, sexual activity, contraception use, and STI-related knowledge and practices. Data were analyzed using PQStat with frequency tables, Chi-square, and Fisher tests. Most respondents were female (66.7%) and aged 21–23 (53%). The largest groups were from Adam Mickiewicz University (19.7%), Poznan University of Technology (17.6%), and Poznan University of Medical Sciences (PUMS; 16.7%). No significant differences were found between universities or genders in contraception use or sexual activity. Similarly, no gender differences were observed in awareness of HIV testing locations, engaging in sex with partners of unknown health status, or sexual activity under the influence of alcohol or psychoactive substances. Students from PUMS and the University of the Arts Poznan underwent STI testing more frequently than others ($p=0.000004$). Together with Adam Mickiewicz University students, they demonstrated greater knowledge of access to free and anonymous HIV testing compared to students from other universities ($p=0.000001$). Students from PUMS were more familiar with PrEP ($p=0.000002$) and more often vaccinated against HPV ($p<0.000001$). HPV vaccination was also significantly higher among women ($p=0.000084$). Sex under the influence of psychoactive substances was most common among arts students and least frequent among life sciences students ($p=0.003888$). Sexual encounters with partners of unknown health status were most frequent among arts students and least among technical university students ($p=0.025928$). Among those tested for STIs, 65% knew where to obtain a free HIV test, compared to only 22.2% among untested individuals ($p<0.000001$). Additionally, 84.5% of respondents who reported condomless sex despite awareness of STI risk also engaged in intercourse under the influence of alcohol ($p=0.000429$). In contrast, 85% of those who had never foregone condom use reported no such behavior ($p<0.000001$). The study highlights disparities in STI-related health literacy depending on the field of study and gender. While overall sexual activity is similar, medical and arts students more often engage in preventive behaviors, including testing and vaccination. A strong association between substance use and risky sexual practices was observed. Limited awareness of testing options among untested individuals represents a significant barrier to prevention and access to healthcare services.

PhD SESSION

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Title: The Role of Chemokines and Their Receptors in Ovarian Cancer

Author(s): Paulina Bałdyga

Tutor(s): PROF. PAWEŁ KNAPP, DR N.MED. JAKUB DOBROCH

Abstract: Background: Ovarian cancer remains one of the most common and most lethal malignancies among women, accounting for approximately 185,000 deaths worldwide each year. It predominantly affects postmenopausal women, with epithelial ovarian cancer comprising 85–90% of all cases. Despite advances in diagnostics and treatment, prognosis remains poor, emphasizing the need for novel prognostic and predictive biomarkers. Increasing evidence highlights the critical role of the inflammatory tumor microenvironment in carcinogenesis. Chemokines, small chemotactic proteins regulating immune cell migration, are involved in key processes such as angiogenesis, proliferation, inhibition of apoptosis, and epithelial–mesenchymal transition (EMT). Their overexpression has been associated with aggressive disease and poor clinical outcomes. Methods: This retrospective study includes patients with serous ovarian cancer treated at the University Oncology Center in collaboration with the Clinical Research Center of the Medical University of Białystok. Clinical, histopathological, and molecular data were collected, including FIGO stage, BRCA mutation status, treatment course, and CA-125 levels. The analysis focuses on the relationship between chemokine expression and clinical parameters such as overall survival (OS), progression-free survival (PFS), and response to treatment. Statistical methods include correlation analysis, Kaplan–Meier survival curves, and Cox proportional hazards and logistic regression models. Results: The study is expected to demonstrate that increased expression of selected chemokines and their receptors correlates with shorter OS and PFS, higher CA-125 levels, and reduced treatment response. Additionally, specific chemokines may be identified as potential markers of treatment resistance. Conclusions: Chemokines and their receptors may serve as valuable prognostic and predictive biomarkers in serous ovarian cancer. Their identification could improve patient stratification and support the development of targeted therapies. Furthermore, the findings may contribute to a better understanding of the role of inflammation in ovarian cancer progression.

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Title: "To do or not to do - wisdom tooth extractions"

Author(s): Karol Dąbrowski, Virginia Lis

Tutor(s): dr hab. n. med. Bożena Antonowicz

Abstract: Wisdom teeth, also known as the third molars of the maxilla and mandible, usually erupt between the ages of 17 and 25. Due to their late eruption and the limited space in the dental arch, they often remain partially impacted or completely unerupted. Their anatomical position and proximity to important structures, such as the inferior alveolar nerve or the maxillary sinus, mean that the decision to extract them requires careful clinical and radiological evaluation. The most common indications for the removal of wisdom teeth result from their improper position and late eruption. These include recurrent inflammation of the pericoronal tissues, caries of the wisdom tooth or adjacent teeth, neuralgia, and the formation of dentigerous cysts. Orthodontic indications related to the presence of malocclusion may also occur. However, it should be emphasized that impaction of a tooth alone does not constitute an absolute indication for extraction. Equally important is the assessment of local and systemic contraindications as well as proper perioperative management, including the rational use of antibiotic therapy. Contemporary clinical practice emphasizes the individualization of therapeutic decisions and the limitation of prophylactic extractions without clear medical indications. In this paper cases of patients with wisdom teeth have been presented. As for these patients, the indications for surgical treatment and therapeutic procedures have been analysed. The presented cases highlight the importance of accurate diagnosis and individualized treatment planning in dental practice.

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Title: Systemic Oxidative Stress in Unexplained Infertility: Association with Infertility-Related Comorbidities and the Potential Role of Antioxidant Supplementation

Author(s): Gabija Didžiokaitė, Aida Kuznecovaitė, Milda Černytė

Tutor(s): Violeta Kvedarienė

Abstract: Introduction. Unexplained infertility (UI) affects a significant proportion of women of reproductive age, many of whom present with coexisting conditions not considered direct causes of infertility but potentially contributing to impaired reproductive outcomes and overall health. Increasing evidence highlights the role of oxidative stress (OS) in female infertility, particularly through its detrimental effects on oocyte quality and embryo implantation. Malondialdehyde (MDA), a by-product of lipid peroxidation, serves as a reliable biomarker of systemic OS. This study aimed to evaluate serum MDA levels in women with UI, investigate their association with infertility-related comorbidities, and assess the potential impact of antioxidant supplementation in this population. Methods. In this prospective observational study, 30 women with UI were included, 50% of whom had at least one comorbidity. 13 (43,3 %) women were diagnosed with endometriosis (stage I-II), 6 (20 %) – with bronchial asthma, 3 (10 %) – with hypothyroidism and 2 (6,7 %) – with hyperprolactinemia (currently in remission following treatment). Serum MDA was measured by ELISA. Participants received antioxidant supplements (vitamin E 50 mg/day, zinc 15 mg/day, coenzyme Q10 15 mg/day, selenium 70 µg/day) and MDA levels were reassessed after 1–7 months (mode: 3 months). Statistical analyses were conducted using R and Python, with $p < 0.05$ considered significant. Results. The median age was 33 ± 7 years. Across the entire cohort, serum MDA concentrations decreased significantly following antioxidant supplementation: from 228.2 ng/mL to 173.94 ng/mL ($p < 0.001$). All infertility-related comorbidity subgroups experienced a reduction in median serum MDA after supplementation: endometriosis (283.77 to 221.46 ng/mL, $p=0.005$), bronchial asthma (256.84 to 163.6 ng/mL, $p=0.156$), hypothyroidism (162.76 to 108.91 ng/mL, $p=0.25$), hyperprolactinemia (172.6 to 148.97 ng/mL, $p=0.5$). Although subgroup analyses were limited by small sample sizes, the consistent downward trend suggests a potential beneficial effect of antioxidant therapy on systemic OS in this population. Conclusions. Women with unexplained infertility demonstrated elevated systemic OS, as reflected by serum MDA levels, particularly in the presence of coexisting conditions such as endometriosis, bronchial asthma, treated hypothyroidism, and treated hyperprolactinemia. Antioxidant supplementation was associated with a significant reduction in MDA levels in the overall cohort, with a consistent downward trend observed across all comorbidity subgroups, although statistical significance was limited in smaller groups. These findings highlight the potential role of OS as a contributing mechanism through which coexisting conditions—traditionally not considered direct causes of infertility—may adversely influence reproductive function in women with UI, and suggest that antioxidant therapy may represent a beneficial adjunctive strategy.

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Title: Baseline Respiratory and Exercise Capacity Assessment in Patients with Lung Cancer Prior to Oncological Treatment: A Pilot Cardiopulmonary Exercise Testing Study

Author(s): Klaudia Jadczak, Katarzyna Guziejko, Łukasz Minarowski, Robert Mróz

Tutor(s): prof. Robert Mróz MD PhD

Abstract: Background: Patients with lung cancer represent a clinically heterogeneous population with regard to physiological reserve even before the initiation of oncological treatment. Impaired exercise capacity may reflect not only tumour burden and respiratory dysfunction, but also coexisting cardiovascular comorbidity. Cardiopulmonary exercise testing (CPET) provides an integrated assessment of ventilatory, circulatory, and metabolic responses to exercise. The aim of this study was to evaluate the relationships between clinical, pulmonary function, and CPET parameters in patients with lung cancer assessed before treatment initiation, with particular emphasis on cardiovascular burden. Methods: This pilot baseline analysis included 23 patients with lung cancer assessed with CPET before the initiation of oncological treatment, irrespective of disease stage and planned treatment modality. Demographic characteristics, performance status, clinical stage, cardiovascular comorbidities, pulmonary function indices, and CPET parameters were assessed. Continuous variables are presented as median and interquartile range (IQR). Associations were analysed using Spearman's rank correlation, and between-group comparisons were performed with the Mann–Whitney U test. All analyses were considered exploratory. Results: The median age was 70 years (IQR 58.5–74.5), and 65.2% of participants were male. Median VO2peak/kg was 17.8 mL/kg/min (IQR 15.3–21.3), median VE/VCO2 slope was 29.1 (IQR 26.7–35.7), median DLCO was 68% predicted (IQR 61–80), and median FEV1 was 77% predicted (IQR 64.5–91.5). VO2peak/kg was significantly negatively correlated with age (rho = -0.652; p = 0.0008), BMI (rho = -0.470; p = 0.0236), and cardiovascular burden score (rho = -0.610; p = 0.0020), and positively correlated with DLCO % predicted (rho = 0.479; p = 0.0327), peak heart rate as percentage of predicted value (rho = 0.654; p = 0.0007), and peak oxygen pulse (VO2/HRpeak) (rho = 0.498; p = 0.0155). Patients without cardiovascular comorbidity achieved higher VO2peak/kg than those with cardiovascular burden (22.8 vs 15.6 mL/kg/min; p = 0.0035). Patients with ECOG 0 had higher FEV1 % predicted (91.5 vs 64.5; p = 0.0036) and greater 1-minute heart rate recovery (20.0 vs 12.5 beats/min; p = 0.0406). Most CPETs were submaximal. Conclusions: Patients with lung cancer demonstrate substantial heterogeneity in exercise capacity already at the pre-treatment stage. A less favourable exercise profile is associated primarily with older age, higher BMI, lower diffusing capacity, and the presence of cardiovascular comorbidity. These findings suggest that CPET may serve as a useful tool for baseline functional phenotyping before treatment initiation and may help identify patients at greater risk of poorer treatment tolerance. Prospective follow-up will determine whether baseline CPET characteristics predict early changes in physical performance after treatment initiation.

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Title: Why Do Parents Refuse Regional Anesthesia in Children? – Results of an Original Survey

Author(s): Karolina Jaruga, Ewa Piekarska

Tutor(s): Piotr Jakubów MD, PhD, DSc

Abstract: Background: Regional anesthesia is increasingly used in pediatric orthopedic surgery as part of multimodal analgesia strategies. It has been shown to improve postoperative pain control and reduce perioperative opioid requirements. Despite these advantages, parental acceptance remains a key factor determining whether regional techniques are implemented in children and adolescents. Understanding the factors that influence parental decision-making may help improve preoperative communication and facilitate shared decision-making between clinicians and families. Methods: We conducted a prospective questionnaire-based study among parents of children aged 12–18 years scheduled for elective lower limb orthopedic surgery. Parents were informed about the proposed anesthetic technique, including the use of regional anesthesia as an adjunct to general anesthesia or spinal anesthesia. The survey assessed parental acceptance of regional anesthesia and explored factors influencing the decision using a five-point Likert scale. Questions evaluated understanding of the proposed technique, perceived benefits and risks, trust in the anesthesiology team, previous anesthetic experiences, and concerns related to possible complications. Additionally, respondents were asked to indicate the main reasons influencing their decision to accept or refuse regional anesthesia. Results: Preliminary analysis of the collected questionnaires suggests that parental decisions regarding acceptance of regional anesthesia are influenced by several factors, including the level of trust in the anesthesiology team, understanding of the proposed procedure, and perceived benefits related to improved postoperative pain control. The most commonly reported concerns included the possibility of neurological complications, potential nerve injury, and anxiety related to the performance of the block itself. Some parents also expressed concerns that their child might be conscious during needle insertion or while the regional block was being performed. Detailed statistical analysis of the collected data is currently ongoing. Conclusions: Initial observations suggest that effective preoperative communication and trust in the anesthesiology team may play an important role in parental acceptance of regional anesthesia in adolescents undergoing orthopedic procedures. Addressing parental concerns, particularly those related to neurological complications and procedural awareness, may help increase acceptance of regional techniques and support their wider use in pediatric orthopedic anesthesia.

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Title: The Prevalence of Obstructive Sleep Apnea in the Population of Bialystok and the Discriminative Validity of the Epworth Sleepiness Scale and the Insomnia Severity Index

Author(s): Urszula Karaszewska

Tutor(s): Prof. dr hab. Ewa Olszewska

Abstract: Background: Obstructive sleep apnea (OSA) is a highly prevalent condition affecting nearly 936 million adults worldwide. The severity of OSA is classified as mild, moderate, or severe based on the apnea-hypopnea index (AHI) obtained from polysomnography, the gold standard for diagnosis. Questionnaires alone are not recommended for diagnosing OSA in adults without polysomnography or a home sleep apnea test. The aim: To determine the prevalence of OSA in the population of Bialystok and to evaluate the discriminative validity of two self-report screening instruments- the Epworth Sleepiness Scale (ESS) and the Insomnia Severity Index (ISI). Materials and methods: The study was conducted as part of the Bialystok Plus population study, which comprehensively assesses the health of Bialystok residents. All participants underwent a diagnostic procedure including a medical history, ESS, ISI questionnaires, an ENT examination and a home sleep study (type III). Polysomnography served as the reference standard against which questionnaire- based screening was evaluated. The Full Analytical Cohort (FAC; N = 210) included all participants with valid polysomnography and at least one computable questionnaire score. The Binary-Outcome Set (BOS; N = 191) was derived from the FAC to participants with both ESS and ISI scores available. Results: The Full Analytical Cohort comprised 210 participants (mean age 50.77 ± 13.39 years; 50.0 % female; median BMI 26.25 [IQR 23.50–29.40] kg/m²), of whom 122 (58.1 %) met the criteria for any-grade OSA (AHI ≥ 5). Among these, 74 (60.7 %) had mild, 33 (27.0 %) moderate, and 15 (12.3 %) severe disease. Participants with OSA were significantly older (Cohen's d = 0.62), had higher body weight (r = 0.38), and demonstrated markedly higher AHI (r = 0.83), lower mean SpO_2 (r = 0.47), greater time spent with SpO_2<90% (T<90%) (r = 0.54), and longer snoring duration (r = 0.40) relative to OSA-negative individuals (all p < .001). Critically, ESS and ISI total scores did not differ significantly by OSA status (d = 0.21, p = .138 and d = 0.08, p = .577, respectively). Conclusions: Neither the ESS nor the ISI demonstrates clinically meaningful discriminative validity for the detection of OSA in this community-based cohort. The identified risk triad of advancing age, male sex, and elevated BMI rather than symptom- based questionnaire profiles constitutes a more appropriate framework for estimating clinical pre-test probability in this population. Further studies in independent cohorts with broader severity distributions remain warranted before these conclusions can be generalised.

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Title: Bridging Blood and Urine: Emerging Inflammatory Markers in Bladder Cancer Monitoring

Author(s): Kacper Karpiuk, Grzegorz Młynarczyk

Tutor(s): dr hab. n. med. Grzegorz Młynarczyk

Abstract: Background: Inflammation plays a significant role in the pathogenesis and recurrence of non-muscle invasive bladder cancer (NMIBC). Haematological markers, including the neutrophil-to-lymphocyte ratio (NLR), lymphocyte-to-monocyte ratio (LMR), platelet-to-lymphocyte ratio (PLR), and coagulation-related markers, such as fibrinogen and D-dimers, show promise. Nonetheless, their time dynamics around endoscopic management remain understudied. Methods: This prospective observational study involved NMIBC patients who underwent transurethral resection of bladder tumour (TURBT). Peripheral blood samples were collected at three time points: before TURBT (Sample 1), early postoperative within 48 hours (Sample 2), and early surveillance within 6 months (Sample 3). NLR, LMR, and PLR were derived from the complete blood count. Fibrinogen and D-dimers were quantified; values below the limit of detection were imputed using the half-LOD method. Descriptive statistics and paired comparisons were performed. Results: A total of 10 patients and 30 serial measurements were analysed. The baseline medians for Sample 1 were as follows: NLR 3.4, LMR 2.96, PLR 153.6, fibrinogen 3.9 g/L (converted from 389.5 mg/dL) and D-dimers 0.54 µg/mL. In a study involving 10 paired patients with Samples 1 and 3, the mean NLR decreased by −1.2 ($p = 0.0199$), while the PLR decreased by −11.7 ($p = 0.4398$). LMR showed minimal change, while fibrinogen and D-dimers showed expected postoperative responses. Although the sample size was limited, the marker trajectories demonstrated consistency and biological plausibility. Conclusions: Preliminary data suggest that NLR, PLR, fibrinogen and D-dimers show measurable perioperative changes over time during the diagnostic and therapeutic management of NMIBC. The serial monitoring of systemic biomarkers may enhance the assessment of perioperative inflammation and facilitate the development of tailored surveillance strategies. Additional recruitment and expanded analyses are required to define their predictive value.

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Title: Rotational Thromboelastometry Demonstrates Plasma Hypercoagulability in Acute Extrahepatic Cholestasis

Author(s): Maksymilian Lech,

Tutor(s): PhD MD Paweł Rogalski

Abstract: Background: Cholestasis is a clinical and biochemical condition characterized by impaired bile flow into the duodenum, most commonly caused by gallstones or malignant lesions. While standard laboratory tests (e.g., PT, aPTT) typically suggest an increased bleeding tendency in these patients, more advanced assays often reveal the opposite. Rotational thromboelastometry (ROTEM) allows for a comprehensive, global in vitro assessment of the entire coagulation process. This study aimed to evaluate potential hemostatic alterations in patients with acute extrahepatic cholestasis and determine the impact of its underlying etiology. Methods: The study included a research cohort of patients with extrahepatic cholestasis divided into two subgroups: Group 1 (malignant etiology, n=16; mean age 73.6 years) and Group 2 (benign etiology, n=23; mean age 64.5 years), alongside a control group (n=35; mean age 57.6 years). ROTEM analysis was performed for each patient, incorporating EXTEM (extrinsic pathway activation via tissue factor) and FIBTEM (EXTEM with cytochalasin for platelet inhibition) profiles. The primary parameters analyzed were clotting time (CT), clot formation time (CFT), maximum clot firmness (MCF), and the platelet component of the clot (%PLT). Results: Patients with cholestasis (both malignant and benign) demonstrated significantly higher median MCF (EXTEM) values compared to the control group [72.8 mm (69;75) vs. 64.5 mm (62;67), $p<0.005$], despite having a significantly prolonged PT. Conversely, the median platelet component of the clot (%PLT) was significantly lower in the overall cholestasis cohort than in controls [61.1% (54.1;70) vs. 73.9% (70.3;76.5), $p<0.005$]. There were no statistically significant differences in any measured parameters between patients with malignant (Group 1) and benign (Group 2) etiologies. Furthermore, CT and CFT did not differ significantly between the cholestasis patients and the control group. Conclusions: Patients with acute extrahepatic cholestasis demonstrate a hypercoagulable state on ROTEM, which contrasts with the bleeding tendency suggested by the prolonged PT in conventional testing. This prothrombotic profile occurs independently of the underlying etiology (malignant vs. benign). Furthermore, the hypercoagulability is primarily driven by the plasma component of the coagulation system rather than platelets, as evidenced by the reduced platelet contribution to overall clot firmness.

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Title: The Frequency of Serological Markers of Past Infectious Diseases and Selected Current Markers of Autoimmune Diseases in Patients with Intracranial Aneurysms

Author(s): Karolina Lewko

Tutor(s): prof. dr hab. n. med. Joanna Zajkowska, dr Radosław Zawadzki

Abstract: Intracranial aneurysms are vascular abnormalities whose development is influenced by multiple factors, including inflammatory and infectious processes affecting the vessel wall. Certain infections capable of inducing vasculitis in the vessels such as Varicella-Zoster virus (VZV), Borrelia burgdorferi, Epstein–Barr virus (EBV), and SARS-CoV-2, may contribute to vascular remodeling and potentially to aneurysm formation. Objective: The aim of this study is to evaluate the frequency of serological markers of selected past infectious diseases and autoimmune markers in patients with intracranial aneurysms and to explore their potential role as predictors of aneurysm development. Methods: A laboratory analysis of serum samples from patients with intracranial aneurysms and a control group of patients without aneurysms coming from the University Clinical Hospital in Białystok is being conducted. Serological testing includes markers of past infections (VZV IgG, Borrelia IgM and IgG, EBV IgG, SARS-CoV-2 antibodies) as well as autoimmune markers (ANA, c-ANCA, p-ANCA). Preliminary data currently include six patients with intracranial aneurysms, all female, with a mean age of 57 years. Results: Preliminary results indicate serological evidence of past viral infections in several patients. VZV IgG antibodies were detected in half of the analyzed patients. Markers of early or late stages of Borrelia infection were present in approximately 66% of cases. EBV IgG antibodies were detected in all tested samples, indicating past infection. Antibodies against SARS-CoV-2 were also frequently observed - anti-N antibodies were positive in one-third of samples, and anti-S antibodies were detected in all patients, which may reflect either past infection or prior vaccination. In contrast, no positive results for autoimmune markers including ANA, c-ANCA, or p-ANCA were observed. Conclusions: Initial observations suggest a high prevalence of serological markers indicating previous viral infections in patients with intracranial aneurysms, while markers associated with autoimmune vasculitis appear absent in the current sample. However, these findings are preliminary, and further recruitment of patients and continuation of the study will be necessary to obtain a larger dataset and allow more reliable conclusions.

20th Bialystok International Medical Congress for Young Scientists

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Title: Relationship Between CGM-Derived Metrics and Traditional Glycemic Markers in Individuals with Normal Glucose Tolerance, Prediabetes, and Type 2 Diabetes

Author(s): Katarzyna Maciorowska-Rosłan

Tutor(s): Prof. dr hab. Karol Kamiński

Abstract: The number of people with diabetes worldwide is constantly growing. Type 2 diabetes (T2DM) is one of the most important risk factors for cardiovascular disease (CVD). In addition to HbA1c, which reflects average glucose concentrations over the last 2–3 months, continuous glucose monitoring (CGM) is increasingly used in the assessment of metabolic control of diabetes. CGM systems provide detailed information on glycemic patterns and glycemic variability. Recent studies show that hyperglycemia and hypoglycemia, but also glycemic variability, contribute significantly to the development of macrovascular complications of diabetes. Pathophysiology of these mechanisms refers mostly to oxidative stress and chronic inflammation, although research in this topic is limited. The aim of the study was to evaluate a range of glycemic indicators, including glycated hemoglobin (HbA1c), results of the oral glucose tolerance test (OGTT), fasting plasma glucose levels, and glycemic variability assessed using continuous glucose monitoring (CGM). The analysis included 380 patients examined between 2024 and 2025 as part of the Białystok+ project. Participants were stratified according to categories of fasting plasma glucose (FPG), 2-hour OGTT glucose test, and HbA1c. CGM-derived metrics, including Time in Range (TIR), Time Above Range (TAR) and Time Below Range (TBR) were analyzed. Differences between groups were assessed using the Kruskal–Wallis test, and associations between variables were evaluated using Spearman's rank correlation. TIR differed significantly across OGTT categories ($p = 0.0001$), although similar values were observed in individuals with <140 mg/dL and 140–199 mg/dL, with lower TIR only in the ≥200 mg/dL group. Significant differences in TIR were also observed across FPG categories ($p = 0.0001$), with markedly reduced TIR in individuals with FPG ≥126 mg/dL compared to those with lower glucose levels. No significant linear correlations were found between TIR and HbA1c, FPG, or OGTT values. TIR also differed significantly across HbA1c categories ($p = 0.0002$), remaining high in individuals with HbA1c <6.5% and decreasing substantially in those with HbA1c ≥6.5%. In contrast, TAR increased markedly with rising HbA1c, indicating a higher burden of hyperglycemia in the diabetic range. TIR remains high in normal and mildly impaired glucose metabolism, declining significantly only in overt diabetes. The relationship between TIR and traditional glycemic markers is non-linear. HbA1c primarily reflects hyperglycemia burden, while CGM-derived metrics provide complementary insights into glycemic variability and daily glucose dynamics, supporting CGM's role beyond conventional measures.

20th Bialystok International Medical Congress for Young Scientists

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Title: Assessment of the mental health of patients with chronic obstructive pulmonary disease (COPD) from the Podlaskie Voivodeship

Author(s): Katarzyna Bojarska, Mateusz Grochowski

Tutor(s): prof. dr hab. Mateusz Cybulski

Abstract: Introduction: Chronic obstructive pulmonary disease (COPD) substantially hinders the activity of patients and contributes to the co-occurrence of mental burdens. The aim of this study was to ascertain the mental health of patients suffering from COPD who reside in the Podlaskie Voivodeship. Materials and Methods: 47 fully completed questionnaires were analysed submitted by outpatients (n=11) or inpatients (n=36) at the University Clinical Hospital in Białystok as part of the cross-sectional study (February–August 2025). An original author's questionnaire and the BDI, HAM-A, GAD-7, AIS, ISI, and SQoL scales were applied in the study. Results: Increased levels of depression (Me=16 points), anxiety (HAM-A Me=27; GAD-7 Me=15), and insomnia (AIS Me=9; ISI Me=14) as well as decreased quality of sexual life (SQoL Me=46) were observed in the entire group. Age was positively correlated with depression, anxiety, and sleep disorders (R=0.42–0.53; $p<0.01$) whilst being negatively correlated with SQoL (R=–0.63; $p<0.001$). Women were reported to have higher BDI, HAM-A, GAD-7, AIS, and ISI scores than men (all $p<0.01$). Meanwhile, inpatients achieved significantly higher median scores than outpatients: BDI 30.5 vs. 2.0; HAM-A 36.0 vs. 2.0; GAD-7 18.0 vs. 8.0; AIS 12.0 vs. 1.0; ISI 17.0 vs. 4.0, and lower SQoL 43.5 vs. 66.0 (all $p<0.001$). A strong co-occurrence was noted of depression and anxiety (R=0.86–0.90) and anxiety and insomnia (R=0.80–0.91) whilst SQoL was negatively correlated with depression, anxiety, and insomnia (R=–0.64 to –0.75; $p<0.001$). Conclusions: The obtained results indicate a frequent, multidimensional psychological burden in patients with COPD, particularly in case of older adults, women, and hospitalized patients, justifying routine screening for depression, anxiety, and sleep disorders, as well as incorporating the assessment of sexual functioning into comprehensive, interdisciplinary care. Integrating pulmonary care with monitoring of mental health, sleep, and sexuality may improve patient functioning; these observations ought to be confirmed through larger studies.

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Title: More than anemia: the impact of iron depletion on haemodynamics and exercise capacity – A Large-Scale Analysis of 2,465 Individuals (the Bialystok PLUS Study)

Author(s): Agata K. Ołdakowska, Andrzej Raczkowski, Magdalena Łapińska, Karol A. Kamiński, Katarzyna Ptaszyńska

Tutor(s): dr hab. n. med. Katarzyna Ptaszyńska

Abstract: Background: Iron is an essential element of life, presenting a multifaceted role in the human body. It is crucial for oxygen utilization in mitochondria, thereby influencing the function of multiple organs. Furthermore, iron deficiency (ID) might lead to structural changes in cardiac muscle. We aimed to investigate the impact of ID on cardiac morphology and peripheral oxygen utilization in a large population. Methods: 2,465 individuals who had their serum iron and ferritin measured, members of the Bialystok PLUS population study (mean age 47.8±14.6 years, female n=1388, 56,3%) were analysed. Subjects were categorized into three overlapping groups: isolated decreased serum iron concentration (n=59), isolated serum ferritin depletion (n=181), and combined deficiency of iron as well as ferritin (n=43). Individuals with hyperferremia and hyperferritinemia were excluded from further analysis. Participants underwent comprehensive echocardiography and exercise capacity assessment (CPET, cardiopulmonary exercise testing). Statistical significance was assessed with Student's t-test and Chi-square tests. Results: Participants with disturbed iron homeostasis across all categories were significantly younger and had lower BMI ($p<0.01$). In echocardiography, deficiency of iron and/or ferritin was related to smaller cardiac dimensions, with LV mass and right heart parameters being the most prominently affected in the group with combined iron deficiency – LV Mass (119.6 ±31.8 vs. 137.7±41.5; $p<0.001$) and RA volume (33.8±12.5 vs. 40.6±14.4; $p=0.001$). Moreover, according to PET O2_max (114.3±5.3 vs. 112.3±6.9 mmHg; $p=0.028$) and VO2_max (1.55±0.62 vs. 1.75±0.73 l/min; $p=0.005$), in isolated iron depletion, impairment of peripheral oxygen extraction occurs. Notably, despite the fact that anemia was prevalent in combined ID (86.8%) and isolated iron depletion (74.1%), in the group with lower ferritin concentrations, 50% individuals were non-anemic, yet they still presented with remarkable structural and metabolic changes. Conclusions: Iron deficiency – regardless of the marker used – reflects individuals' physical status, defined as oxygen uptake, utilization, and extraction, during exercise, as well as echocardiographic right ventricular volumes and left ventricular mass measurements. These changes occur even in the absence of anemia, highlighting the need for early screening.

DENTISTRY SESSION

20th Bialystok International Medical Congress for Young Scientists

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Title: Orthodontic Management of an 11-Year-Old Boy Using Clear Aligners and Myobrace Appliance. A Case Report

Author(s): Simona Stučinskaitė

Tutor(s): Arūnas Vasiliauskas

Abstract: Introduction Interceptive orthodontics is an early approach, usually during mixed dentition period in patient's life [1]. It has a positive outcome on mandible position correction, bite improvement and can guide permanent teeth during eruption [2]. Interceptive orthodontics combined with clear aligners can show great results in both – teeth alignment and optimizing dentofacial development. Case Presentation An 11-year-old boy came to clinic with a complaint of misaligned teeth, crowding in upper and lower dental arches and deep bite. Patient had no specific dental history, no mouth breathing, no tongue thrusting habits. Clinical extraoral examination showed a retruded mandible and a convex facial profile. Intraoral examination consisted of mixed dentition, rotations, crowding in upper and lower dental arches, deep bite, increased overbite (5,8mm), increased overjet (5,7mm), Class II subdivision 1 malocclusion (from 3D scan). For X-ray diagnostics panoramic radiogram and cephalogram were taken. There were no abnormalities in the number of teeth. Cephalometric data revealed a retruded mandible (SNB=73°); skeletal Class II (ANB=7°), a horizontal growth model, deep bite (SN-GoGn=28°). The patient was in the prepubertal growth period/Cervico Vertebrae Maturation Index (CVMI) stage 1-2 (the inferior margins of the second vertebra shows concavity, third, and fourth cervical vertebrae exhibit a flat morphology). Treatment plan was chosen regarding the age of the patient and wishes of parents and patient himself. The purpose of the treatment was to align teeth, expand upper and lower dental arches, modify vertical growth pattern and improve the position of a mandible. Patient was treated with clear aligners combined with Myobrace T2 appliance. Myobrace is a multifunctional appliance, which assists in dental alignment, arch expansion, and improving intermaxillary relationships. Patient was instructed to wear clear aligners for 16-18 hours per day and use Myobrace appliance during night. A follow-up was every 2 months. After 1,5 years a significant improvement can be seen in both overjet (1 mm) and overbite (2,5 mm), a bite jump occurred and deep bite was corrected. Pont's index also enhanced: premolar width increased from 34,6 mm to 39,4 mm; molar width from 45,9 mm to 49,8 mm in the upper jaw. In the lower jaw: premolar width improved from 34,5 mm to 39,0 mm, molar – 47,0 mm to 53,2 mm. Class I occlusion can be seen on the right and Class III on the left side (from 3D scan). The treatment is still ongoing. Final results will be monitored. Conclusion This case represents that clear aligner treatment combined with Myobrace appliance is a great choice to achieve teeth alignment, correct a retruded mandible and fix deep bite. Myobrace also holds space for permanent teeth and should be considered as a retention during mixed dentition stage.

20th Bialystok International Medical Congress for Young Scientists

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Title: The Hidden Link: Dental Deterioration as a Frequently Overlooked Pathway to CNS Abscesses

Author(s): Zofia Stankiewicz, Marta Berczyńska

Tutor(s): lek. med. Justyna Adamczuk, prof. dr hab. n. med. Anna Moniuszko-Malinowska, dr hab. n. med. Piotr Czupryna

Abstract: Poor oral health is a critical, yet frequently overlooked risk factor that may significantly predispose patients to central nervous system (CNS) abscesses. Odontogenic infections increase the risk of severe systemic complications, primarily through the hematogenous spread of oral pathogens or direct anatomical continuity. Despite general awareness regarding oral hygiene, many patients delay dental interventions, failing to associate often oligosymptomatic focal infections with the life-threatening risk of diseases in other organ systems. This case series presents the coexistence of severe dental deterioration and CNS abscesses in three patients, aged 28, 30, and 61. Despite a frequent lack of local oral complaints, clinical and radiographic examination revealed deep carious lesions, retained roots, and numerous hidden foci of infection. Upon admission, the patients presented with a spectrum of acute neurological symptoms, including severe headaches, fatigue, and apathy. Neuroimaging confirmed the presence of extensive intracranial abscesses and a spinal canal abscess. Furthermore, two of the patients developed concurrent infective endocarditis that required cardiac surgical intervention, highlighting the profound systemic impact of the infection. Although definitive microbiological confirmation of specific oral flora within the CNS lesions was not obtained, the advanced dental pathologies strongly suggested their etiology. In each case, a neurosurgical consultation was performed, but none of the patients required surgical drainage. Furthermore, definitive eradication of the primary dental foci was recommended for all individuals. Two of the patients underwent the proposed dental treatment, while one refused. All three of them were successfully managed conservatively with prolonged antibiotic therapy. Ultimately, the implemented management led to a significant clinical improvement in all cases. This case series highlights the necessity of considering possible odontogenic sources in patients presenting with CNS abscesses. It underscores the crucial role of a multidisciplinary approach in preventing and managing neurological infections.

20th Bialystok International Medical Congress for Young Scientists

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Title: Conservative management of Intrusive Luxation followed by a root fracture in an immature tooth 21: A Pediatric Case with consistent monitoring.

Author(s): Syeda Samiya Anjum, Andrew Nowak, Caroline Plewik, Mahnoor Raza

Tutor(s): Dr. Aya Kraiz DDS, Dr hab. n. med. Katarzyna Błochowiak DDS

Abstract: Background:- Traumatic dental injuries, particularly those involving immature permanent teeth that have undergone intrusive luxation and root fracture, impose therapeutic and diagnostic challenges.They are linked with an increased risk of root resorption and compromised healing.Treatment requires careful consideration of esthetic outcomes and periodontal and alveolar bone health. Intrusive luxation (≈ 3-5%) and root fractures (≈1-4%) are quite uncommon, and their occurrence together is scarcely reported in children. Complex cases require both conservative and surgical approaches to secure esthetic outcome and periodontal health. Long term treatment planning is vital for paediatric patients undergoing craniofacial growth. Clinical case:- A 7 year old female presented six months post trauma with an Ellis VII injury (intrusive luxation) on impact with concrete to immature tooth 21. Initial management consisted of observation for a spontaneous extrusion, following which, a formerly undetectable palatal fracture line was detected. CBCT imaging confirmed palatal wall fracture, root fracture and root tip fracture extending to the pulp chamber, consistent with Ellis VI injury (root fracture). Despite poor prognosis, initial conservative treatment approaches were endodontic and restorative treatments to preserve the tooth for as long as possible. Over the following two years, intraoral and radiograph examinations portrayed external root resorption, alveolar bone loss, fistula formation, increased mobility and periodontal deterioration. This progressed towards Ellis IV injury (non-vital tooth secondary to trauma). It suggested that the tooth required extraction and a prosthetic rehab. Imperative considerations prior to conducting the treatment included patient's growth, implant site preservation, infection control and progression of pathology. Conclusion:- The case portrays conservative management with precise observation of clinical and radiograph examinations could be a valid short-term strategy in observing traumatically injured teeth with root fracture and resorption when radiographic solidity is achieved, regardless of an initial unfavourable prognosis. However with the recent appearance of fistula and increased mobility the prognosis remains unfavourable.

20th Bialystok International Medical Congress for Young Scientists

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Title: Assessment of Students' Knowledge on Occlusion – A Questionnaire-Based Study

Author(s): Sylwia Sobolewska, Katarzyna Łęczycka, Zuzanna Brzuzy, Karolina Banaszek, Oliwia Gagacka

Tutor(s): Katarzyna Taraszkiewicz-Sulik, MD, PhD

Abstract: Introduction Proper occlusion is fundamental to successful dental treatment. It plays a key role in diagnosis, treatment planning, and evaluation of outcomes across dental disciplines. Knowledge of occlusal principles, including identification of contact points and registration of maxillomandibular relationships, is essential for proper function of the stomatognathic system. It improves patient comfort, supports the longevity of prosthetic restorations, and reduces the risk of temporomandibular disorders. In prosthodontics, effective collaboration between the clinician and dental technician is crucial for accurate reproduction of occlusal relationships. Aim To assess students' theoretical knowledge of occlusion and their self-evaluated clinical skills, and to identify areas requiring improvement in education. Material and Methods An anonymous online questionnaire with 22 closed-ended questions was conducted among 105 students of the Medical University of Białystok: fourth-year dental students (n=60), fifth-year (n=34), and third-year dental technician students (n=11). The survey covered centric relation, static and dynamic occlusion, and occlusal interferences. Practical skills assessed included occlusal analysis, centric relation registration, articulator use, and determination of vertical dimension. Results All respondents declared familiarity with occlusion. Correct differentiation between static and dynamic occlusion was observed in 82.4% of fifth-year, 66.7% of fourth-year, and 63.6% of technician students. Identification of premature contacts using articulating paper was reported by 73.5%, 56.7%, and 36.4%, respectively. Adequate recognition of decreased vertical dimension was declared by 70.6%, 53.3%, and 18.2% ($p=0.0225$). Significant differences were also found in centric slide assessment ($p=0.0015$) and inclusion of occlusion in temporary restorations ($p=0.0474$). No other significant differences were observed ($p>0.05$). Conclusions Most students consider occlusion important in clinical practice. Fifth-year students show greater confidence than fourth-year students, likely due to more experience. Dental technician students demonstrate good theoretical knowledge but lower clinical confidence. Limited awareness of digital occlusal analysis was noted. Greater emphasis on practical training in occlusion is needed.

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Title: Seeing Beyond the Obvious: Radiological Challenges in Face and Jaw Trauma

Author(s): Ernestas Gertas

Tutor(s): Dalius Matkevičius, PhD

Abstract: Aim of the study: The aim of this study is to examine the difficulties encountered during radiological assessment of injuries to the facial bones and jaws and to emphasize the importance of appropriate imaging methods in accurate diagnosis and treatment planning of maxillofacial trauma. Methodology: A descriptive analysis of published scientific literature and selected clinical imaging examples related to facial and jaw trauma was performed. Information was gathered from medical databases such as PubMed, Medscape, and UpToDate using the following keywords: maxillofacial trauma, facial bone fractures, mandibular injuries, computed tomography, cone-beam computed tomography, radiological assessment. Relevant recent publications were reviewed to summarize current diagnostic approaches and common imaging difficulties. In addition, representative clinical imaging cases were evaluated to illustrate practical challenges encountered during radiological interpretation. Results: The radiological evaluation of facial and jaw injuries is often complicated due to the complex three-dimensional structure of the facial skeleton and the diversity of traumatic mechanisms. Small fracture lines, minimal bone displacement, and overlapping anatomical structures may make injuries difficult to detect on conventional radiographs. Advanced imaging techniques, particularly computed tomography (CT) and cone-beam computed tomography (CBCT), allow detailed visualization of the maxillofacial region and significantly improve the detection of fractures involving the mandible, maxilla, zygomatic complex, nasal bones, and orbital walls. Nevertheless, accurate interpretation still requires careful analysis because imaging artifacts, subtle fracture patterns, and variations in anatomy may lead to diagnostic uncertainty. A structured and systematic approach to image evaluation is therefore essential in order to reduce the risk of overlooked injuries. Conclusions: Reliable radiological examination is a key element in the evaluation of facial and jaw trauma. Modern imaging modalities provide valuable diagnostic information and support appropriate clinical decision-making. Awareness of potential interpretation challenges and the application of a systematic diagnostic strategy can improve the accuracy of radiological reports and contribute to more effective patient management. Keywords: maxillofacial trauma, facial bone fractures, mandibular injuries, radiological evaluation, computed tomography, cone-beam computed tomography, diagnostic challenges.

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Title: Clinical Management of Trauma and Pulpal Complications in Immature Central Incisors of Paediatric Patients

Author(s): Subodh Sudhakar, Leyana Najem, Matylda Sarraf, Lilly Yesufu

Tutor(s): Dr. Aya Kraiz, Dr hab. n. med. Katarzyna Błochowiak

Abstract: Dental trauma can result in several complications, such as root fracture, necrosis of the pulp, damage to the alveolar bone and surrounding tissue. There is a higher risk with immature adult teeth, as such frequent monitoring and diagnostic tests are key. These include CBCT, RTG, vitality tests (cold and percussion tests) and clinical evaluation of soft tissue healing to ensure no long term complications. A 7 year old, female patient with mixed dentition presented with trauma to teeth 11 and 21 after a fall. She had underdeveloped enamel on several teeth and early caries requiring prophylaxis and thus was given fluoride varnish and strict recommendations for oral health. The fall caused pain in the upper front teeth (particularly 21), gingival swelling following trauma and sensitivity to touch and biting. RTG imaging showed horizontal root fractures in the middle thirds of teeth 11 and 21 as well as possible pulp involvement in 21, CBCT confirmed the fracture of tooth 21 and damage to hard tissues. These symptoms were treated with splinting stabilisation of tooth 21, prescription of amoxicillin. Routine follow ups showed healing gingival swelling, as well as delayed pulp necrosis in the tooth 11, treated with a root canal. Tooth 21 caused intermittent discomfort and showed progressive discoloration, leading to a suspicion of early pulpal changes with a high risk of future complications, but a guarded pulpal prognosis. Crucially, there were signs of post traumatic remodelling with the injury to immature teeth 11 and 21. Initially the roots were not fully formed, however follow up RTG imaging showed signs of lateral root growth. As such, further biannual monitoring is necessary to monitor proper root maturation and vitality of the pulp in tooth 21. This case highlights the necessity of follow up sessions using CBCT, RT and vitality tests to monitor the health of the pulp and development of immature teeth, as well as the risks related to trauma in immature adult teeth.

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Title: Occlusal Contact Analysis Using the T-Scan System in a Patient with Temporomandibular Joint and Muscle Pain Following Orthodontic Treatment

Author(s): Sylwia Sobolewska, Karolina Ciesiołka, Joanna Pyskło, Bartosz Sołowiej, Aleksandra Juśkiewicz

Tutor(s): dr n.med. Katarzyna Taraszkiewicz-Sulik

Abstract: Introduction Occlusal disorders may contribute to the development of stomatognathic system dysfunctions, manifesting as dental pain and, in chronic cases, involving the masticatory muscles and temporomandibular joints. Accurate diagnosis requires identification of premature occlusal contacts. Modern prosthodontics increasingly utilizes digital occlusal analysis systems, such as T-Scan, enabling objective assessment of occlusal force distribution and timing. Aim The aim of this study was to present the diagnostic process and preliminary treatment outcomes in a patient with pain associated with occlusal disturbances. Materials and Methods A 23-year-old female patient presented with chronic pain affecting the teeth, masticatory muscles, and temporomandibular joints. Palpation examination (0–3 scale) revealed tenderness in the medial (R: 2, L: 3) and lateral pterygoid muscles (R: 2, L: 2), sternocleidomastoid muscle (R: 2, L: 1), and right suboccipital muscles (2). Maximum mouth opening was 50 mm with an S-shaped mandibular path. Bilateral joint pain was observed, with an early click in the right joint and a late click in the left joint. The patient had undergone orthodontic treatment (2014–2016) and reported tension-type headaches (VAS up to 7), bruxism, clenching, and hypersensitivity of mandibular posterior teeth and central incisors. Clinical and radiographic examination revealed overload of teeth 31 and 41, with widening of the periodontal ligament space. Previous stabilization splint therapy was ineffective. T-Scan analysis identified premature contacts on teeth 31, 41, 46, and 47, with asymmetrical force distribution. Selective occlusal adjustment was performed, followed by muscle deprogramming. Repeated digital analysis confirmed elimination of premature contacts. An individualized stabilization splint was fabricated, and follow-up was scheduled. Conclusions Selective occlusal adjustment reduced pain during biting and decreased muscle tension. Follow-up T-Scan analysis confirmed improved occlusal balance and elimination of occlusal interferences. These findings suggest that digital occlusal analysis combined with muscle deprogramming may support effective occlusal stabilization. Properly adjusted stabilization splints remain essential for maintaining treatment outcomes.

20th Bialystok International Medical Congress for Young Scientists

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Title: Lithuanian Orthodontists‘ Chosen Waiting Period Before Initiating Orthodontic Treatment After A Dental Trauma. A Case Report

Author(s): Simona Stučinskaitė

Tutor(s): Arūnas Vasiliauskas

Abstract: Introduction Dental trauma prevalence is 4-58% and can have a negative long-term outcomes [1]. Traumatic teeth require attentive orthodontic management due to possible complications, such as root resorption [2]. The aim of this research was to assess orthodontists‘ knowledge regarding observation period before orthodontic treatment (OT) after a dental trauma. Material and Methods The research was approved by the Kaunas Regional Biomedical Research Ethics Committee (ID number of ethical approval: BE-2-26). A cross-sectional questionnaire-based survey was conducted to evaluate Lithuanian orthodontists knowledge on waiting period before initiating orthodontic treatment after dental trauma. The population was orthodontists and orthodontic residents. An anonymous questionnaire was introduced to participants during orthodontic conferences in Lithuania and a link to the survey was emailed to 73 dental clinics where orthodontists work. Data were collected from 2021 November to 2022 January. The questionnaire was adapted from previous studies, was pilot tested and consisted of 3 questions about professional profile of respondents and 7 questions regarding waiting time before orthodontic treatment after a specific periodontum and/or dental trauma. Statistical data analysis was coded and analysed using IBM SPSS version 27.0. In the descriptive analysis, the number of correct answers is presented as a percentage (%) and indicating the exact number of respondents (n). Results 54 participants finished the questionnaire – 42 orthodontists and 12 orthodontic residents. Overall response rate was 42.9%, work experience - 1-33 years. Distribution in working place was: private dental clinic (n=48, 89%), university clinic (n=23, 43%) and public clinic (n=5, 9%). The frequency of correct answers to the survey is 40.21%. 37% of respondents would wait for 3 months before starting orthodontic treatment after a crown fracture and 22.2% after a crown-root fracture. The correct answer of observation time after a minor damage to periodontum prior to OT was chosen by 64.8% of participants (3-6 months), after a severe damage to periodontum – 35.2% (correct answer – 6 months). Only 7.4% chose the right answer to question about waiting time before OT if the tooth had an endodontic treatment due to trauma (12 months). The percentage of correct responses was higher (20.4%) when it was asked about obervation period prior OT after a regenerative endodontic (12 months). Almost all participants chose the right answer (94.4%) about how long one should wait if a tooth has a sign of inflamatory resorption (when periodontal ligament is healed and observed for one year with regular X-rays). Conclusion The results of this study indicates that orthodontists‘ knowledge about observation time before initiating orthodontic treatment of a tooth with a history of dental trauma is insufficient. Further education is needed.

20th Bialystok International Medical Congress for Young Scientists

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Title: Management of Concurrent Dental Trauma and Extensive Caries in a Paediatric Patient: A Case Report

Author(s): Michael Bubienczyk, Danae Peskia, Manpreet Chander, Emilia Krysiuk, Salam Alkhafaji

Tutor(s): dr. Aya Kraiz, dr hab. n. med. Katarzyna Błochowiak

Abstract: Background Dental trauma and extensive caries rarely arrive alone in paediatric patients, and when they do occur together the treatment priorities are not always obvious. This case report presents the management of an 8-year-old boy who sustained subluxation of the maxillary central incisors while also requiring pulp therapy and restoration across multiple carious primary molars, and examines how both problems were handled without one undermining the other. Case Report An 8-year-old boy presented to the dental clinic following blunt trauma to the maxillary anterior region sustained at school. Teeth 11 and 21 exhibited grade I mobility, localised soft tissue swelling, and tenderness on palpation. Radiographic evaluation showed no crown or root fractures, alveolar bone injury, or pathological root resorption. Both incisors responded positively to pulp sensibility testing, confirming a diagnosis of subluxation. Splinting was not indicated as neither tooth was displaced. Management included saline irrigation, topical chlorhexidine gel, soft diet advice, and scheduled clinical and radiographic review. Intraoral examination found cavitated lesions in primary molars 54, 55, 64, and 65, with pulp involvement in several teeth. These were addressed across a series of appointments. Pulpotomy was carried out where clinically necessary, and teeth were restored with glass-ionomer cement. Vitality and mobility of teeth 11 and 21 normalised over the follow-up period, with no pathological findings on subsequent imaging. The treated primary molars remained clinically stable. Conclusions When trauma and active caries occur together in a young patient, the outcome depends less on treating each condition separately, and more on how care is organized across visits. In this case, conservative management of the subluxated incisors preserved pulp vitality through a critical period of root maturation, whilst resolving infection in the primary molars protected the developing dentition. Considered diagnosis and treatment planning were the deciding factors.

20th Bialystok International Medical Congress for Young Scientists

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Title: Evaluation of Occlusal Disorders in a Female Patient with Malocclusion Using T-Scan Analysis - A Case Report

Author(s): Karolina Ciesiołka, Joanna Pyskło, Karolina Banaszek, Oliwia Gagacka, Sylwia Sobolewska

Tutor(s): dr n. med. Katarzyna Taraszkiewicz-Sulik

Abstract: Introduction Occlusal disorders may lead to overloading of the stomatognathic system and manifest as pain in the masticatory muscles and temporomandibular joints. Their diagnosis requires precise assessment of occlusal contacts, which can be achieved using digital systems such as T-Scan, enabling objective analysis of the distribution and timing of occlusal forces. Aim of the Study To present the diagnostic process of occlusal disorders in a female patient with malocclusion and pain symptoms using the T-Scan system. Materials and Methods A 23-year-old female patient presented with recurrent pain in the frontal and temporal regions of the head, as well as in the temporomandibular joints. The pain was described as pulsating or dull, of moderate intensity (approximately 5/10 on the VAS scale), and did not require pharmacological treatment. Additionally, the patient reported morning pain in the masticatory muscles, increased muscle tension, discomfort in the ear region, and a sensation of ear fullness. Medical history revealed symptoms of masticatory system overload, including posterior tooth wear, hypersensitivity, pain during mastication of hard foods, and muscle fatigue. The patient also reported clicking in the temporomandibular joint during maximal mouth opening, predominantly on the right side. Parafunctional habits were present (teeth clenching, soft tissue biting). Clinical examination revealed overload of teeth 34 and 35 with non-carious cervical lesions. Symptoms were exacerbated under stress. Orthodontic history included treatment with a removable appliance between the ages of 11 and 13. Diagnostic evaluation was supplemented with occlusal analysis using the T-Scan system, assessing occlusal dynamics and force distribution. Based on the findings, an individualized occlusal splint was fabricated. Conclusions T-Scan analysis enabled identification of occlusal disorders and assessment of force distribution, forming the basis for treatment planning. Therapy with the use of an occlusal splint reduced pain symptoms and muscle tension. The combination of digital occlusal analysis and splint therapy may effectively support occlusal stabilization and improve patient comfort in the management of stomatognathic system disorders.

CLINICAL SCIENCES
CARDIOLOGY SESSION

20th Bialystok International Medical Congress for Young Scientists

2026

Title: What Is the Evidence That Pharmacogenomic-Guided Therapy Improves Patient Outcomes in Anesthesia and Pain Medicine?

Author(s): Gabriel Perurena

Tutor(s): -

Abstract: Objective: The objective of this study is to evaluate the literature on pharmacogenomics in Anesthesia and Pain Medicine, looking for evidence that pharmacogenomic-guided therapy can be used in clinical practice to produce demonstrable, verifiable improved patient outcomes. Materials and Methods: A literature search was conducted via Google Scholar and PubMed using combinations and permutations of the keywords “anesthesia,” “pain,” “implementation,” “personalized medicine,” “informatics,” “bioinformatics,” “pharmacogenomics,” “pharmacogenetics,” and “randomized clinical trial.” Excluded were studies that focused solely on theoretical genomic and molecular links and not on demonstrable clinical results, as well as studies that did not concern the practical implementation of these technologies into clinical practice. Included were randomized controlled trials, prospective studies, retrospective cohort studies, meta-analyses, and systematic reviews. Results: A total of 13 relevant papers were found. Three were excluded due to non-availability of the full text. Of the 10 that remain, 2 are reviews, 3 are randomized prospective trials, 2 are double-blind randomized controlled trials, 1 is a prospective observation, and 2 are retrospective cohort studies. The two most promising have not yet released full results. Of the other 8, only one was a well-designed clinical trial with a large sample size that directly compared treatments, and it showed no benefit. Other studies found positive results, such as lower consumption of analgesics post-operatively or associations between genotype and response to therapy, but many were limited by small sample sizes, poor adherence, or indirect outcome measures. Within this sample, most studies focused on opioids or NSAIDS, and while some studies addressed other classes of drugs used peri-operatively, these were not studied in a way that demonstrates clinical outcome benefit. Conclusions: There is little evidence that pharmacogenomic-guided therapy currently yields improved patient outcomes in clinical Anesthesia and Pain Medicine. Worthwhile clinical trials only exist for pain management with CYP2D6-dependent opioids and NSAIDS, and those show no or weak benefits. Most drugs used peri-operatively do not even have identifiable genomic associations, much less those that are actionable, and there is almost nothing done that even accounts for polypharmacy. More basic research is needed, though upcoming studies are promising and may yield useful results. Further search conducted after the initial literature review identified additional studies, particularly when focusing specifically on opioid-related pharmacogenomics, which remain to be evaluated.

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Title: Cardiac Remodeling in Atrial Fibrillation: Echocardiographic Differences Between Paroxysmal and Persistent Forms

Author(s): Joanna Kruszyńska, Julia Kobylińska, Izabela Kruszewska, Klaudia Kłymko, Daria Woroniecka

Tutor(s): lek. Tomasz Januszko, dr n. med. Emil Julian Dąbrowski, dr hab. Marcin Kożuch

Abstract: INTRODUCTION: Atrial fibrillation (AF) leads to atrial remodeling, which leads to disease progression and adverse outcomes. The extent of these changes depends on the duration and phenotype of AF, and their precise assessment is possible with echocardiography. Identifying differences between paroxysmal and persistent AF in echocardiographic parameters may be important for risk stratification, optimizing therapeutic strategies, and qualifying for ablation, translating into improved treatment effectiveness. AIM OF THE STUDY: The study aimed to evaluate echocardiographic parameters of cardiac remodeling between patients with paroxysmal and persistent atrial fibrillation. METHODS: We conducted a retrospective study that included 350 patients hospitalized for atrial fibrillation and flutter ablation from 2019 to 2025 at the Department of Invasive Cardiology of the University Clinical Hospital in Białystok. Patients with missing echocardiographic data were excluded from the analysis, leaving 340 patients in the final cohort. The Mann–Whitney U test, chi-square test and Fisher's exact test were used for statistical comparisons between groups. RESULTS: The comprehensive echocardiographic analysis was performed in a group of 340 patients (251 (73.8%) with paroxysmal AF and 89 (26.2%) with persistent AF). Patients with persistent AF were slightly older than those with paroxysmal AF (63.42 ± 9.13 vs. 61.24 ± 11.40; p=0.15) and had a higher proportion of females (76% vs. 67%; p=0.11). Heart failure was significantly more prevalent among patients with persistent AF (60% vs. 37%; p<0.001), while other comorbidities were comparable between the groups. Echocardiographic analysis revealed that patients with persistent AF had significantly larger left atrial diameter (43.0 ± 4.8 vs. 41.5 ± 4.6 mm; p=0.017), left atrial area (26.6 ± 5.0 vs. 24.6 ± 7.2 cm^2; p=0.003) and right atrial area (23.2 ± 4.7 cm^2 vs. 20.1 ± 4.4 cm^2; p < 0.001) compared to those with paroxysmal AF. In contrast, no statistically significant differences in left ventricular ejection fraction were observed between paroxysmal and persistent AF groups (47 ± 19% vs. 46 ± 21%; p=0.7). The prevalence of mild or severe mitral regurgitation 24 (12%) vs. 7 (9.2%); p = 0.7, aortic regurgitation 6 (2.9%) vs. 1 (1.3%); p=0.7 and aortic stenosis 5 (2.4%) vs. 0 (0%); p=0.3 was comparable between persistent and paroxysmal AF groups. CONCLUSION: Patients with persistent AF demonstrated more advanced atrial remodeling in comparison with paroxysmal AF patients. However, left ventricular systolic function was preserved.

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Title: Multimorbidity burden in persistent and paroxysmal Atrial Fibrillation.

Author(s): Klaudia Kłymko, Julia Kobylińska, Izabela Kruszewska, Daria Woroniecka

Tutor(s): Tomasz Januszko, MD; Emil Julian Dąbrowski, MD, PhD; Paweł Muszyński, MD, PhD; Prof. Marcin Kożuch; Prof. Sławomir Dobrzycki

Abstract: INTRODUCTION: Atrial fibrillation (AF) is the most common supraventricular arrhythmia and represents a significant challenge of modern cardiology due to its increasing prevalence and progressive nature. Comorbidities play a particularly important role, as they not only shape the clinical presentation and influence therapeutic strategies, but may also determine the course of the arrhythmia. Understanding these relationships is crucial for identifying patients at higher risk of progression and for optimizing personalized therapeutic management. AIM OF THE STUDY: The study aimed to evaluate and compare the multimorbidity profiles of patients with paroxysmal versus persistent atrial fibrillation. METHODS: We conducted a retrospective study that included 350 patients hospitalized for atrial fibrillation and flutter ablation from 2019 to 2025 at the Department of Invasive Cardiology of the University Clinical Hospital in Białystok. Patients with missing data were excluded from the analysis, leaving 283 patients in the final cohort. Multimorbidity was defined as the presence of ≥2 comorbid conditions. For statistical comparisons between the groups chi-square test, Wilcoxon rank-sum test and Fisher's exact test were used. RESULTS: The study population comprised 283 patients, of whom 206 (72.8%) had paroxysmal AF and 77 (27.2%) had persistent AF. Patients with persistent AF were slightly older than those with paroxysmal AF (63.2 ± 9.4 vs. 60.8 ± 11.6 years; p=0.2) and had a higher proportion of females (59 (77%) vs. 137 (67%); p=0.1). Body mass index was comparable between groups (29.0 ± 4.9 vs. 29.0 ± 4.1 kg/m²; p=0.7). A significantly higher burden of comorbidities was identified among patients with persistent AF than in the paroxysmal group (3.14 ± 1.48 vs. 2.69 ± 1.57; p=0.025). In the persistent atrial fibrillation group, 152 patients had at least two comorbidities, whereas in the paroxysmal atrial fibrillation group, 67 patients met this criterion (74% vs. 87%; p=0.018). In a detailed analysis, heart failure was significantly more prevalent among patients in the persistent AF group (44 (57%) vs. 77 (37%); p= 0.003). For other comorbidities, there was no statistical significance observed. CONCLUSION: Patients with persistent AF exhibit a higher burden of multimorbidity compared to those with paroxysmal AF, reflecting a more advanced clinical phenotype, with the difference particularly in a higher prevalence of heart failure.

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Title: Volumetric and Strain-Based Evaluation of Biatrial Remodeling in Patients with Atrial Fibrillation Undergoing Ablation

Author(s): Zofia Mik

Tutor(s): prof. Piotr Lipiec MD, PhD

Abstract: Introduction: Atrial fibrillation (AF) leads to structural and functional remodelling of the atria, including enlargement, changes in geometry, and impaired reservoir and contractile function. Modern echocardiographic parameters, including volumetric indices and atrial muscle strain, allow for a more accurate assessment of the degree of remodelling and may be important in qualifying patients for ablation. Objective: This study aims to evaluate advanced structural and functional parameters of the left atrium (LA) and right atrium (RA) in patients with AF who qualify for ablation and to analyze the changes in these parameters post-procedure. Material and methods: The investigation involved 52 patients with AF (38% with paroxysmal AF > 6 months, 59% with persistent AF) scheduled for ablation, with a mean age of 67±11 years, 42.3% of whom were male. Each patient underwent transthoracic echocardiography with the assessment of the following atrial morphology and function parameters: left atrial volume index (LAVI), right atrial volume index (RAVI), left atrial sphericity index (LASI), left atrial contraction index (LACI), right atrial contraction index (RACI), left atrial reservoir strain (LARS), and right atrial reservoir strain (RARS). These assessments were repeated after the ablation. Results: The findings demonstrated significant enlargement of both atria; LAVI measured at 41.37±17 ml/m² and RAVI at 32.43± 9 ml/m². The LASI (0.69±0.5) reflected an increase in LA sphericity. Notably, functional measures were abnormal: LACI was at 65± 35%, and RACI at 72±16%. The reservoir function exhibited pronounced deficiencies, with LARS at 17.18± 7% and RARS at 20.76 ±9%. Follow-up results are presently under analysis. Conclusions: Patients with AF undergoing ablation reveal significant enlargement and mechanical dysfunction in both atria, highlighting the importance of advanced echocardiographic evaluation in understanding atrial remodeling and guiding treatment strategies. Further analysis of post-ablation results is anticipated to enhance our comprehension of the impact of these interventions on atrial structure and function.

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Title: Burden of Carotid Atherosclerosis in Adult Populations Across Europe and North America.

Author(s): Maciej Chlabicz, Wojciech Łaguna, Jerzy Głowiński

Tutor(s): dr hab. n. med. Jerzy Głowiński

Abstract: Background: Carotid atherosclerotic plaques (CAPs) are an established marker of systemic atherosclerosis and an important predictor of future cardiovascular events. However, despite advances in cardiovascular prevention, their contemporary prevalence in high-income regions remains uncertain because of heterogeneity in imaging definitions, study designs, and study populations. We therefore performed an updated meta-analysis of population-based studies published between 2015 and 2025 in Europe and North America to estimate the prevalence of CAPs in the general adult population. Methods: Following the PRISMA 2020 guidelines, PubMed and Web of Science were searched for original studies. Eligible studies reported CAPs prevalence in adult general populations using ultrasonography, computed tomography angiography, magnetic resonance imaging. Pooled prevalence was calculated using a random-effects meta-analysis of proportions, and heterogeneity was assessed using I^2 and τ^2 statistics. Subgroup and meta-regression analyses explored associations with age and comorbidities. Results: A total of 80 studies comprising 177,196 participants were included. Pooled prevalence of CAPs was 39.8% (95% CI 32.6–47.5%) under a random-effects model with substantial heterogeneity (I^2 = 99.6%). The prevalence of CAPs increased with age, exceeding 59% among individuals aged over 70 years. High-risk populations, particularly those with T2DM, exhibited a prevalence exceeding 50%. Conclusions: Carotid atherosclerotic plaques affect nearly 40% of adults in Europe and North America, confirming a substantial burden of subclinical and overt atherosclerotic disease in contemporary populations. Their prevalence rises steeply with age and is particularly high among individuals with cardiometabolic comorbidities, underscoring the cumulative impact of vascular risk exposure across the life course. Despite major advances in cardiovascular prevention, CAPs remain highly prevalent, suggesting that current strategies are insufficient to curb the population burden of arterial disease. These findings support the need for harmonized imaging definitions, more robust population-level surveillance, and longitudinal studies linking plaque burden with hard cardiovascular outcomes to strengthen risk stratification and guide more effective preventive interventions.

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Title: Real-life prevalence of lipid disorders in a large single-centre registry - Comparative assessment of sex-related differences in lipid parameters

Author(s): Emilia Świenc, Helena Żórawska, Paweł Niczyporuk, Piotr Poznalski, Piotr Kazberuk

Tutor(s): Paweł Muszyński, MD, PhD

Abstract: Dyslipidemia remains one of the most significant and direct causes of atherosclerosis. Lipid metabolism displays sexual dimorphism due to differences in hormonal profiles and body composition. Lipid profile assessment is a crucial part of prevention, allowing for modification of cardiovascular risk. The study aimed to assess the prevalence of lipid disorders among patients hospitalised in the University Clinical Hospital in Bialystok. The subanalysis assessed sex-related differences in lipid disorders. Data obtained from 1611 patients hospitalised in the University Clinical Hospital in Bialystok, including 794 men and 817 women from the HELPE-R registry, were included in this study. The average total cholesterol (TC) level was 164.52 mg/dl. The TC exceeded 190 mg/dL in 25.45% of patients. The mean triglyceride concentration was 120.25 mg/dL. 47.49% were reported as having TG >100 mg/dl, 19.12% >150 mg/dl and 0.37% >880 mg/dl (severe hypertriglyceridemia). Average HDL level was 51.16 mg/dL, with 40.97% below the norm (Female <50 mg/dL; Male <40 mg/dL). Remnant cholesterol was 15.24 mg/dl. Mean LDL-cholesterol level was 99.11 mg/dl. LDL > 190 mg/dL was exceeded in 5.03% of patients. The mean Lp(a) concentration among patients was 31.16 mg/dL. Women had higher TC values (170.93 mg/dL) than men (157.923 mg/dL) ($p < 0.0001$). TC above 190 mg/dL was found in 22.17% of males and 28.64% of females, showing a statistically significant association with sex ($p=0.003$). The average triglyceride values were comparable between men (123.58 mg/dl) and women (117.00 mg/dl), with 47.73% of men and 47.25% of women measured exceeding 100 mg/dl. Male group (23.05% vs 15.30%) exhibited higher prevalence of triglyceride concentration above 150 mg/d ($p<0.0001$), but no such marked disparity was observed in severe hypertriglyceridemia surpassing 880 mg/d (2 males and 4 females) ($p=0.434$). Men's HDL-cholesterol results (45.55mg/dL) were notably lower than women's (56.60mg/dL), and more men did not reach sex-specific normative rates ($p=0.000$). Prevalence of RC concentration greater than 30 mg/dL in men (9.45%) surpassed women (6.36%) ($p=0.022$). No strong sex correlation was found on LDL-cholesterol level ($p=0.202$). 81 patients (44 men, 37 women) achieved levels exceeding 190mg/dl. No proven sex-related differences (30.98 mg/dl in men vs 31.34 mg/dl in women) were reported regarding average Lp (a) concentration ($p=0.309$). 1.64% of males and 1.71% of females had an Lp (a) level above 180mg/dL. These findings suggest that sex-related disparities in lipid profiles are primarily driven by HDL-C and total cholesterol, rather than by LDL fractions. Lipoprotein (a) concentrations, including high-risk levels, were comparable between sexes, indicating a similar genetically determined cardiovascular risk.

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Title: Obstructive sleep apnea as a cause of reversible atrioventricular conduction disorder

Author(s): Piotr Kazberuk, Emilia Świenc, Helena Żórawska, Paweł Niczyporuk, Piotr Poznalski

Tutor(s): Paweł Muszyński MD PhD

Abstract: Obstructive sleep apnea (OSA) is a sleep-related breathing disorder characterised by upper airway collapse during sleep, leading to intermittent hypoxemia, intrathoracic pressure swings. OSA has been strongly associated with systemic hypertension, atrial fibrillation, ventricular arrhythmias, and conduction disturbances. Bradyarrhythmias and atrioventricular (AV) conduction abnormalities occurring during sleep are thought to be primarily mediated by enhanced vagal tone and hypoxemia. Advanced AV block detected during sleep raises diagnostic and therapeutic challenges, regarding permanent pacemaker implantation in the context of potentially reversible sleep-related mechanisms.We report the case of a 60-year-old obese patient (BMI 38) with a diagnosis of moderate-to-severe obstructive sleep apnea who presented with nocturnal bradyarrhythmias. The patient had no prior history of intrinsic conduction system disease or structural heart disease. Daytime electrocardiography showed a normal sinus rhythm with preserved atrio-ventricular conduction. Overnight polysomnography demonstrated frequent obstructive apneas and hypopneas associated with significant oxygen desaturation. Continuous electrocardiographic monitoring during sleep revealed recurrent episodes of advanced atrio-ventricular block, including periods of high-grade second-degree (3:1) and transient complete AV block, occurring predominantly during apneic episodes. These conduction disturbances were accompanied by sinus slowing and resolved spontaneously with arousal and resumption of ventilation. Further evaluation, including transthoracic echocardiography and laboratory testing, excluded structural heart disease and other causes of conduction abnormalities. The temporal relationship between apneic events, hypoxemia, and advanced AV block suggested a functional, sleep-related mechanism. Continuous positive airway pressure (CPAP) therapy was initiated, leading to reduction in apneic events and complete resolution of nocturnal AV block on follow-up monitoring. Additionally, the dietary and physical activity recommendations were advised to reduce body mass. Advanced atrio-ventricular block occurring during sleep in patients with obstructive sleep apnea is most often a functional phenomenon related to increased parasympathetic activity and intermittent hypoxemia rather than intrinsic conduction system disease. In such cases, effective treatment of OSA with CPAP can resolve nocturnal conduction disturbances. Pacemaker implantation should be considered in the presence of persistent high-grade AV block during daytime, symptomatic bradycardia not attributable to reversible causes, or when conduction abnormalities persist despite optimal OSA therapy. This case highlights the importance of recognizing OSA as a reversible cause of advanced nocturnal AV block. It underscores the need for comprehensive sleep and cardiac evaluation before committing patients to permanent device implantation.

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Title: Heart rate self-monitoring in arrythmia prevention among „Pulse Day" campaign participants- assessment of awareness in a survey

Author(s): Wiktoria Kuczyńska, Emilia Świenc, Joanna Baaj, Katarzyna Sołodyna

Tutor(s): Paweł Muszyński MD PhD

Abstract: Dangerous arrhythmia can affect even 1 in 3 people, making it a significant clinical health risk. Regular pulse self-monitoring is one of the simplest tools for early detection of heart rhythm disorders. Despite the prevalence of cardiovascular diseases, public knowledge of how to interpret measurement results remains ambiguous. The purpose of this report is to assess knowledge about self-pulse taking and the occurrence of cardiac arrhythmias among survey participants. The survey-based study involved 64 volunteers, including 41 women and 23 men, from the "Pulse Day" event, an international initiative by the European Heart Rhythm Association within the European Society of Cardiology (EHRA/ ECA). The participation in the survey was entirely voluntary and anonymous. The average age of participants was 40,17 years. Resting heart rate was measured along with collecting survey data on basic knowledge of heart pulse measurement, including awareness of the correct pulse rate range, history of arrhythmia in participants, and their family. The average heart rate was 75.13 bpm (32-120 range). The bradycardia was identified in 6,25% (n=4) of the respondents, while tachycardia was noted in 4,69% (n=3). 70,31% of individuals declared the ability to measure pulse. There was no correlation between a prior diagnosis of arrhythmia and knowledge of how to measure pulse (p=0.723). Moreover, individuals diagnosed with arrhythmia were less likely to know pulse rate norms (40%) than the group without such a diagnosis (50.94%)(p=0.561), raising questions about the quality of health education provided to individuals affected by arrhythmia. A higher proportion of participants with a family history of arrhythmia reported knowing how to measure the pulse than those without such a history (82.61% vs 63.41%), although the difference was not statistically significant (p=0.184). The study demonstrated a clear need for patient education on interpreting pulse measurements. Initiatives such as 'PulseDay' serve as effective tools for identifying these deficiencies and screening individuals for potential heart rhythm disorders, thereby enhancing public awareness and minimising the risk of complications from life-threatening arrhythmias.

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Title: Know Your Enemy: Awareness of Hypertension Complications in Białystok, Poland.

Author(s): Małgorzata Sebestjaniuk, Natalia Piaszczyńska, Karolina Połubińska, Mateusz Gawryluk

Tutor(s): Edyta Zbroch, MD, Professor

Abstract: Introduction: May 17th of each year is globally recognized as World Hypertension Day. This study was conducted as part of the annual pro-health campaign organized in Białystok in 2025 to mark this day. Aim of the study: The main objective was to assess the level of awareness regarding complications of hypertension among residents of Białystok, Poland, and the surrounding areas. The analysis focused on the relationship between awareness of hypertension-related complications and selected factors, including sex, body mass index (BMI), smoking status, and self-reported history of hypertension. Materials and methods: The research consisted of 205 volunteer participants (62.4% female). Data were collected through physical examination and surveys completed by participants, which assessed age, sex, education, smoking habits, diagnosed hypertension and awareness of hypertension complications followed by a request to list them. The measured parameters included heart rate, blood pressure, blood glucose and BMI. The data was statistically analyzed. Results: The mean blood pressure in the study population was 141/80 mmHg. Hypertension was diagnosed in 40.7% of the individuals in the study group. Overall, 40.5% of participants were aware of hypertension-related complications, while 59.5% were not. The most frequently identified complications were stroke (63.9%) and myocardial infarction (45.8%), followed by cerebral hemorrhage and atherosclerosis (both 10.8%). Higher BMI was significantly associated with greater awareness of hypertension complications (p=0.0131). Women showed greater awareness than men (69.37% vs. 30.63%, p=0.0205). Elevated blood pressure (130/80 mmHg and more) was measured significantly more often among aware participants (88.29% vs. 70.37%, p=0019). A history of hypertension was more prevalent among aware participants than unaware ones (46.30% vs. 34.18%), while smoking prevalence was lower in the aware group (15.74% vs. 25.64%). Conclusion: The findings indicate a relatively low level of awareness of hypertension-related complications among residents of the Białystok region. Greater awareness was observed among women, individuals with higher body mass index (BMI), and participants reporting a history of hypertension. The results highlight the importance of targeted public education to improve awareness and knowledge about hypertension and its complications, particularly among the groups identified as less aware in this study.

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Title: What really makes our blood pressure rise? An analysis of data gathered from a pro-health campaign during World Hypertension Days from 2023 to 2025

Author(s): Łukasz Więcław, Tomasz Kredowski, Yana Rak, Mateusz Gawryluk

Tutor(s): Prof. Edyta Zbroch MD

Abstract: Introduction: Over the three-year-long period from 2023 to 2025, 542 volunteers from Białystok underwent comprehensive examination, as a part of a pro-health initiative of the World Hypertension Day. The participants completed detailed surveys, including information about age, weight, and height, medical history and lifestyle choices. A physical examination was performed, including measurements of blood pressure, heart rate, glycemia, and resting ECG. The collected data was statistically analysed to assess differences between subgroups, divided by age, sex, BMI, and previous diagnosis of hypertension. In addition, variation of measured parameters between three groups examined in the respective years was assessed. Results: A large percentage of the participants reported in the surveys to have been already diagnosed with hypertension (44,15%) and diabetes (11,86%). Mean systolic blood pressure displayed a slight increase from year to year (from 135,66 to 140,88 mmHg), while diastolic blood pressure did not show a steady trend. Average BMI was 26,69, which had not changed significantly. A slight increase of glycemia was noted from 2023 to 2025 (from 100,1 to 107,7 mg/dl). Regarding the lifestyle, there was a slight decrease in the number of active smokers (from 22,76% to 19,92%) and people declaring lack of any exercise (from 33,33% to 24,29%), mirrored by an increase of physical activity two or three times a week, which might be a sign of improving health awareness. In the group of participants over 65 years old, the BMI was significantly higher (27,1 vs 26,3 in the younger cohort, at p=0,006). There was a remarkable difference between the sexes – women were found to be smoking tobacco less frequently (16,6% vs 26,8% of males), and to have both significantly lower systolic and diastolic blood pressure and BMI (both at p=0,005). Increased BMI was related both with hyperglycaemia and hypertension (p=0,017 and p=0,05 respectively). Abnormal ECG was more frequent in male, overweight and hypertensive populations. In 2025, a separate examination was performed to assess the participants' knowledge about the arterial hypertension – they were asked to name its most common complications. As the survey revealed, there was no significant difference concerning their actual systolic blood pressure or glucose levels (p=0,17 and p=0,91 respectively). Moreover, people aware of health risks of hypertension were, surprisingly, more likely to be overweight (with p=0,013). Conclusion: The outcomes of the study underline the need for lifestyle changes in populations affected with hypertension, as better control of body weight was associated with lower blood pressure. However, a positive trend in terms of blood pressure and glycaemia could not be demonstrated in the better-educated group, which was even statistically more likely to be overweight,

implying that health awareness may not be the most important contribution to the success of hypertension prevention.

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Title: Financial barriers as a cause of acute stent thrombosis

Authors: Matylda Walesiuk, Julia Paprota

Supervisors: Emil Dąbrowski, MD, PhD; Marcin Kożuch, MD, PhD

Abstract: Introduction: Percutaneous coronary intervention (PCI) with drug-eluting stent (DES) implantation requires the patient's diligent adherence to dual antiplatelet therapy (DAPT). Ensuring continuity of treatment remains crucial in post-intervention care, which is influenced not only by medical factors but also by financial barriers. Premature discontinuation of antiplatelet therapy due to a lack of funds to fill prescriptions represents a significant, yet often overlooked, risk factor for acute stent thrombosis.

Case Report: A 68-year-old male patient with multivessel coronary artery disease, hypertension, and heart failure with reduced ejection fraction (HFrEF, EF 38%) underwent elective PCI. Due to massive calcifications in the left anterior descending (LAD) artery, the procedure was performed using rotational atherectomy, followed by the implantation of a DES. The procedure was uncomplicated, achieving an optimal angiographic result. The patient was discharged in stable condition with a recommendation for DAPT (including clopidogrel) for at least 6 months and continuation of HFrEF therapy. Five days later, the patient was admitted emergently with a diagnosis of anterior ST-segment elevation myocardial infarction (STEMI). During history taking, it was established that the patient had not purchased the prescribed medications immediately after discharge due to a lack of financial resources. Urgent coronary angiography revealed acute thrombosis in the previously implanted stent in the LAD. Rescue treatment was initiated, and PCI with aspiration thrombectomy was performed, restoring blood flow in the vessel. In the following hours, a gradual deterioration of the patient's condition was observed, and the patient developed full-blown cardiogenic shock. Due to the worsening condition refractory to standard pharmacological treatment, mechanical circulatory support using an Impella pump was implemented. Despite the treatment, multi-organ dysfunction syndrome (MODS) developed; continuous renal replacement therapy (CRRT) was initiated due to observed anuria. Despite the use of advanced circulatory support and intensive care, no clinical improvement was achieved. Death was pronounced on the seventh day following the primary procedure.

Conclusions: The described case illustrates the dramatic consequences of failing to fill prescriptions for recommended medications, including antiplatelets, for economic reasons. It highlights the necessity of patient and family education, as well as the verification of the patient's financial capacity to purchase essential medications prior to hospital discharge. Economic barriers can jeopardize the success of advanced medical procedures, leading to irreversible complications and death.

CASE REPORTS
PAEDIATRICS SESSION

20th Bialystok International Medical Congress for Young Scientists

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Title: A Rare Ovarian Immature Teratoma in a 10-Year-Old Girl: A Case Report

Author(s): Viktorija Urbonavičiūtė, Patricija Kručaitė, Tomas Budrys, Ligita Bespalovaitė

Tutor(s): Tomas Budrys, MD; Ligita Bespalovaitė, MD

Abstract: Background Ovarian tumors in the pediatric population are rare, and malignant germ cell tumors such as immature teratomas often present with nonspecific abdominal or gastrointestinal symptoms, which may delay diagnosis. Radiological imaging is crucial for determining tumor origin, internal composition, associated complications, and disease spread. Case report A 10-year-old girl presented with several weeks of persistent abdominal pain and changes in bowel habits. The patient had no acute symptoms and her general condition was relatively stable. Initial conservative management was attempted, but there was no clinical improvement. Computed tomography of the abdomen and pelvis revealed a large intra-abdominal mass measuring approximately 20 cm, characterized by a heterogeneous cystic-solid mass with areas of calcification, suggestive of a malignant ovarian germ cell tumor. Additional findings included omental involvement, enlarged paraaortic lymph nodes, and marked mass effect on adjacent organs, resulting in bilateral ureteral compression with secondary hydronephrosis. Moderate to large ascites and bilateral pleural effusions (up to approximately 2.7 cm on the right and 2.9 cm on the left) were also identified. Following multidisciplinary team discussion, surgical treatment was performed. Histopathological examination confirmed an ovarian immature teratoma with involvement of pelvic and mesenteric tissues (pT3a N0 G3). Adjuvant chemotherapy with four planned cycles was initiated, with fertility-sparing management recommended. The patient is currently under follow-up. Conclusions This case highlights the role of cross-sectional imaging in revealing the full extent of disease in a pediatric patient with initially nonspecific symptoms. Computed tomography enabled accurate characterization of the lesion, reveals the impact on surrounding structures, and identifies clinically relevant complications, offering crucial guidance for treatment planning.

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Title: Eczema Herpeticum in an Atopic Child: Early Recognition Prevents Severe Complications

Author(s): Kaushik Niranjankumar

Tutor(s): Dr. Kacper Toczyłowski, MD, PhD

Abstract: Background: Eczema herpeticum (EH) is a widespread infection caused by the herpes simplex virus (HSV) seen in individuals with compromised epidermal barrier integrity, primarily those with atopic dermatitis. Even though atopic dermatitis and HSV exposure are frequent in children, their combination can lead to quick viral spread, systemic issues, and complications that threaten vision. Late diagnosis continues to be a significant factor in illness. Case Presentation: An 8-year-old girl with a history of atopic dermatitis and dust mite allergy exhibited worsening painful skin lesions and ongoing fever despite earlier antibiotic treatment for suspected bacterial infection. Assessment disclosed widespread, uniform erosive and crusted lesions on an atopic skin foundation, featuring confluent plaques and several satellite vesiculopustules spread from the sternum to the chin in the front and partially across the upper limbs. Other lesions affected the wrists and face, with right-sided periorbital involvement causing worry about ocular extension. Laboratory investigations revealed increased inflammatory markers (CRP, fibrinogen) and significantly high total IgE levels (>500 IU/mL). Differential diagnoses considered were impetigo, intense atopic dermatitis exacerbation, and varicella. The rapid progression of lesions, distinctive morphology, systemic symptoms, and confirmed HSV exposure reinforced a clinical diagnosis of eczema herpeticum. Management and Outcome: Intravenous acyclovir was started right away, in conjunction with empirical intravenous antibiotics for suspected bacterial superinfection. Supportive management consisted of hydration, pain relief, and localized wound treatment. Immediate ophthalmology consultation resulted in supplementary topical antiviral treatment. The patient showed quick clinical improvement with decreasing inflammatory markers and gradual lesion healing. Conclusion: This case highlights the significance of identifying eczema herpeticum as a clinical diagnosis in atopic children who show acute disseminated monomorphic erosive lesions, especially with a history of HSV exposure. Timely antiviral treatment and management are essential to avert systemic dissemination and eye-related issues. Greater awareness in primary care and emergency environments can greatly minimize diagnostic delays and related morbidity

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Title: Necrotizing Enterocolitis in a Full-Term Neonate with Hypopituitarism and Dysgenesis of the Corpus Callosum: A Case Report

Author(s): Olga Gryszkiewicz, Sylwia Pol

Tutor(s): Marek Wolski, MD, PhD

Abstract: Necrotizing enterocolitis (NEC) is an acquired inflammatory disease of the gastrointestinal tract, most commonly diagnosed in preterm infants with low birth weights, which emphasizes the role of intestinal immaturity in its pathogenesis. NEC also affects full-term newborns, especially those who suffer from major comorbidities such as perinatal asphyxia and endocrine insufficiency. It is characterized by severe intestinal inflammation and varying degrees of bowel tissue necrosis. Management of the disease depends on the Bell's criteria staging and may include gastric decompression, parenteral nutrition, broad-spectrum antibiotic therapy, and intestinal resection. Many patients, after surgical interventions, tend to become more susceptible to long-term complications such as short bowel syndrome, growth delay, and neurodevelopmental abnormalities. Additionally, the rapid and unpredictable progression and limited therapeutic strategies vastly contribute to the challenging nature of the disease. We present the case of a full-term female neonate born at 39 weeks of gestation with prenatal diagnosis of corpus callosum dysgenesis and subependymal heterotopia. Postnatally, the patient developed hypoglycemia, thermoregulation issues, and metabolic instability. On the fourth day of life, the patient exhibited swift clinical deterioration, pointing to sepsis, metabolic acidosis, and gastrointestinal inflammation. Laboratory testing exposed various hematological issues, including thrombocytopenia, lymphocytopenia, anemia, and elevated inflammatory markers. Intensive care was implemented, consisting of broad-spectrum antibiotics, hemodynamic support, mechanical ventilation, and total parenteral nutrition. The disease progressed to an advanced stage of NEC (Bell's criteria) with intestinal necrosis and perforation. The patient required multiple laparotomies, including extensive bowel resections and gastrostomy. Postoperatively, the patient struggled with infections and was maintained on prolonged parenteral nutrition and further antimicrobial treatment. Clinical stabilization was achieved, and the patient was transferred to a referral center for further specialized therapy and management. This case exemplifies the fulminant nature of early-onset NEC in a full-term newborn with coexisting endocrine and perinatal risk factors. Dynamic inflammatory parameters, thrombocytopenia, lymphocytopenia, and elevated lactate levels clearly correlate with the severity of the disease and often require surgical solutions. This report highlights the importance of early clinical assessment, thorough monitoring, and multidisciplinary management in improving outcomes and reducing the health risks associated with this illness.

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Title: Rapid Progression to Class III Lupus Nephritis in a 14-Year-Old Male

Author(s): Kornel Witek, Kacper Włodarczyk

Tutor(s): Karolina Cichoń-Kawa MD, Anna Maria Wabik MD

Abstract: Background: Systemic lupus erythematosus (SLE) is a chronic, multisystem autoimmune disease characterized by a heterogeneous clinical presentation and variable disease course. Although pediatric-onset SLE is uncommon in males (female-to-male ratio approximately 5:1), male sex is associated with a more severe phenotype and a higher prevalence of renal involvement (lupus nephritis). We report a case of a 14-year-old male with fulminant SLE onset and rapid progression to biopsy-proven Class III lupus nephritis. Case report: A 14-year-old male, previously healthy with no family history of autoimmune diseases, was admitted due to progressive urinary abnormalities and suspected lupus nephritis in the setting of newly diagnosed SLE, for extended diagnostic evaluation and management. The first clinical symptoms of SLE manifested as photosensitive erythematous skin lesions and a rash on the cheeks, followed by systemic symptoms such as fatigue, weight loss, fever, abdominal pain, mouth ulcers, and oral erosions. Laboratory investigations revealed cytopenias, including anemia and thrombocytopenia. Immunological testing indicated high disease activity with hypocomplementemia (C3 63.5 mg/dL, C4 4.7 mg/dL). The SLEDAI-2K score was 29, confirming high disease activity. During subsequent hospitalizations, progressive kidney involvement became apparent—hematuria and increasing proteinuria (maximum daily proteinuria 960 mg/24 h). A kidney biopsy was performed, and microscopic examination confirmed Class III lupus nephritis. Given the high disease activity, induction therapy was initiated with hydroxychloroquine and intravenous methylprednisolone pulses. Following histopathological confirmation, mycophenolate mofetil was introduced as induction therapy. The patient showed clinical improvement accompanied by stabilization of hematological and kidney parameters. Echocardiography revealed pericardial effusion. The patient remains under nephrological and rheumatological care, continuing immunosuppressive treatment and regular monitoring of disease activity and kidney function. Conclusions: Progressive proteinuria and hematuria require urgent nephrological evaluation, including a kidney biopsy. Early diagnosis of SLE and intensification of immunosuppressive treatment may improve the clinical condition and stabilize hematological and renal parameters.

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Title: Same variants, similar features: siblings with Smith-Lemli-Opitz syndrome

Author(s): Maria Bardziak, Gabriela Adamiak

Tutor(s): dr.n.med i n. o zdr. Ilona Jaszczuk

Abstract: Introduction: Smith- Lemli-Opitz syndrome (SLOS) is a rare autosomal recessive disorder of cholesterol biosynthesis. It is caused by pathogenic variants in the DHCR7 gene, which encodes 7-dehydrocholesterol reductase, the enzyme responsible for the final step of cholesterol synthesis. Mutations of 7-dehydrocholesterol reductase (DHCR7) result in reduced conversion of 7-dehydrocholesterol to cholesterol, leading to cholesterol deficiency and accumulation of sterol precursors. SLOS presents with a broad clinical spectrum, ranging from mild features to severe congenital malformations. Case report: We present two male siblings with Smith-Lemli-Opitz syndrome, born to unaffected carierr parents. The first patient, an 11-years-old boy was referred for futher diagnostic work-up at the age of 3 years due to developmental delay and growth retardation. The second patient, his 5-years-old brother, was prenatally suspected of SLOS based on elevated sterol metabolites detected in maternal urine during pregnancy. Both patients presented with similar clinical features, including developmental delay, behavioral abnormalities consistent with autism spectrum disorder, and dysmorphic features such as ptosis and partial 2-3 toe syndactyly. Additionally, the older brother presented with micrognathia, prominent ears and two café-au-lait spots. Biochemical analysis revealed decreased total cholesterol levels and elevated levels of 7-dehydrocholesterol and 8-dehydrocholesterol. In the older sibling array comparative genomic hybridization (aCGH) did not reveal any genomic imbalances. Further molecular genetic analysis in both patients identified the same two variants in the DHCR7 gene: c.452G>A and c.1084C>G, inherited from each parent, which confirmed the diagnosis. Conclusion: The presented cases highlight the association between DHCR7 variants and the pathogenesis of Smith- Lemli-Opitz syndrome. SLOS is characterized by a variable clinical presentation, in this case the disorder was inherted from carrier parents, which resulted in similar phenotypic features in both siblings. Early diagnosis is crucial, biochemical testing and molecular genetic testing play a key role in confirming diagnosis of SLOS. Acurrate diagnosis enables appropriate clinical treatment, including cholesterol supplementation and multidisciplinary care.

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Title: Schimke immuno-osseous dysplasia as an example of rapidly progressive chronic kidney disease based on the case of a 6-year-old girl

Author(s): Mikołaj Grzegrzółka, Jakub Adamus

Tutor(s): Anna Maria Wabik MD

Abstract: Background Schimke immuno-osseous dysplasia (SIOD) is a rare, genetically determined disorder classified among monogenic causes of nephrotic syndrome in children. It is characterized by severe, progressive nephropathy, most often presenting as steroid-resistant nephrotic syndrome, leading to early renal failure and associated with poor prognosis. The clinical presentation of SIOD is multisystemic and includes growth impairment with marked disproportionate short stature, skeletal and joint abnormalities and hyperpigmented skin macules on the trunk. A key feature of the syndrome is immunological dysfunction, particularly lymphopenia, predisposing patients to recurrent and severe infections. In some cases, vascular complications, including ischemic strokes, have also been reported. Approximately half of patients harbor mutations in the SMARCAL1 gene, which encodes a protein involved in chromatin remodeling. Case report We present the case of a nearly 6-year-old girl admitted due to the first episode of nephrotic syndrome with massive proteinuria, hypoalbuminemia, severe hyperlipidemia, arterial hypertension, and worsening renal function. Despite intensive steroid therapy, supportive treatment, remission was not achieved. Kidney biopsy revealed chronic glomerulopathy with extensive focal segmental glomerulosclerosis. The disease course was complicated by numerous infections (including EBV, bacterial and fungal infections), hematological disorders, gastrointestinal bleeding, and fluid overload with pericardial effusion. Due to rapid progression to end-stage renal disease, the patient was qualified for chronic hemodialysis. Genetic testing identified one pathogenic and one potentially pathogenic variant in the SMARCAL1 gene, confirming the diagnosis of SIOD. Given the genetic background of the disease, further intensive immunosuppressive therapy was discontinued. The patient remains under the care of a nephrology unit, undergoing hemodialysis while awaiting kidney transplantation. Conclusions This case highlights the importance of early genetic diagnostics in children with early-onset, steroid-resistant nephrotic syndrome and focal segmental glomerulosclerosis. Identification of a monogenic disorder allows avoidance of ineffective and burdensome immunosuppressive therapy, facilitates timely initiation of renal replacement therapy, and enables appropriate planning of multidisciplinary care and qualification for kidney transplantation.

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Title: Title: An example of a 7-year-old patient with APS-4 syndrome in the course of 5 autoimmunopathies.

Author(s): Michał Gorlo, Julia Garkowska, Miłosz Nesterowicz, Katarzyna Anikiej, Maja Łopatecka

Tutor(s): dr hab. n. med. Hanna Borysewicz- Sańczyk, dr n. med. Aneta Zasim, lek. Stanisław Trzebuchowski, prof. dr hab. n. med. Artur Bossowski

Abstract: Background: Autoimmune polyendocrine syndromes (APS) are rare conditions characterized by the coexistence of autoimmune disorders. APS type 4 (APS-4) represents a heterogeneous group of disorders that do not meet the classification criteria for APS 1- 3. Diagnosis in the pediatric population remains a challenge due to an incomplete clinical picture and the slow, multi-year evolution of the syndrome's components. Case Presentation: A nearly 7-year-old female patient with a positive family history of autoimmune thyroid diseases and nephrolithiasis was hospitalized with suspected type 1 diabetes in a state of compensated acidosis. Laboratory tests revealed acute, trilineage pancytopenia (WBC 1.9 × 10^3/μL, PLT 22,000/μL, Hb 4.0 g/dL) refractory to intravenous immunoglobulin (IVIG) infusions, coagulopathy, and signs of hepatocyte damage. Extensive immunological diagnostics and a liver biopsy led to the diagnosis of APS-4, which included: type 1 diabetes, celiac disease, autoimmune hepatitis (AIH) with micronodular cirrhosis, and immune thrombocytopenia (ITP). Treatment involved functional insulin therapy using a personal pump, a gluten-free diet, and systemic glucocorticosteroid (GCS) therapy, achieving clinical remission. Long-term follow-up revealed the progression of polyautoimmunity and unmasked iatrogenic complications. Chronic GCS administration led to the development of cushingoid habitus, hirsutism, and a subcapsular cataract. In 2023, the patient was diagnosed with urolithiasis and dysmorphic erythrocyturia continues to be present in the urine sediment. In her 9th year of life, suppressed TSH levels, elevated fT4, and the presence of TSH receptor antibodies (TRAb) were detected, establishing the diagnosis of autoimmune hyperthyroidism and prompting the initiation of thyrostatic treatment. The patient remains in good general condition under multidisciplinary specialist care. Conclusions: This case demonstrates that APS-4 in children has a strictly progressive nature. The sudden onset of type 1 diabetes accompanied by refractory pancytopenia requires urgent, targeted immunological diagnostics. The complexity of the phenotype and the significant risk of iatrogenic (post-steroid cataract) and metabolic (nephrolithiasis) complications determine the need for strict, individualized patient monitoring in multispecialty centers.

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Title: When the Liver Is Not the Whole Story: A Multisystem Diagnostic Challenge of Autoimmune Hepatitis Complicated by Vasculitis in a Pediatric Patient

Author(s): Weronika Gadomska

Tutor(s): lek. Natalia Aleksandra Lwow

Abstract: Introduction Autoimmune hepatitis (AIH) is a chronic inflammatory liver disease of autoimmune origin. Although it primarily affects the liver, it reflects systemic immune dysregulation and may occasionally be associated with extrahepatic manifestations. Such presentations may complicate the diagnostic process and delay the correct diagnosis, particularly in pediatric patients. Case report A 12-year-old girl was admitted to the Department of Pediatrics, Gastroenterology and Allergology due to fever, headache, and abdominal pain. Initial laboratory tests revealed severe hepatocellular injury with transaminase levels exceeding 1000 U/L. Impaired liver synthetic function was also present, including prolonged INR and hypoalbuminemia. Additional findings included leukopenia, thrombocytopenia, and markedly elevated serum immunoglobulin G (IgG) levels. Serological testing showed positive HSV IgM antibodies, raising suspicion of viral infection, and antiviral therapy with acyclovir was initiated. However, liver enzyme levels did not improve. Abdominal ultrasonography revealed hepatosplenomegaly without biliary obstruction. Further diagnostic evaluation, including liver biopsy and immunological testing, confirmed the diagnosis of autoimmune hepatitis. According to current clinical recommendations, standard immunosuppressive therapy with corticosteroids followed by azathioprine was initiated, resulting in significant clinical improvement with gradual normalization of liver enzymes. During corticosteroid tapering, the patient developed pain, swelling, and impaired weight-bearing of the right lower limb. Doppler ultrasonography of the lower limb arteries and veins excluded thrombosis and significant large-vessel pathology. Because of persistent symptoms and the presence of atypical p-ANCA antibodies, small-vessel vasculitic involvement was considered. Supportive treatment targeting microcirculatory impairment, including low-molecular-weight heparin, pentoxifylline, and acetylsalicylic acid, was introduced, resulting in clinical improvement. Conclusions This case demonstrates that autoimmune hepatitis in pediatric patients may present as a diagnostic challenge and may be associated with additional immune-mediated manifestations. Similar cases of autoimmune hepatitis accompanied by ANCA-associated vasculitis have been reported in adult patients, suggesting a possible link between systemic immune dysregulation and vascular involvement. Awareness of such associations may facilitate earlier recognition of systemic immune manifestations in patients with autoimmune hepatitis.

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Title: „More than an eating disorder: when esophagitis hides behind worsening depression and bulimia”

Author(s): Klaudia Grądzka

Tutor(s): Elżbieta Jarocka-Cyrta, MD, PhD, Associate Professor, University of Warmia and Mazury

Abstract: Introduction: Eating disorders- including anorexia and bulimia and avoidant/restrictive food intake disorder (ARFID)- are becoming increasingly important cases each year in the pediatric population. They are often accompanied by depression and anxiety disorders, which intensify eating difficulties. Malnutrition further escalates these conditions. In every case, comprehensive psychotherapy and psychiatric treatment are essential. It is important to remember that patients with eating disorders may also develop organic diseases, which may lead to a refusal of food intake. We present the case of a patient, in whom appropriate treatment of depression led to an exceedingly rare condition- sloughing esophagitis. Case study: A 16-year-old girl, diagnosed one year earlier with depression and bulimia and treated with fluoxetine, lamotrigine, and chlorprothixene, was admitted to the gastroenterology department due to nausea, vomiting, and refusal of food intake for two months. The patient reported a worsening of depression symptoms several months prior to hospitalisation. She described feeling similar to the time before treatment, admitted to taking medications from her mother’s supply, and occasionally skipping meals. Around the same time, hypothyroidism was diagnosed, and treatment with Euthyrox was started. Over time, she developed retrosternal pain with a burning sensation, as well as difficulty with the intake of solid food. A few days before hospitalisation, the symptoms worsened. She tolerated only a liquid diet. Her mother suspected a relapse of eating disorders. Physical examination and laboratory tests were within normal ranges. Gastroscopy revealed severe nonspecific inflammatory changes in the middle part of the oesophagus, suggestive of a chemical burn or eosinophilic esophagitis. During the hospital stay, the patient was placed on a liquid diet and treated with intravenous proton pump inhibitors, resulting in clinical improvement and resolution of symptoms. Histopathological examination confirmed sloughing esophagitis. Due to the suspicion that esophagitis was caused by psychiatric medications, the treatment was modified, resulting in complete resolution of symptoms. Follow- up gastroscopy showed complete regression of the changes. Conclusions: This case highlights how tricky it can be to find a proper diagnosis. Psychiatric disorders often overlap with somatic diseases, which may hinder the recognition of the main disorder. A wide range of medications used in psychiatric treatment may contribute to the development of side effects, and non-specific gastrointestinal symptoms, overlapping with a history of eating disorders and depression, could mistakenly lead to overlooking the patient’s true source of symptoms. This case underscores the importance of maintaining a differential diagnosis and not attributing all symptoms solely to previously diagnosed psychiatric conditions.

CLINICAL SCIENCE
PAEDIATRICS SESSION

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Title: Acute multiorgan decompensation in Alström Syndrome

Author(s): Hami Nguyen, Kiara Sequeira, Baron Akaragwe

Tutor(s): Dr. Klaudyna Noiszewska

Abstract: Background: Alström syndrome is an autosomal recessive disorder characterized by progressive cone rod dystrophy, sensorineural hearing loss, hyperinsulinemia, restrictive cardiomyopathy, pulmonary, hepatic and renal fibrosis. This case study describes a 16 year old male patient diagnosed with Alström syndrome who developed acute renal failure and electrolyte disturbances in addition to cardiovascular instability requiring admission to intensive care. Case Presentation: A 16-year-old male with Alström syndrome, confirmed by compound heterozygous pathogenic variants in ALMS1 was admitted to the intensive care unit with acute kidney injury, electrolyte disturbances, and hypotension. His underlying condition is characterised by restrictive cardiomyopathy in addition to obesity, asthma, pulmonary hypertension, blindness, and hearing impairment. The patient was admitted to the intensive care unit due to acute renal injury, electrolyte imbalances and hypotension. Upon his arrival, his oxygen saturation deteriorated rapidly from 98% to 77%. He was then put in a high flow nasal oxygen at a rate of 60 liters per minute and an oxygen concentration of 90%, but this approach was not sustained, and the patient had to be intubated and ventilated. He was placed on pressure controlled ventilation which improved his saturation to 96%. The machine delivered a peak pressure of 26 and a positive end expiratory pressure of 12, with a respiratory rate of 14 breaths per minute. The hypotension was treated with dopamine and dobutamine infusion followed by sodium bicarbonate to correct the patient's metabolic acidosis. On the fifth day the patient underwent extubation and transitioned to a non invasive ventilation (Trilogy, S/T mode with AVAPS, target Vt 419 mL, PIP 15 cmH_2O, PEEP 5 cmH_2O, f 15/min, Ti 1.2 s). Antibiotic treatment was modified in response to the findings of the cultures. The patient remained conscious, cooperative, and hemodynamically stable. The patient maintained spontaneous breathing with low flow oxygen during the day and non invasive ventilation during nocturnal periods. On the twenty-seventh day the patient was discharged with a non invasive ventilator (vitalaire) and will be following up with regular visits to the outpatient care with different specialists. The patient also received pharmacotherapy including sildenafil, spironolactone, lisinopril, levothyroxine, vitamin D3, metformin, iron supplementation, allopurinol, bisoprolol, magnesium supplementation, inhaled budesonide/formoterol. Additional temporary antibiotic courses included ciprofloxacin, amoxicillin/clavulanate, and itraconazole. Conclusion: This case highlights the complexity of managing acute organ decompensation in a patient with multisystemic Alström syndrome. Immediate respiratory, hemodynamic, and metabolic stabilization enabled recovery and transition to home based noninvasive ventilation. Multidisciplinary long term care is important in patients with Alström syndrome.

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Title: Does allergy affect the course of inflammatory bowel disease in children?

Author(s): Julia Arct, Kamila Milewska

Tutor(s): dr hab. n. med. Beata Cudowska

Abstract: Introduction: Inflammatory bowel disease (IBD) is a group of chronic autoimmune conditions comprising Crohn's disease (CD) and ulcerative colitis (UC). Allergy and IBD share disrupted Th1/Th2 balance, which may suggest a similar immunological background. Aim of the study was to assess the prevalence of allergic comorbidities in children with IBD and to identify clinical features associated with their presence across disease subtypes. Methods: A retrospective analysis was conducted on 129 children (68 girls, 61 boys) aged 1-18 years (mean 12.7 ± 3.5) years with diagnosed IBD (75 UC, 54 CD) and hospitalized in a pediatric gastroenterology unit between 2020 and 2025. Data regarding diagnosis of allergy, allergic co-morbidities and family history of atopy were analyzed based on patients' medical records. Data concerning disease activity of IBD (PUCAI/PCDAI scale), BMI, and biological treatment were compared between patients with UC and CD in allergic and non-allergic subgroups. Mann-Whitney U and Chi-square tests were applied; $p<0.05$ was considered as significant. The study was approved by the local Bioethics Committee (APK.002.498.2025). Results: Allergy was identified in 37.2% of patients with IBD (UC: 33.3%; CD: 42.6%; p=0.283). The most common was inhalant allergy (77.1%), followed by food allergy (41.7%) and cross-reactive allergic reactions (29.2%). In UC patients, positive family history of allergic disease was more frequent, with statistical significance (60.0% vs. 26.0%, p=0.004). Allergy did not affect disease activity or age of onset in each group. Biological treatment was more common in CD overall (53.7% vs. 32.0%, p=0.013) and even more frequent in patients with allergy (65.2% vs. 45.16%, p=0.144). Female gender predominated in allergic UC; male gender in allergic CD (p=0.045). The BMI difference between UC and CD was statistically significant only in non-allergic patients (19.46 vs. 17.67 kg/m², p=0.048). Conclusions: 1. Allergy affects more than one third of patients with IBD and its prevalence is not related to the subtype of the disease. 2. The higher prevalence of allergy among patients with Crohn's disease receiving biologic therapy may suggest the impact of allergy on the severity of the disease. 3. Children with IBD require careful medical monitoring not only due to the primary disease but also possible allergic comorbidities.

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Title: Electric Scooter Epidemic: Analysis of Temporal Distribution and The Impact of Helmet Non-Compliance on Injury Severity in Paediatric Head Injuries

Author(s): Kacper Budziłowski, Dominika Bardońska, Filip Maliszewski

Tutor(s): Tymon Skadorwa, MD, PhD

Abstract: Introduction: The rapid global adoption of shared micromobility programmes has significantly altered urban trauma profiles. While e-scooters offer environmental benefits, their integration has coincided with a surge in emergency department (ED) presentations. This study aims to identify the temporal distribution of injuries and quantify the effectiveness of helmet use in reducing head trauma severity. Material and methods: A retrospective cohort study was conducted on 250 patients presenting with e-scooter injuries to a tertiary ED, with a sub-group of 57 patients admitted to a Neurosurgical Ward. Data on demographics, helmet status, accident circumstances (time, month, day of the week), injury characteristics and Emergency Severity Index (ESI) were collected. Statistical analysis utilized Chi-squared and T-tests as well as logistic regression to identify independent predictors of injury severity. Head trauma was graded using the Abbreviated Injury Scale (AIS). Results: The cohort was predominantly male (68.0%), with a low helmet compliance rate (26.7%). Significant temporal peaks were identified in June and July, with a clear diurnal risk window between 16:00 and 23:00 hours. Conversely, accident rates were significantly lower during winter months (Nov-Jan) and early morning hours (01:00–10:00). 26.0% of patients required hospital admission, with 20.8% specifically admitted to the Neurosurgical Ward. Helmet use demonstrated a statistically significant protective effect against severe head trauma ($p=0.003$ for AIS Head scores) and the intracranial haemorrhage (ICH) occurrence (OR=0.094, 95%CI: 0.010-0.841, $p=0.013$). Regression analysis revealed that ICH volume significantly and positively correlated with both the necessity for neurosurgical intervention ($p=0.039$) and total hospitalisation time ($p=0.029$), with a mean stay of 12.4 days. Helmets also significantly mitigated the risk of cranial vault fractures (OR=0.323, 95%CI: 0.13–0.78, $p=0.010$), but not the maxillofacial fractures ($p=0.917$). Non-helmeted riders incurred a substantially greater mean total radiation dose (mean 2747.3 vs 1862.5 mGy/cm; $p=0.012$), reflecting a higher diagnostic burden that necessitated up to eight CT scans in the non-helmeted cohort. Conclusions: E-scooter injuries follow predictable temporal and seasonal patterns. The low rate of helmet use, results in higher severity of e-scooter-related neurotrauma, which is a primary driver of hospital resource depletion. Targeted public health interventions, including mandatory helmet legislation, are essential to mitigate the complex surgical and radiological burden of e-scooter trauma, reducing both injury severity and population-level radiation exposure.

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Title: From Breast Milk to Blood Loss: A Severe Atypical Case of Food Protein–Induced Allergic Proctocolitis

Author(s): Wiktoria Ulejczyk

Tutor(s): Elżbieta Jarocka-Cyrta, MD, PhD, Associate Professor, University of Warmia and Mazury

Abstract: INTRODUCTION: Gastrointestinal bleeding in infants requiring blood transfusion is a rare, serious condition. In this age group, significant anaemia raises concern for structural abnormalities, vascular malformations, or coagulation disorders. Food protein–induced allergic proctocolitis (FPIAP) commonly presents with hematochezia and mucus-streaked stools in otherwise healthy infants. It is most often triggered by cow's milk protein, begins in the first weeks of life, and typically resolves in late infancy. Despite marked mucosal abnormality on endoscopy, it is generally a benign, self-limiting condition. In prolonged or severe cases, maternal elimination of cow's milk protein or the use of an amino acid–based formula may be required. We present a rare case of FPIAP with severe gastrointestinal bleeding leading to significant anaemia. CASE PRESENTATION: A 2-month-old, exclusively breastfed girl was admitted with a 5-day history of fresh blood in the stool. Eleven days earlier, she had received a rotavirus vaccination. Laboratory tests revealed anaemia (Hb 10.5 g/dL), while inflammatory markers and coagulation parameters were normal. Abdominal ultrasound was unremarkable. As late hemorrhagic disease of the newborn could not be ruled out, parenteral vitamin K and hematinic therapy were administered, leading to temporary improvement. FPIAP was considered in the differential diagnosis, and the mother was advised to eliminate cow's milk protein from her diet. In the following months, the girl required further hospitalisations due to a large amount of blood in every stool. The anaemia progressively worsened, and the haemoglobin level decreased to 7.2 g/dL, requiring blood transfusion. MRI was unremarkable. Endoscopic evaluation was performed to determine the source of bleeding, and the only abnormality identified was nonspecific erythematous lesions on colonoscopy. Histopathological examination demonstrated eosinophilic infiltration (>80 eosinophils/HPF) throughout the intestinal wall, confirming the diagnosis of FPIAP. According to current recommendations, a trial of an amino acid–based formula was initiated; however, the girl refused it. The mother was advised to follow a strict elimination diet (excluding milk, eggs, nuts, soy, and citrus). The amount of blood in the stool decreased but remained intermittent. At 6 months of age, blood was no longer observed in the stool. An oral cow's milk challenge performed at 9 months was negative. At 1 year of age, the girl remains on a normal diet, except for citrus, which causes perianal erythema. CONCLUSIONS: FPIAP rarely causes severe anaemia requiring blood transfusion, and management usually involves eliminating dairy from the mother's diet during breastfeeding. In this case, this approach was ineffective, and treatment with an amino acid–based formula was not feasible. Awareness of the natural course of this self-limiting condition helped avoid unnecessary diagnostics and pharmacological interventions.

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Title: Mapping the Craniocerebral Impact: Fracture Morphology and Haemorrhage Distribution as Determinants of Surgical Necessity in Paediatric e-Scooter Injuries

Author(s): Kacper Budziłowski, Dominika Bardońska, Filip Maliszewski

Tutor(s): Tymon Skadorwa, MD, PhD

Abstract: Introduction: The rapid expansion of e-scooter sharing systems has resulted in a novel profile of craniocerebral trauma. While general injury characteristics are known, specific morphological predictors of trauma severity and necessity for surgical intervention remain poorly defined. This study aims to identify the relationship between fracture morphology, intracranial haemorrhage (ICH) features, and the injury acuity with the need for neurosurgical intervention. Helmet efficacy was also assessed. Material and methods: A retrospective analysis was conducted on a cohort of 57 paediatric patients admitted to a tertiary Neurotrauma Centre following e-scooter accidents. Primary metrics included Glasgow Coma Scale (GCS) on admission, Abbreviated Injury Scale (AIS) for the head, Rotterdam CT scores and the ICH presence, location and volume. Fracture morphology was classified as simple or comminuted but also depending on the form of cranial suture involvement. Chi-square, Log-linear regression and Mann-Whitney U tests were employed to identify independent predictors of injury severity and surgical necessity. Results: Helmet use significantly reduced the incidence of intracranial haemorrhage (OR=0.098, 95%CI: 0.002-0.900, p=0.034) and cranial squama fractures (OR=0.317, 95%CI: 0.076-0.986, p=0.047). Brain contusion was the most prevalent lesion (43.9%), with temporal (36.4%) and frontal (31.8%) regions being the primary locations. Skull fractures most frequently involved the temporal and parietal bones. Morphological analysis revealed that 20.9% of fractures were comminuted and 70.7% involved cranial sutures. Regression analysis confirmed that ICH volume was a significant and independent predictor of the necessity for neurosurgical intervention (p=0.039) and correlated positively with total hospitalisation time (p=0.029). Furthermore, fractures causing cranial suture diastasis (51.2%), showed a statistically significant correlation with the occurrence of any form of ICH (p=0.031). Neurosurgical intervention was required in 12.3% (7) of admitted patients, with 3.5% requiring secondary reoperation. Conclusions: Helmets provide a significant protective effect against both cranial fractures and the incidence of ICH. The severity of e-scooter neuro-trauma is driven by ICH volume and specific fracture morphology. These findings suggest that patients presenting with parieto-temporal fractures involving cranial sutures or comminuted segments require detailed radiological imaging and haemorrhage volumetric assessment, as these patterns are high-probability indicators for surgical progression and prolonged tertiary care utilisation.

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Title: Rewiring Cytotoxic Immunity: Altered Effector Activity in SARS-CoV-2–Associated MIS-C.

Author(s): Sabina Sobolewska

Tutor(s): Dr Katarzyna Popko

Abstract: Introduction Multisystem Inflammatory Syndrome in Children (MIS-C) is a post-infectious inflammatory condition that can develop after SARS-CoV-2 infection. Its exact pathomechanism remains unclear, but it is presumed to result from immune dysregulation triggered by the virus. MIS-C typically presents with fever, abdominal pain and diarrhea, accompanied by elevated white blood cell and neutrophil counts, lymphopenia and high CRP. Natural killer (NK) cells are innate lymphocytes essential for antiviral defense and tumor surveillance. They are broadly divided into cytokine-producing CD56brightCD16dim and cytotoxic CD56dimCD16bright subsets. Their primary antiviral mechanism relies on granule exocytosis, releasing perforin and granzymes to induce apoptosis in target cells. Perforin forms membrane pores enabling granzyme entry. NK cells also use this pathway to eliminate activated CD8+ T cells, helping limit excessive inflammation. Natural Killer T (NKT) cells represent an innate-like T-cell population that bridges innate and adaptive immunity. Combining features of both NK and T cells, they rapidly secrete a wide range of cytokines and chemokines upon activation and shape the direction of the immune response. Aim of the study This study aimed to evaluate alterations in lymphocyte T subsets, NK and NKT cells, and perforin expression in patients with MIS-C compared to the control group. Material and methods All patients in this study were under 18 and evaluated for MIS-C after SARS-CoV-2 infection at the Pediatric Hospital MUW. Healthy children served as controls. Immunophenotyping was performed on peripheral blood collected into EDTA-containing tubes. Cells were stained with a panel of monoclonal antibodies (CD3, CD4, CD8, CD56, CD57, CD107a). Data were acquired using a BD FACSLyric flow cytometer. Results Perforin expression was significantly elevated in both NKT and CD4+ T-cell subsets in the patient group compared to healthy controls (p=0.008 and p=0.0274, respectively). In contrast, the frequencies of regulatory CD56bright NK cells (p=0.061) and CD8+ effector T cells (p=0.0244) were notably lower in the study group than in the control cohort. Furthermore, the relative proportion of NKT cells was significantly higher in patients than in healthy individuals (p=0.013). Conclusions We suggest MIS-C is associated with significant dysregulation of immune cell populations involved in antiviral defense. Regulatory NKbright depletion removes essential immune "brakes," allowing uncontrolled hyper-inflammation and a cytokine storm. To manage high antigen loads, NKT cells expand with increased perforin, shifting toward aggressive innate-like cytotoxicity. Simultaneously, CD4+ cells adopt a cytotoxic phenotype (higher perforin) to bridge the gap left by the depleted CD8+ effector pool. These findings indicate that MIS-C involves a profound reorganization of cytotoxic immune responses following SARS-CoV-2 infection.

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Title: The same diagnosis, three emergencies: pediatric case series of anaphylaxis

Author(s): Kamila Milewska, Julia Arct

Tutor(s): dr hab. n. med. Beata Cudowska

Abstract: Introduction: Anaphylaxis remains the most severe manifestation of immediate hypersensitivity and affects up to 5% of the general population, with a pediatric fatality rate that persists despite the wide availability of epinephrine auto-injectors. While food allergens account for the majority of pediatric cases, a major proportion involves atypical or underrecognized triggers, complicating pre-hospital management and long-term prevention. Case presentation: Three patients were admitted to the allergology unit, each meeting criteria for anaphylaxis, but varied in terms of trigger factor, mechanism, and clinical course. A 13-year-old boy developed a two-phased reaction following inhalation of sulfur dioxide during a home experiment. Specific IgE testing was negative for all standard allergens. Serum tryptase on admission was 21.1 µg/L and D-dimer concentration reached 6554 ng/mL. Epinephrine was not administered at the initial emergency department; a second reaction with respiratory compromise occurred three hours later in hospital with a good response to adrenaline injection. In the next case, a 12-year-old female athlete, with history of cholinergic urticaria, developed her first anaphylactic episode with paresthesia, swollen lips, loss of consciousness and hypotension (68/35 mmHg) during karate training. Serum tryptase was 24.4 µg/L, with no food allergen exposure identified, supporting exercise-induced anaphylaxis. Epinephrine at the dose of 0.3 mg was administered pre-hospital with improvement. Specific IgE testing was positive for tree pollen, cat and dog epithelium. In the third case, a 16-year-old girl with a well-documented peanut allergy developed anaphylaxis after accidental nut ingestion as a hidden allergen in a chicken sauce. Molecular workup showed extreme sensitization to peanut components: Ara h2 and Ara h6. Serum tryptase was 13 µg/L. Epinephrine was not administered neither by the patient nor the emergency team, despite an auto-injector being available and previous patient education. Conclusions: 1. Pediatric anaphylaxis includes a broad phenotypic spectrum, from non-IgE-mediated reactions to rare chemical triggers and exercise-induced anaphylaxis, through to IgE-mediated food allergy with extreme molecular sensitization and participation of cofactors. 2. Assessment of serum tryptase concentration still remains a consistent objective marker in all mechanisms of anaphylaxis, reinforcing its diagnostic value besides triggers or immunological pathway. 3. Failure to administer adrenaline in 2 of 3 cases indicates the need for further education of patients and their families.

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Title: Thyrotropin Receptor-Stimulating Autoantibodies in Pediatric Graves' Disease Assessed by an Ultra-Rapid Turbo Bioassay

Author(s): Laura Dąbrowska1, Maja Łopatecka1, Magdalena Bossowska1, Filip Bossowski1

Tutor(s): dr n. med.Karolina Stożek1, prof. dr hab. n. med. Artur Bossowski1, prof. George J Kahaly2

Abstract: Background: Thyrotropin receptor-stimulating autoantibodies (TSAb) are detected in 95–99% of patients with Graves' disease (GD) and play a central pathogenic role by directly driving thyroid hormone overproduction. As functional biomarkers, TSAb are highly relevant for both diagnosis and disease monitoring. We evaluated TSAb in pediatric patients with different phases of autoimmune thyroid disease (AITD), including GD before and during methimazole therapy, using a novel ultra-rapid bioassay. Methods: Serum samples from pediatric patients with AITD and healthy controls were analyzed at the accredited academic thyroid laboratory of the JGU Medical Center, Mainz, Germany, using the novel TurboTM TSAb bioassay (Thyretain®, Quidel), based on cyclic AMP-activated luciferase signaling. Anti-TSH receptor antibody values <0.024 IU/L were considered negative. A total of 80 patient samples and 35 healthy control samples were included. The median age was 12 years in the patient group and 10.5 years in controls, with a female-to- male ratio of 1.65. Results: Among the 80 pediatric AITD samples, 43 (52.5%) were obtained during hyperthyroidism, 30 (36.5%) during hypothyroidism, and 7 (11.0%) during euthyroidism. All healthy controls were negative for TSH receptor antibodies. Overall, 41 of 80 pediatric AITD samples were TSAb-positive. The TurboTM cAMP bioassay detected TSAb in all 36 untreated pediatric GD patients (100%) and in 5 samples obtained during methimazole treatment. TSAb measured by the TurboTM assay showed a significant association with thyroid functional status ($p = 0.028$). Dual TSH receptor antibody positivity was identified in 3 of 80 samples (3.75%). Conclusions: This study represents the largest reported pediatric series of TSAb-positive Graves' disease samples assessed using a rapid and reliable TurboTM TSAb bioassay. TSAb showed a significant relationship with thyroid functional status, underscoring their biological and clinical relevance. These findings support the potential utility of the novel TurboTM stimulating bioassay as a valuable tool for the diagnosis and monitoring of pediatric Graves' disease.

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Title: When Test Results Mislead: A Case Series of Pediatric Gastroenteritis

Author(s): Bisma Jawad Butt

Tutor(s): Kacper Toczyłowski, MD, PhD

Abstract: Introduction: Acute gastroenteritis is a common cause of hospital admission in children and is usually attributed to viral or bacterial infections. Microbiological testing is frequently used to support diagnosis; however, results do not always reflect true infection. Previous studies have shown that stool antigen tests may yield false-positive results due to cross-reactivity, limited specificity, and the complex composition of stool samples. This may lead to inconsistencies between laboratory findings and the clinical picture, potentially affecting clinical decision-making and leading to unnecessary treatment or further investigations. Case Description: We present a case series of three pediatric patients admitted to our department with symptoms of acute gastroenteritis, including diarrhea, vomiting, fever, and dehydration. All patients underwent stool testing, including bacterial culture, antigen-based viral assays, and confirmatory RT-PCR. Clinical findings, laboratory parameters, and imaging results were systematically compared with microbiological data to assess diagnostic consistency and clinical relevance. In two patients, stool cultures confirmed Salmonella spp., consistent with clinical features of bacterial gastroenteritis, including elevated inflammatory markers, as well as moderate to severe clinical presentation. In the third patient, no bacterial pathogen was confirmed despite clinical suspicion of bacterial infection, and no clear epidemiological link to Salmonella infection was identified. In all patients, antigen-based assays initially indicated the presence of enteric viruses (rotavirus, adenovirus, and norovirus); however, these findings were not confirmed by RT-PCR, which excluded viral infection. The detection of multiple viral antigens in a single patient, without a corresponding clinical presentation, strongly suggested false-positive results rather than true co-infection. Conclusion: These findings are consistent with known limitations of antigen-based diagnostics and emphasize the importance of careful interpretation of microbiological results. This case series highlights that positive stool antigen tests do not necessarily indicate true infection and should be confirmed with more specific methods such as RT-PCR. Laboratory findings must always be interpreted in the context of the clinical picture. Over-reliance on isolated test results may lead to misdiagnosis, unnecessary treatment, and inappropriate clinical management. Not every positive test reflects true disease, and awareness of these limitations is essential in clinical practice. A holistic approach to such cases, including careful reassessment, repeat testing, and the use of more specific diagnostic tools are essential in ensuring accurate diagnosis and appropriate patient management, underscoring the importance of diagnostic caution.

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Title: Rapidly Progressive Leigh Syndrome in Infancy: A Case Series of Four Patients

Author(s): Natalia Rutkowska, Aleksandra Samojłowicz, Marta Galicka

Tutor(s): Michał Płoński MD, Eryk Latoch MD PhD

Abstract: Introduction: Leigh syndrome is one of the most common and most severe mitochondrial diseases. It is caused by pathogenic gene variants present in both nuclear and mitochondrial DNA disrupting the oxidative phosphorylation. The condition has a progressive neurogenerative course and leads to early death. Symptoms, such as developmental delay and various neurological deficits, usually manifest themselves in the first few months of life. The diagnosis is based on clinical presentation, characteristic findings on MRI, increased serum lactate and genetic testing. Case description: We present a case series of four infants diagnosed with Leigh syndrome, all of whom required multiple hospitalizations. The cohort included three boys aged two, four, and seven months and an eight-month-old girl. The diagnostic process of the two-month-old boy began when he was admitted to the hospital on suspicion of a neuroinfection. His state was worsening therefore a head MRI was conducted. Results showed lesions characteristic for Leigh syndrome. Genetic testing confirmed the diagnosis. After a brief stabilization, in the second week of the hospitalization patient's condition worsened. He developed Multiple Organ Dysfunction Syndrome which led to his death. The story of the four-month-old boy was similar. He was admitted to the hospital in status epilepticus. During his month-long stay his condition was improving and then worsening with every infection. He was admitted to the Intensive Care Unit multiple times. Throughout the hospitalization MRI and genetic testing were conducted and confirmed Leigh syndrome. The boy died at nine months old. The diagnosis of the seven-month-old boy started while he was admitted to determine the cause of his developmental delay. During the hospitalization an MRI and genetic testing were carried out and confirmed the diagnosis of Leigh syndrome. In the span of the next few months, he was hospitalized multiple times as his condition was worsening. At his last discharge he required mechanical ventilation and enteral nutrition through a PEG. The boy died three weeks later. The story of the eight-month-old girl began similarly. She was admitted to the hospital to diagnose her developmental delay, hypotonia and ptosis. Genetic testing confirmed Leigh syndrome. Six months later the child was admitted again, this time because of severe dyspnoea. During her stay at the Intensive Care Unit, her condition was stabilized and she underwent a tracheotomy and a PEG placement. She was discharged to home hospice care. Conclusions: Leigh syndrome is a severe, progressive disease. Management is challenging due to heterogeneous clinical manifestations and poor prognosis. It is crucial to develop a treatment plan adapted to the individual needs of the patient and their family and to provide necessary hospice and end of life care.

CLINICAL SCIENCES
SESSION VARIA

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Title: Assessment of Symptoms Suggestive of Xerostomia in Patients with Spondyloarthritis Using the Modified Fox Questionnaire

Author(s): Stanisław Krokosz. Ewa Zalewska. Karol Dąbrowski. Gabriela Borkowska. Alicja Skutnik

Tutor(s): Prof. zw. dr hab. Anna Zalewska

Abstract: Introduction: Spondyloarthropathies are a group of chronic inflammatory rheumatic diseases that may be associated with various oral manifestations, including xerostomia. Xerostomia, defined as the subjective sensation of oral dryness, may contribute to the development of dental caries, mucosal irritation, and deterioration of oral health. Therefore, assessment of xerostomia symptoms in this patient group is clinically relevant. Materials and Methods: The study included 70 patients diagnosed with spondyloarthropathies (22 women and 48 men). The study group consisted of 45 patients with ankylosing spondylitis, 23 patients with psoriatic arthritis, and 2 patients with non-radiographic spondyloarthritis. A control group included 70 individuals (10 women and 60 men). Subjective symptoms of xerostomia were assessed using the Modified Fox Questionnaire consisting of six questions related to oral dryness. An affirmative response (“yes”) to at least one of the questions was considered suggestive of xerostomia. Results: Symptoms suggestive of xerostomia were reported by 28 patients with spondyloarthropathies (40.0%) compared with 8 individuals (11.43%) in the control group. Ankylosing spondylitis was the most common diagnosis in the study group (64.3%), followed by psoriatic arthritis (32.9%) and non-radiographic spondyloarthritis (2.9%). Conclusions: Symptoms suggestive of xerostomia were reported more frequently among patients with spondyloarthropathies than in the control group. Oral dryness may increase the risk of dental caries and other oral complications. These findings highlight the importance of regular dental examinations and preventive care in this group of patients.

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Title: Characteristics of an Ideal Clinical Decision Support and Electronic Health Record System Incorporating Pharmacogenomic Data

Author(s): Gabriel Perurena

Tutor(s):-

Abstract: Aim: The objective of this study was to examine existing attempts to integrate pharmacogenomic data into clinical decision support systems and into electronic health records in order to determine which features may, from a clinician's perspective, be considered ideal. Materials and Methods: A literature search was undertaken via Google Scholar and PubMed for relevant peer-reviewed journal articles concerning actually built systems and their features. Short case studies, dissertations, news articles, and opinion pieces were excluded. A total of 10 articles were selected for quality and comprehensiveness. Results: 10 articles were found. 4 described the construction of unique EHR/CDSS systems incorporating pharmacogenomics for their end user, and 2 described the process of constructing pharmacogenomic-integrated CDSS/EHR systems while incorporating user feedback. Though the papers in the study spanned a period of 11 years, there is remarkably little variation in the characteristics they find desirable. All are primarily concerned with providing clinicians with active alerts in the prescribing stage of the workflow, though many also consider the passive provision of information important. These studies recognized the importance of balancing the need for prompt delivery of relevant clinical information with concerns about provider "notification fatigue". Most systems addressed this by sorting alerts by importance, while one study instead presented this information as MDSS decision making trees. Several systems store data in a time-independent manner. Two papers suggested incorporating lifestyle, environmental, and demographic factors into pharmacogenomic decision making models, and one study considered the legal ramifications of having alerts available to clinicians. Conclusion: There is widespread consensus on what characteristics the ideal CDS/EHR system integrating pharmacogenomics should have. All are primarily concerned with providing clinicians with active alerts in the prescribing stage of the workflow while balancing the need for relevant clinical information with concerns about provider notification fatigue. Overall, there seem to be few technical barriers to creating effective and usable systems. Instead, the problem remains clinician reluctance and end-user demand.

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Title: Clinical Utility of the IgG4/IgG Ratio in the Differential Diagnosis of IgG4-Related Disease

Author(s): Joanna Staszewska, Kinga Kmiecik, Anna Budzińska

Tutor(s): mgr Aleksandra Kumorek

Abstract: Background: Serum IgG4 concentration exceeding 135 mg/dL is a primary laboratory criterion for IgG4-related disease (IgG4-RD). However, its diagnostic specificity is significantly lowered in clinical settings characterized by polyclonal hypergammaglobulinemia. In such cases, a non-specific elevation of all IgG subclasses occurs, leading to false-positive results. Precise differentiation between selective IgG4 overproduction and generalized immune activation is critical to avoid unnecessary invasive diagnostics and misclassification of classical autoimmune disorders. Aim: To evaluate the prevalence of IgG4-RD laboratory markers and to assess the diagnostic accuracy of the IgG4/IgG ratio (threshold >10%) in differentiating true IgG4-RD suspicion from other immune-mediated conditions in a hospital-based cohort. Material and Methods: A retrospective analysis was performed on 582 patients hospitalized at the University Clinical Center Medical University of Warsaw. Serum concentrations of total antibodies (IgG, IgM, IgA, IgE) and subclasses (IgG1, IgG2, IgG3, IgG4) were quantified using the turbidimetric method. For a subgroup of 449 patients with a complete immunoglobulin profile, the IgG4/IgG ratio was calculated. Demographic data showed a mean age of 38.6 years (median: 41; range: 0–81). Results: In the total cohort, IgG4 >135 mg/dL was identified in 30 patients (5,2%). Upon application of the IgG4/IgG ratio >10%, the number of cases maintaining a laboratory suspicion of IgG4-RD was reduced to 21 (3,6%). Isolated IgG4 elevation (ratio <10%) was predominantly observed in patients with systemic connective tissue diseases, such as systemic lupus erythematosus, where it was accompanied by a statistically significant concurrent increase in IgG1 and IgG2 levels. Furthermore, a high variability of the ratio was noted in the pediatric subpopulation (n= 10), indicating that adult-based diagnostic thresholds may be suboptimal for younger age groups. Conclusions: Isolated IgG4 elevation lacks sufficient specificity for IgG4-RD diagnosis in autoimmune populations. The IgG4/IgG ratio >10% reduces false-positive results caused by polyclonal hypergammaglobulinemia. Turbidimetric quantification of the full IgG subclass profile is necessary for precise differential diagnosis.

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Title: Dupilumab – The New Hope for Patients Suffering from Chronic Rhinosinusitis with Nasal Polyps - A Single-Center Real-World Case Series

Author(s): Tymoteusz Czarnocki, Katarzyna Pogorzelska, Marta Jamiołkowska

Tutor(s): dr n. med. Bartosz Piszczatowski

Abstract: Introduction Chronic rhinosinusitis with polyps (CRSwNP) is a specific subtype of chronic rhinosinusitis (CRS) characterized by recurrent nasal polyps, which cause substantial sinonasal symptoms as well as worsening patient's overall condition resulting in a decline in quality of life. Dupilumab – a fully human monoclonal IgG4 antibody, has become a significant therapeutic option for patients with severe symptoms. The mechanism of action of this biologic involves, binding to alpha subunit of the IL4Rα receptor, which causes inhibition of IL4 and IL13 signaling, thereby reducing type II inflammation. Aim To assess changes in SNOT-22 questionnaire, which was completed by patients with CRSwNP, treated with dupilumab in the Otolaryngology Clinic of the University Clinical Hospital in Białystok. Material and methods We conducted a single-center, real-world case series with patients treated in Otolaryngology Clinic of the University Clinical Hospital in Białystok. The analysis included only patients that underwent dupilumab therapy with available baseline and follow-up SNOT-22 assessment. Patients who did not have both baseline and follow-up questionnaires, as well as those treated with another biologic agent, were excluded from the analysis. The age was determined based on the baseline questionnaire. Demographics and clinical data were obtained from medical records, then the differences between baseline and follow-up SNOT-22 scores were evaluated. Results A group of 9 patients, that were subjected to analysis, consisted of 6 males and 3 females; the mean age was 50.4 years. The mean baseline SNOT-22 total was 75.2 and the mean follow-up SNOT-22 total was 24.4. The average SNOT-22 total change was -50.8 points with a median change of -48 points. The mean time between baseline and follow-up was 264.6 days, with a median of 303 days. An improvement in the SNOT-22 score was observed in all patients who each achieved a meaningful clinical improvement. Conclusions In this analysis, dupilumab therapy demonstrated a significant and sustained improvement in the quality of life of patients with CRSwNP. The results suggest that dupilumab is an effective therapeutic option for patients with CRSwNP, however, further studies are needed to confirm these findings.

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Title: Female-Specific VEGF Reference Ranges: Menstrual Cycle–Dependent Variability and Implications for Infertility Assessment

Author(s): Gabija Didžiokaitė, Aida Kuznecovaitė, Austėja Grudytė

Tutor(s): Violeta Kvedarienė

Abstract: Introduction. Approximately 15% of infertility cases are classified as unexplained infertility (UI), which remains poorly understood despite extensive diagnostic evaluation. Vascular endothelial growth factor (VEGF) is a key regulator of angiogenesis, endothelial cell proliferation, and vascular permeability. In the female reproductive system, VEGF contributes to endometrial remodeling, follicular development, and embryo implantation. Because physiological angiogenesis varies across the menstrual cycle, VEGF levels may fluctuate with cycle phase and menstrual regularity. However, there are currently no established reference ranges for serum VEGF concentrations in women, particularly across different menstrual cycle phases, which limits its clinical interpretation. This study aimed to assess serum VEGF concentrations across menstrual cycle phases and in relation to cycle regularity in women with UI, to clarify its potential as a reproductive biomarker. Materials and Methods. Research included 35 women (16 with UI and 19 fertile controls). Serum VEGF levels were measured using ELISA. Due to non-normal distribution, non-parametric tests (Mann–Whitney U, Kruskal–Wallis) were applied. ROC analysis and logistic regression were used to assess diagnostic performance. Statistical significance was set at $p<0.05$. Results. Women with infertility accounted for 16(45.71%) participants, while 19(54.29%) were fertile. A total of 29(82.86%) women had a regular menstrual cycle (defined as cycle length variability ≤5 days), whereas 6(17.14%) had an irregular cycle (>5 days of variability). VEGF concentrations demonstrated a clear pattern across menstrual cycle phases. The highest median VEGF level was observed at the beginning of the cycle (206.1 pg/mL, IQR = 142.5), followed by the middle (154.2 pg/mL, IQR = 129.2), and the lowest at the end (112.4 pg/mL, IQR = 120.6). Women with regular cycles demonstrated higher median VEGF concentrations (143.0 pg/mL, IQR = 136.4) than those with irregular cycles (111.3 pg/mL, IQR = 145.0); however, this difference did not reach statistical significance, possibly reflecting the limited sample size ($p = 0.3756$). Median serum VEGF was also higher in women with UI compared to fertile controls (158.4 pg/mL, IQR = 115.5 vs. 111.6 pg/mL, IQR = 159.4, $p = 0.307$). Conclusions. Serum VEGF concentrations demonstrated a clear phase-dependent pattern, with higher levels observed earlier in the menstrual cycle. Women with regular cycles tended to show higher VEGF levels than those with irregular cycles. The findings of this study highlight the importance of considering menstrual cycle characteristics when evaluating VEGF as a potential biomarker in reproductive research and other VEGF-related conditions, and provide novel insights into its variation across the menstrual cycle in women.

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Title: Platelets as the foundation of immunothrombosis in COVID-19 – evaluation of the diagnostic utility of platelet indices (PLT, MPV, PLR).

Author(s): Maja Aleksandra Oksentowicz

Tutor(s): prof. Violetta Dymicka-Piekarska

Abstract:

Introduction: Patients with COVID-19 often develop COVID-19-Associated Coagulopathy (CAC) – an imbalance between procoagulant and anticoagulant pathways resulting from the uncontrolled inflammatory response triggered by SARS-CoV-2 infection. Platelets, playing a crucial role in thrombogenesis and actively participating in the immune response, constitute a bridge linking inflammation and coagulation. Immunothrombosis predisposes patients with COVID-19 to an increased risk of thromboembolic complications, which ultimately contributes to poor prognosis and increased mortality. The aim of this study was to investigate the diagnostic usefulness of platelet indices (PLT, MPV, PLR) in patients with COVID-19. Materials and Methods: The study included 80 patients with a positive RT-PCR test for the presence of SARS-CoV-2 RNA who were hospitalized in the First Department of Pulmonology, transformed into a Temporary Hospital of the University Clinical Hospital in Bialystok. The study group was assessed using the Modified Early Warning Score (MEWS) and divided into four groups differing in clinical presentation. In-hospital mortality and length of hospitalization were also analyzed. Peripheral blood morphology was performed using the Sysmex XN-1000 analyzer. Statistical analysis was conducted using STATISTICA 13.3 software. The control group consisted of 24 individuals with a negative RT-PCR test for SARS-CoV-2 RNA. Results: The analysis demonstrated statistically significant differences in all platelet parameters between patients with COVID-19 and the control group (MePLT=173.00; MeMPV=10.90; MePLR=240.65) and healthy individuals (MePLT=243.50; MeMPV=10.40; MePLR =119.70) ($p<0.001$; $p=0.008$; $p<0.001$, respectively). The PLR index showed excellent diagnostic performance (AUC=0.922, $p<0.001$), while PLT and MPV demonstrated lower diagnostic value (AUC=0.823 for PLT and 0.680 for MPV). With increasing disease severity, a statistically significant decrease in PLT was observed (MEWS 1 vs MEWS 3, $p=0.008$; MEWS 1 vs MEWS 4, $p<0.001$; MEWS 2 vs MEWS 4, $p=0.032$), along with a significant increase in MPV (MEWS 1 vs MEWS 4, $p=0.003$; MEWS 2 vs MEWS 4, $p=0.012$). Lower PLT was significantly associated with a higher risk of death (OR=0.989, 95% CI: 0.978–0.999, $p=0.039$). Increased MPV and PLR were also significantly associated with a higher risk of death (OR=4.384, 95% CI: 1.946–9.887, $p<0.001$; OR=1.006, 95% CI: 1.001–1.011, $p=0.015$, respectively). During hospitalization, PLT showed a significant upward trend ($p<0.001$). Conclusion: Each of the analyzed indices plays an important role in the diagnosis and prognosis of COVID-19. Immunothrombosis is a complex process; therefore, comprehensive evaluation of platelet parameters is crucial for accurate assessment of disease course and prognosis. Changes in platelet parameters may assist clinicians in assessing COVID-19 patients but still require further investigation.

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Title: Small airway dysfunction as a potential marker of interstitial lung disease in patients with systemic sclerosis.

Author(s): Artur Ejsmont

Tutor(s): prof. dr hab. n. med. Otylia Kowal-Bielecka

Abstract: Systemic sclerosis (SSc) is a rare connective tissue disorder characterized by a complex and not yet fully understood pathogenesis. The disease involves endothelial injury, immune activation, and progressive fibrosis affecting both the skin and internal organs. Among its complications, interstitial lung disease (SSc-ILD) represents the leading cause of mortality in this patient population. Current diagnostic strategies for interstitial lung disease (ILD) predominantly utilize high-resolution computed tomography (HRCT) and pulmonary function tests. Although HRCT is indispensable and considered golden standard in ILD diagnosis, its repeated use is limited by the potential for cumulative radiation exposure. In comparison, pulmonary function tests are safe method of monitoring disease progression - however, their capacity to identify early or subclinical manifestations is suboptimal. These constraints highlight the necessity for dependable biomarkers that would facilitate earlier diagnosis and more accurate risk evaluation. Increasing evidence suggests that small airway dysfunction (SAD) may represent an early manifestation of pulmonary involvement in connective tissue diseases. In this context, the present study aims to evaluate the role of SAD as a potential marker for the early detection and progression of SSc-ILD. The specific objectives of the study include determining the prevalence of SAD among patients with systemic sclerosis and assessing its relationship with clinical characteristics, inflammatory activity, and selected serological markers, including KL-6, surfactant protein D (SP-D), interleukins (IL-6 and IL-36), CA 15-3, and anti-topoisomerase I antibodies. Furthermore, the study will examine the effects of immunosuppressive and antifibrotic therapies on small airway function. In this presentation, the preliminary data focusing on KL-6 and SP-D will be discussed. The primary objective of whole study is to contribute to improving early diagnosis and risk stratification in SSc-ILD, thereby enabling more timely therapeutic interventions and potentially improving clinical outcomes. Moreover, identifying associations between small airway dysfunction and disease-related parameters may support the development of more refined diagnostic strategies for interstitial lung disease in systemic sclerosis.

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Title: Use of Transcutaneous Electrical Nerve Stimulation (TENS) in the Treatment of Pain Syndromes in Patients with Lower Limb Ischemia

Author(s): Aleksandra Barabasz

Tutor(s): Bartosz Sadownik

Abstract: Introduction: Lower limb ischemia is frequently associated with severe, difficult-to-control pain, often requiring complex pharmacotherapy and increasing the risk of adverse effects. Transcutaneous electrical nerve stimulation (TENS) is a non-invasive, non-pharmacological method of pain treatment based on the gate control theory and the theory of reduced conduction velocity in small nerve fibers, with potential benefits in both nociceptive and neuropathic pain. Aim: To compare the analgesic effect of TENS therapy using different stimulation frequencies in the treatment of lower limb pain syndromes of ischemic origin. Material and methods: A prospective randomized clinical trial was conducted in patients hospitalized at a tertiary university hospital. Inclusion criteria included age ≥18 years, pain intensity ≥4 on the Numeric Rating Scale (NRS), and lower limb ischemia stage ≥IIb according to the Fontaine classification. Exclusion criteria included lack of informed consent, hemodynamic instability, implanted electronic devices (e.g. pacemaker), local inflammation or malignancy at the electrode site, pregnancy, prior TENS therapy, recent anesthesia (<24 h), traumatic amputation, impaired consciousness, or limited communication. Patients were randomized 1:1 into an active TENS group (n=9) and a sham TENS group (n=9), with patient blinding. TENS was applied for 30 minutes. In the active group, initial parameters of stimulation -100 Hz, 150 μs and 1mA- were increased until strong but comfortable paresthesia was achieved, while in the sham group the intensity was not increased beyond the initial level of 100 Hz, 150 μs and 1mA . Pain intensity (NRS) was assessed at baseline, immediately after, 30 minutes, and 72 hours post-intervention. Hemodynamic parameters- heart rate, respiration rate and blood pressure were also evaluated before and immediately afetr and 30 minutes after the TENS . Neuropathic pain features were assesed accroding to DN4 in every patient, Results: In the active TENS group, mean NRS decreased from 6.11 to 4.56 immediately after therapy (−1.55; 25.4%), and remained reduced at 30 minutes (4.78) and 72 hours (4.67). In the control group, NRS decreased from 6.22 to 5.67 (−0.55; 8.9%), with further reductions at 30 minutes (5.56) and 72 hours (4.89). The between-group difference in pain reduction immediately after intervention was 1.00 NRS point , after 30 min- 0.67 and 72h later- 0.11- in favor of active TENS. No clinically significant changes in hemodynamic parameters were observed. All patients presented neuropathic pain features (DN4). Conclusions: TENS provides short-term pain reduction in patients with lower limb ischemia and appears to be a safe, non-pharmacological adjunct to standard analgesic therapy. Further studies with larger sample sizes are required to confirm long-term effectiveness

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Title: Obesity-Associated Hormonal Changes and Their Influence on GERD Before and After Bariatric Therapy

Author(s): Katarzyna Wawrzak-Pienkowska, Hady Razak Hady, Andrzej Dabrowski, Krzysztof Kurek, Agnieszka Swidnicka-Siergiejko

Tutor(s): dr hab Krzysztof Kurek

Abstract: INTRODUCTION Obese patients have a higher risk of gastroesophageal reflux disease (GERD), but obesity-related hormonal changes associated with GERD and the effects of bariatric therapy on reflux are unclear. OBJECTIVES The aim of the study was to assess reflux parameters in relation to bariatric therapy and hormonal changes in obese patients. PATIENTS AND METHODS This prospective observational study with a 1-year follow-up included 53 obese patients undergoing bariatric therapies. Esophageal pH and impedance monitoring tests were performed and circulating hormone levels were analyzed. RESULTS Esophageal acid exposure time (%AET) and the number of refluxes correlated positively with body mass index. There were several significant, although weak, correlations of pH and impedance parameters with ghrelin and omentin levels. Patients with abnormal %AET had lower ghrelin levels and those with abnormal reflux number had lower omentin levels than patients with normal parameters. Although we observed certain changes including increased %AET and bolus clearance time (BCT) after laparoscopic sleeve gastrectomy, a reduced BCT and number of refluxes after gastric band, and nonsig- nificant changes after intragastric balloon, the overall bariatric therapy did not significantly impact on the final GERD diagnosis. GERD before and after therapy was present in 42% of patients. De novo GERD developed in 17.8% of patients, while a similar percentage of patients with initial GERD had normal pH and impedance after therapy. Patients with de novo or persistent GERD had a similar percentage of weight loss as patients without GERD. CONCLUSIONS Bariatric therapy and percentage of weight loss do not significantly affect GERD. The ob- served hormonal changes alone do not fully explain the high prevalence of GERD in obese patients.

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Title: AI Clinical Documentation from ICU Rounding Dialogue: A Preliminary Evaluation of Accuracy and Error Patterns

Author(s): Gabriel Perurena

Tutor(s): -

Abstract: Introduction: Automated generation of structured clinical notes from spoken medical encounters has been enabled by advances in large language models (LLMs) and speech recognition. Most research on AI-generated notes has focused on structured dictation or encounters between a single physician and patient. However, much clinical documentation derives from progress notes generated during clinical rounds. The ICU represents a particularly challenging environment where discussions often involve interruptions, overlapping speech, disagreement, and evolving clinical reasoning. Despite this, little research has examined AI note generation in such settings, particularly using late-model commercial LLM-based documentation systems. Aim of the study: To conduct a preliminary evaluation of the accuracy, limitations, and constraints of using late-model commercial LLMs to generate clinical notes from unstructured ICU rounding conversations. Materials and Methods: Simulated ICU rounding discussions for critically ill patients were created using multi-speaker dialogue reflecting typical ICU rounds. Three audio scenarios were evaluated: (1) a longer structured dialogue with high patient complexity but minimal conversational complexity; (2) dialogue containing disagreement, uncertainty, and evolving assumptions among speakers with varied accents, including non-native and non-standard speech patterns; and (3) overlapping speech between speakers discussing the same case using live voice actors rather than text-to-speech systems. Audio files were processed using a commercial AI clinical documentation system designed for clinical encounter documentation to generate structured notes. Accuracy was evaluated by decomposing transcripts into discrete clinical facts (e.g., vitals, laboratory values, diagnoses, treatments) and comparing them with generated notes to identify omissions, misrepresentations, numeric errors, and hallucinated information. Results: Across three simulated ICU rounding cases comprising 237 discrete clinical facts, AI-generated notes demonstrated an overall accuracy of 81%. Performance varied by conversational condition, from 77% in unstructured dialogue to 83% in the longer structured dialogue. Omissions accounted for most errors (approximately 65%), while numeric transcription errors were relatively uncommon. Conclusions: AI systems remain prone to hallucinations and omissions and demonstrate difficulty tracking evolving clinical information over time. Further evaluation using more complex patients, more challenging audio environments, larger datasets, and competing systems is needed. The ultimate goal of this work is development of systems capable of self-evaluation and integration with EHR systems.

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Title: Surgeons of Tomorrow: Impact of a Vascular Surgery Summer School

Author(s): Eimear Bruton

Tutor(s): Dr Hubert Stępak, Prof Andrzej Jawień

Abstract: Background: There are limited opportunities for medical students to gain early exposure to specialised surgical fields. Immersive surgical experiences possess the potential to provide practical insights, shape career aspirations and inspire the next generation of surgeons prior to graduation. The aim of this programme was to assess the impact of a one-week intensive vascular surgery summer school (VSSS) on knowledge, practical skills and career decisions of medical students. Summary of Work: Students in 4th and 5th year from European Universities were invited to partake in the programme, led by a team of vascular surgeons. The programme consisted of workshops (Suturing, Endovascular Procedures, Vascular Imaging), Outpatient exposure, simulation centre scenarios, case discussions and assistance in the operating room (OR). One-on-one mentorship from vascular surgeons was provided to offer personalised guidance and career advice throughout the week. Summary of Results: All students reported significant improvements in technical skills and clinical confidence. Hands-on workshops and OR experience were cited as the most valuable aspect of the programme. Students emphasised the “support” and “approachability” of the vascular team as a key driver in fostering “an open and collaborative environment”. Mentorship was highlighted as particularly influential in shaping career aspirations with all reporting that the programme influenced their decision to pursue a career in vascular surgery. Attendance was perceived as “extremely beneficial” to those looking to enhance career networking. Feedback on improvement yielded a desire to extend the programme further, with more advanced surgical workshops and OR exposure offered. Discussion & Conclusion: Overall feedback indicates that providing a programme focused on personalised teaching and proactive workshops greatly bridges the gap between theory and practice. Students reported that consistent mentorship throughout the programme significantly enhanced competency in combining theoretical knowledge with practical applications. The VSSS successfully demonstrated the value of specialty-focused education in medical training, with unanimous reports of it “exceeding expectations” and highly recommended by all. Take Home Message: Early exposure to surgical subspecialties within an immersive and mentorship-driven programme has the potential to inspire and shape the surgeons of tomorrow. Guidance from experienced surgeons coupled with personalised teaching experiences fosters continued advancement and passion in their field.

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Title: REDUCING TRANSITIONAL LOSSES IN LUNG CANCER DIAGNOSTICS: A COMPARATIVE ANALYSIS OF COORDINATED VS. FRAGMENTED CARE MODELS

Author(s): Franciszek Przybylski, Izabela Majewska

Tutor(s): MD, PhD Łukasz Minarowski

Abstract: The interval between the initial primary care (PC) contact and the acquisition of definitive tissue for a Multidisciplinary Team (MDT) decision remains a critical bottleneck in lung cancer management. These "transitional losses"—inefficiencies occurring during the handoff between different levels of the healthcare system—frequently extend the time to treatment and compromise patient prognosis. A comparative analysis of two clinical trajectories illustrates the profound impact of these systemic challenges. In a fragmented model (Case 1), a 57-year-old active smoker presenting with a six-month history of cough experienced a two-month delay between his initial PC visit in October 2025 and his specialist consultation in December. Although imaging eventually revealed a nodal mass, the reactive nature of his care led to a hospitalization where the invasive procedure (EBUS-TBNA) was complicated by endobronchial hemorrhage and moderate tolerance, necessitating a repeat intervention. In stark contrast, a coordinated model (Case 2) involving a 64-year-old former smoker demonstrated the efficiency of an integrated oncology pathway. Following a suspicious CXR, the patient underwent both CT and PET/CT staging prior to hospitalization. This proactive approach allowed for a precisely calibrated, single-session diagnostic intervention on January 5, 2026, which included a successful tumor cryobiopsy and EBUS-TBNA without complications. These cases highlight that the most significant delays are systemic, occurring during the transitions between primary and specialist care rather than within the clinical procedures themselves. The coordinated LCU model facilitates earlier staging and superior procedural planning, effectively reducing redundancy and the risk of suboptimal diagnostic yield. To address these gaps, we propose the implementation of structured digital triage in primary care, the establishment of direct teleinformatic channels between GPs and specialists, and the adoption of automated KPI monitoring—specifically focusing on time-to-CT, time-to-tissue, and time-to-MDT—with automated alerts for threshold breaches. By shifting from a reactive to a proactive diagnostic framework, healthcare systems can ensure that the "time-to-tissue" interval is minimized, ultimately providing patients with a faster and more reliable path to life-saving therapy.

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Title: Oxidative Stress, Antioxidant Defense, and Apoptosis Markers in Colorectal Cancer: A Comparative Study

Author(s): Stanislaw Krokosz, Maria Obrycka, Gabriela Borkowska, Virginia Lis, Anna Zalewska

Tutor(s): Prof. dr hab. n med. Anna Zalewska

Abstract: This study aimed to evaluate oxidative stress, antioxidant defense, and apoptosis-related markers in colorectal cancer by comparing tumor tissues with adjacent histologically normal tissues obtained from patients undergoing elective surgical resection. Paired samples were collected intraoperatively and subjected to biochemical analysis. The concentrations of total protein [µg/mL], caspase activity [µmol pNA/min/mL], superoxide dismutase (SOD) [U/L], catalase (CAT) [U/L], 4-hydroxynonenal (4-HNE) [µM], malondialdehyde (MDA) [µM], sulfhydryl groups (SS) [µg/mL], total antioxidant capacity (TAC, Trolox mmol/L), total oxidant status (TOS, µmol H2O2 Eq/L), and advanced glycation end products (AGE, AFU) were determined using standardized spectrophotometric and fluorometric methods. Tumor tissues demonstrated significantly increased levels of oxidative stress markers, including MDA, 4-HNE, TOS, and AGE, compared to normal tissues. In parallel, antioxidant parameters such as SOD, CAT, TAC, and SS were markedly reduced in cancerous samples, indicating impaired redox homeostasis. Caspase activity was altered in tumor tissues, suggesting dysregulation of apoptosis pathways. Total protein levels differed between groups, reflecting metabolic and structural changes associated with malignancy. These findings confirm that colorectal cancer tissue is characterized by enhanced oxidative damage and compromised antioxidant defense mechanisms. The observed imbalance between pro-oxidant and antioxidant systems may contribute to tumor progression and cellular dysfunction. Furthermore, alterations in caspase activity highlight the role of apoptosis dysregulation in colorectal carcinogenesis. In future studies, we plan to extend these analyses to non-invasive biological materials, including saliva and blood, to evaluate the potential of these biomarkers for clinical application.

SHORT ORAL COMMUNICATIONS 1

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Title: When hypertension is ignored: hemorrhagic stroke in a 43-year-old patient.

Author(s): Julia Pisanko, Małgorzata Chlabicz

Tutor(s): lek. Anna Mirończuk, prof. dr. hab. n. med Monika Chorąży

Abstract: Introduction: Arterial hypertension is a global health challenge characterized by an increasingly early age of onset. Early detection and proper management protect patients from numerous adverse health complications. However, neglecting this condition significantly increases the risk of serious clinical events, such as stroke or myocardial infarction. Case presentation: A 43-year-old male patient with a history of untreated arterial hypertension presented to the Emergency Department (ED) due to speech disturbances that had occurred several hours prior to admission. Neurological examination revealed sensory aphasia, right-sided hemispatial neglect, and neck stiffness. Upon admission, his blood pressure was 193/99 mmHg. Based on the symptoms, a head CT angiography was performed, which revealed a 50x30x60 mm intracerebral hematoma in the left parietal lobe with a surrounding perifocal edema-ischemic zone, causing a mass effect and intraventricular hemorrhage, as well as a displacement of the brain's midline structures by almost 1 centimetre. The patient was admitted to the Neurological Department, where extended cardiac diagnostics showed left ventricular hypertrophy and slight left atrial enlargement on echocardiography, indicating long-standing, pharmacologically uncontrolled hypertension. These findings, correlated with an NT-proBNP level of 1189.7, support the clinical picture of significant left ventricular remodeling and increased wall tension secondary to chronic hypertensive heart disease. Although antihypertensive treatment was initiated immediately upon ED admission, BP stabilization below 140/90 mmHg was only achieved after 12 days of hospitalisation. As a result of the intracerebral hemorrhage, the patient exhibited multiple neurological deficits, including aphasia, anomia, alexia, agraphia and agnosia. Therapeutic mobilization led to significant improvement in cognitive and speech functions. After more than a month of hospitalization, the patient was discharged in stable condition with persistent speech and cognitive impairments. Discharge recommendations included daily BP monitoring, continued antihypertensive therapy and follow-up appointments at Cardiology and Neurology departments. Conclusions: Arterial hypertension is increasingly affecting younger populations, and its neglect can lead to life-threatening complications in organs such as the heart and brain. This case highlights the critical importance of regular blood pressure monitoring and adherence to appropriate treatment to prevent such devastating outcomes.

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Title: Recurrent Syncope and Atrioventricular Block in a High-Risk Patient: Diagnostic and Therapeutic Challenges

Author(s): Indrė Kukanauskaitė, Justė Šimonytė

Tutor(s): Prof. dr. Vaida Mizarienė, MD Martynas Jurėnas

Abstract: Introduction. Syncope and cardiac conduction disturbances are common clinical presentations that may indicate life-threatening conditions. Determining the underlying etiology can be challenging, particularly in high-risk patients, and standard treatments do not always resolve conduction abnormalities. Clinical case. A 61-year-old male with a history of arterial hypertension and dyslipidemia presented with progressive fatigue, reduced exercise tolerance, and five episodes of complete syncope over three months. Initial evaluation revealed intraventricular conduction delay without high-grade atrioventricular block. Due to high cardiovascular risk, coronary angiography was performed, demonstrating left main and three-vessel coronary artery disease. The patient underwent high-risk percutaneous coronary intervention with multivessel stenting under mechanical circulatory support (PulseCath). Despite successful revascularisation, he developed recurrent syncope associated with intermittent third-degree atrioventricular block, requiring transfer to the intensive care unit and permanent dual-chamber pacemaker implantation. Disccusion. This case highlights that conduction disturbances may persist despite successful coronary revascularisation, suggesting non-ischemic or multifactorial mechanisms. Infectious etiologies, including Lyme disease, should be considered in patients with unexplained atrioventricular block. Conclusion. Comprehensive evaluation and individualised management are essential for high-risk patients, as definitive treatment may be required even after optimal interventional therapy.

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Title: Percutaneous Closure of Mitral Paravalvular Leak Complicated by Hemolytic Anemia Requiring Surgical Reintervention - Case Report.

Author(s): Zofia Mik

Tutor(s): prof. dr hab. n. med. Piotr Lipiec

Abstract: Infective endocarditis can lead to severe structural damage of cardiac valves and frequently requires surgical treatment. A 54 year-old man, cachectic (BMI 18 kg/m2) with a history of heart failure with preserved left ventricular ejection fraction NYHA II was admitted to the cardiology department duo to the progressively worsening dyspnea, fatigue, shortness of breath and high fever. Transthoracic echocardiography revealed severe organic mitral regurgitation due to the perforation of the anterior leaflet, the image corresponds to a ruptured mycotic aneurysm. Additionally it showed bicuspid aortic valve with moderate regurgitation and moderate tricuspid regurgitation; enlarged heart chambers; normal left ventricular function. Laboratory parameters showed elevated inflammatory markers, NT-pro BNP, and blood culture showed the presence of S. Haemoliticus which corresponds to infective endocarditis. After initial antibiotic treatment the patient was qualified for the mitral valve replacement with implantation of the Epic 31 bioprosthesis, aortic valve replacement with implantation of the Epic 23 bioprosthesis, and tricuspid annuloplasty. Echocardiography examination showed good effect of the procedure. However, two months after the operation, the patient experienced a sudden deterioration of his clinical condition, recurrence of dyspnea with large paravalvular leakage observed at the mitral annulus from the side of the lateral wall on echocardiography. Due to clinical condition and recent cardiac surgery the patient was qualified for implantation of the Amplatzer occluder in order to close the paravalvular leak. The early effect of the procedure was good - a reduction in leakage was achieved. Notwithstanding hemolytic anemia requiring multiple blood transfusions was observed in a blood test few weeks later. Based on the clinical picture and additional tests the patient was referred to the reoperation of mitral valve – removal of Amplatzer occluder and reimplantation of bioprosthesis (Epic 33). The periprocedural period was without complications. The patient was discharged in stable condition. At follow-up, he had no shortness of breath. Echocardiography revealed a good outcome of the operation, in addition reduction of left-sided heart chambers were observed. Careful follow-up and individualized treatment strategies are essential for achieving favorable outcomes.

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Title: Obesity hypoventilation syndrome in a patient with Prader-Willi syndrome- challenges in respiratory management and interdisciplinary care

Author(s): Emilia Niedźwiecka, Izabela Saczko, Katarzyna Chodak

Tutor(s): dr n. med. Łukasz Minarowski

Abstract: Obesity hypoventilation syndrome (OHS) represents a severe cause of chronic hypercapnic respiratory failure, posing unique clinical challenges when coexisting with neurodevelopmental disorders such as Prader-Willi syndrome (PWS). We present the case of a 25-year-old male with PWS, morbid obesity (BMI 60-64), and severe intellectual disability, who required recurrent hospitalizations due to acute-on-chronic respiratory failure. On admission, the patient consistently presented with profound oxygen desaturation (SpO2 50-70%) and extreme hypercapnia (pCO2 75-113 mmHg) with partially compensated respiratory acidosis. Diagnostic imaging revealed recurrent inflammatory and congestive lung changes, while pulmonary embolism was excluded despite significant diagnostic difficulties related to the patient's body mass. Conventional respiratory protocols were severely limited by poor cooperation, behavioral disturbances, and active resistance to non-invasive ventilation (NIV) interfaces, often attributed to the sensory hypersensitivity characteristic of PWS. High-flow nasal oxygen therapy (HFNOT) was utilized as a critical bridging modality, providing transient improvement in oxygenation; however, its minimal effect on hypercapnia necessitated a more robust ventilatory strategy. An individualized approach was implemented, incorporating alternating HFNOT and NIV cycles, prioritization of nocturnal ventilation with high inspiratory pressures (IPAP up to 26 cmH2 O), and the integration of psychiatric support with pharmacological sedation to improve interface adherence. This multidisciplinary strategy allowed for a "permissive hypercapnia" approach, targeting clinical stability rather than full gas exchange normalization. As a result, the patient achieved stabilization of oxygenation (SpO2 88-96%), a reduction in pCO2 to 60-70 mmHg, and successfully avoided repeated invasive mechanical ventilation. The patient was eventually discharged on home NIV supported by a structured caregiver-led behavioral plan. This case highlights that managing OHS in PWS requires a departure from standard respiratory algorithms toward a patient-centered model where addressing behavioral phenotypes is as critical to treatment success as the ventilatory settings themselves. Effective long-term care depends on interdisciplinary cooperation and the acceptance of realistic physiological targets to achieve clinical stability.

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Title: Menopause Mask - Macroprolactinoma as a Cause of Secondary Amenorrhea, Headaches, and Severe Dyslipidemia in a 49-Year-Old Woman

Author(s): Emilia Niedźwiecka, Miłosz Nesterowicz

Tutor(s): dr hab. n. med. Katarzyna Maliszewska, dr n. med. Bożena Kubas

Abstract: Secondary amenorrhea in women in their fifth decade of life is often attributed to the physiological decline of ovarian function. This case highlights the importance of endocrinological vigilance when hormonal findings are inconsistent with the patient's age and suggest an underlying intracranial mass lesion that may mimic menopausal symptoms. A 49-year-old woman presented with a one-year history of amenorrhea, progressive fatigue, cold intolerance, and intermittent headaches and eye pain (initially misattributed to dry eye syndrome by the patient). Initial laboratory tests revealed severe hypercholesterolemia (LDL = 249 mg/dL) and a hormonal profile atypical for the perimenopausal period: low gonadotropin levels (FSH = 8.37 mIU/mL, LH = 3.38 mIU/mL) with undetectable estradiol. These findings suggested secondary hypogonadism rather than physiological menopause. Further hormonal evaluation revealed marked hyperprolactinemia (447 ng/mL) and central hypothyroidism (fT4 = 0.43 ng/dL with TSH = 0.7 µIU/mL), indicating pituitary dysfunction involving the gonadotropic and thyrotropic axes. Brain MRI revealed a pituitary macroadenoma measuring 15 × 16 × 10 mm (Knosp grade 2). Following the diagnosis of macroprolactinoma, treatment with a dopamine agonist (cabergoline, 0.5 mg/week) was initiated, along with lipid-lowering and antihypertensive therapy. Despite treatment, follow-up MRI after one year revealed slight tumor growth toward the right cavernous sinus (progression to Knosp grade 3A), with persistent compression of the optic chiasm. The patient remains under close neurosurgical and ophthalmological supervision due to the tumor's suboptimal response to initial-dose cabergoline and its invasive radiological features. This case demonstrates that low FSH and LH levels in a perimenopausal woman represent a diagnostic red flag and should prompt evaluation for pituitary pathology. Additionally, severe secondary dyslipidemia may serve as an important early indicator of hormonal deficiency involving the thyrotropic axis. The observed radiological progression despite dopamine agonist therapy raises concern for a potentially aggressive or treatment-resistant adenoma, warranting consideration of dose escalation or surgical intervention.

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Title: Iatrogenic Hyponatremia During the Diagnostic Workup of Hyperandrogenism: From Clinical Suspicion to Real Threat

Author(s): Kornel Witek, Tomasz Wieczorkiewicz

Tutor(s): Joanna Sobolewska MD, Łukasz Działach MD

Abstract: Background: Desmopressin (DDAVP) is increasingly used as part of the diagnostic workup of Cushing's syndrome (CS), particularly as an adjunctive dynamic test in selected clinical scenarios. One of its potential applications includes the differential diagnosis of functional hypercortisolemia and the exclusion of neoplastic (tumor-related) hypercortisolemia. Although generally considered a useful confirmatory tool, DDAVP administration carries a risk of clinically relevant water–electrolyte disturbances. Here, we report the case of a young woman in whom DDAVP testing performed during the evaluation of hypercortisolemia was complicated by severe, acute hyponatremia. Case Report: A 22-year-old woman was admitted to the Department of Endocrinology for verification of suspected CS, raised due to the lack of cortisol suppression in an outpatient overnight 1 mg dexamethasone suppression test (DST). The diagnostic workup was initially initiated because of clinical features of hyperandrogenism. Physical examination revealed marked hirsutism (16 points on the Ferriman–Gallwey scale) and acne, without typical phenotypic features of CS. Laboratory evaluation demonstrated significantly elevated androgen levels: total testosterone 2.73 nmol/L [0.48–1.85] and dehydroepiandrosterone sulfate 727.7 µg/dL [134.2–407.4]. Circadian cortisol rhythm, 24-hour urinary free cortisol excretion and plasma ACTH normal. Non-classical congenital adrenal hyperplasia was excluded. Pituitary MRI revealed a lesion suggestive of a Rathke's cleft cyst. . Additionally, a combined overnight 1-mg DST followed by 10-µg DDAVP stimulation was performed. Once again, complete cortisol suppression after DST was not achieved (6.8 µg/dL) however, the absence of a cortisol response to DDAVP stimulation (negative result) argued against the presence of endogenous CS. A few hours post-test, the patient reported a severe headache and somnolence. Rapid venous blood gas analysis revealed severe hyponatremia: serum sodium 122 mmol/L [137–145], plasma osmolality (262 mmol/kg H_2O). Further history revealed that despite explicit instructions regarding strict fluid restriction after DDAVP test, the patient had ingested approximately 3000 mL of water, motivated by a desire to "flush out the contrast agent" following MRI. Hyponatremia was corrected with 3% sodium chloride, resulting in rapid symptom resolution and normalization of serum sodium. Conclusions: This case illustrates that desmopressin, as a potent antidiuretic agent, carries a significant risk of severe water intoxication, particularly in patients who do not adhere to fluid restriction recommendations. It underscores the importance of thorough patient education as a key component of diagnostic safety, helping to prevent potentially fatal iatrogenic complications during endocrine testing.

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Title: Challenges in the management of autonomic dysfunction in an elderly patient with heart failure, anemia, and multiple comorbidities.

Author(s): Julia Więcko, Gabriela Dąbrowska, Julia Garkowska

Tutor(s): prof. dr hab. Edyta Zbroch

Abstract: Background: Chronotropic incompetence (CI) is the inability to adequately increase heart rate (HR) during physical exertion to match cardiac output to metabolic demand. One cause of CI may be autonomic dysfunction, which can also manifest as neurogenic orthostatic hypotension or a reversed circadian rhythm of blood pressure (inverse dipper). The co-occurrence of these abnormalities with heart failure significantly increases the risk of cardiovascular events. Case Report: A 79-year-old woman was admitted to the Department of Hypertensiology, Gastroenterology and Internal Medicine with dyspnea, reduced tolerance of physical exertion and chest tightness. Comorbidities included diabetes mellitus type 2 (T2DM), chronic obstructive pulmonary disease (COPD), congestive heart failure (CHF), and hypercholesterolemia. In 2016, a myocardial bridge in the left anterior descending artery (LAD) was diagnosed. On physical examination, her general condition was good, with a BMI of 29.56 kg/m². Signs of pulmonary congestion, peripheral oedema, and a positive orthostatic test, indicating neurogenic orthostatic hypotension, were noted. On admission, BP was 158/105 mmHg, and HR was 88 bpm. Laboratory tests showed elevated NT-proBNP (428.2 pg/ml), a slight increase in troponin T (19 pg/ml), mild normocytic anemia, and deficiencies in folate and vitamin B12. Echocardiography showed a preserved left ventricular ejection fraction (EF 63%) and mild diastolic dysfunction (HFpEF). Ambulatory blood pressure monitoring (ABPM) detected an inverted diurnal blood pressure pattern (average: 139/70 mmHg, daytime: 133/70 mmHg, night-time: 147/69 mmHg). 24-hour ECG monitoring showed clinically insignificant arrhythmia and chronotropic incompetence. During hospitalization, antiarrhythmic treatment was modified, and diuretic medication was increased to reduce oedema. Hypotensive treatment was not escalated because of orthostatic hypotension and the patient's age. Due to autonomic dysfunction, the patient was referred to the neurologist. After peripheral oedema was reduced and the clinical condition improved, the patient was discharged home. Conclusions: This case illustrates the complexity of treating a patient with HFpEF and multiple comorbidities, in whom dysautonomia played a key role. This manifested as a triad of symptoms: neurogenic orthostatic hypotension, CI, and an inverse dipper pattern. This rare configuration led to a therapeutic paradox – treatment of nocturnal hypertension and fluid overload carried the risk of exacerbating daytime hypotension. The condition may have been influenced by type 2 diabetes and deficiencies in vitamin B12 and folic acid. Furthermore, the clinical picture was complicated by the presence of other diseases. Effective management required an individualized, comprehensive approach and careful consideration of the balance between the benefits and risks of treatment.

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Title: Atrioventricular conduction block and heart failure with reduced ejection fraction as manifestations of the systemic disorder - 45-year-old patient with sarcoidosis

Author(s): Emilia Świenc, Joanna Kruszyńska, Piotr Kazberuk

Tutor(s): Paweł Muszyński, MD, PhD

Abstract: BACKGROUND Sarcoidosis is a multisystemic, non-necrotising granulomatous inflammatory disorder, the aetiology of which remains unidentified. Cardiac involvement in sarcoidosis occurs in 20% of patients with systemic disease referred for imaging, and only 5% is clinically evident. In the late clinical stage, it leads to severe complications, and its manifestations range from mitral regurgitation, arrhythmias, heart failure to sudden cardiac arrest. Granulomas infiltrate the myocardium and predispose to conduction disturbances by causing re-entry circuits in inflamed and scarred myocardial areas. The diagnosis of sarcoidosis remains challenging and is based on clinical history, imaging techniques such as Cardiac Magnetic Resonance Imaging (MRI), and histologic evidence from biopsy of one or more organs. CASE REPORT A 45-year-old male with a history of influenza was admitted due to the development of dyspnea and bradycardia to 40/min spotted in a wearable device. The ECG showed first-degree atrioventricular block (PQ interval of 360 ms). The chest XR showed no significant abnormalities. An ECG Holter monitor showed episodes of advanced AV conduction disorders (2:1 and 3:1). A reduction in left ventricular ejection fraction (LVEF) up to 45% was noted on echocardiography. The subsequent cardiac MRI confirmed a reduction in LVEF to 36%, showed multiple atypical Late Gadolinium Enhancement extending throughout the left ventricle, and multiple enlarged nodules in the pulmonary hilus. High-resolution computed tomography confirmed hilar and mediastinal lymphadenopathy, with nodules measuring up to 24mm, suggesting sarcoidosis. The abdominal ultrasonography showed multiple hypoechogenic lesions within the spleen and liver. The coronary computed tomography angiography ruled out significant lesions as a cause of reduced LVEF. To confirm sarcoidosis, Endobronchial Ultrasound-Guided Transbronchial Needle Aspiration was performed, however the resulting histopathology was inconclusive. Subsequently, the whole nodules have been collected by mediastinoscopy. Histopathology showed granulomas with multinucleated giant cells and asteroid bodies, confirming sarcoidosis. Based on Japanese criteria, the diagnosis of cardiac sarcoidosis was made (3 major and 1 minor criteria), and systemic steroid therapy was initiated. Conduction disorders and a reduction in LVEF in the course of cardiac sarcoidosis require assessment of the need for a pacemaker/CRT-D. The patient was qualified for conservative treatment and further observation. CONCLUSIONS The presented case highlights the multi-organ nature of sarcoidosis and the importance of comprehensive imaging for guiding further therapeutic management. Cardiac involvement is a potentially life-threatening manifestation of the disease and requires particular clinical vigilance. Cardiac sarcoidosis is a rare cause of conduction disorders. However, it should be included in differential diagnosis especially in young patients.

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Title: An Unusual Case of NSTEMI and multi-level thrombosis in a patient returning from Thailand: a diagnostic challenge.

Author(s): Dominika Kulikowska , Klaudia Kłymko

Tutor(s): Emil Dąbrowski, MD, Ph; Prof. Marcin Kożuch

Abstract: BACKGROUND: Classical risk factors for acute coronary syndrome (ACS) include hypertension, hyperlipidemia, smoking, male sex, and obesity. Long-haul air travel is, in turn, a recognized risk factor for thrombosis. While management in such cases is usually straightforward, the presence of atypical accompanying symptoms may significantly complicate both diagnostic and therapeutic pathways. This case highlights the importance of a multidisciplinary approach, even in conditions initially suggestive of isolated cardiac pathology. CASE REPORT: A 34-year-old man, professional gym trainer, with no prior medical history was referred from the emergency department with suspected ACS.The patient is a chronic cigarette smoker with occasional cannabis use.Two weeks before admission, he reported nonspecific left- sided chest discomfort. The following day, he developed calf pain and pallor of the right foot during walking, along with exertional upper limb numbness. On admission, he was hemodynamically stable. Electrocardiography showed sinus rhythm (87 bpm), right axis deviation, ST-segment elevation, and T-wave inversion in the anterolateral leads. Echocardiography and cardiac MRI revealed left atrial enlargement, left ventricular hypertrophy, preserved systolic function with apical akinesia, and an apical thrombus. Coronary angiography demonstrated no atherosclerotic lesions. During hospitalization, the patient reported lower limb and hand numbness consistent with claudication. Angio-CT and Doppler ultrasound revealed bilateral occlusions of the brachial, popliteal, and posterior tibial arteries.Following multiple vascular surgical consultations, the patient was deemed ineligible for emergency surgical intervention due to unclear etiology, the absence of life-threatening ischemia, and a high risk of complications.Infectious etiology was excluded. Additional findings included positive antinuclear antibodies (ANA in class IgG), hypercholesterolemia, and inconclusive protein C deficiency. Further evaluation for vasculitis, Buerger’s disease, inherited thrombophilia, autoimmune disorders, and paroxysmal nocturnal hemoglobinuria was recommended. CONCLUSIONS: This case underscores the diagnostic challenge of determining the etiology of multilevel arterial thrombosis in a young patient. The coexistence of ACS and peripheral arterial thrombosis following prolonged travel raises suspicion of rare hypercoagulable states and atypical vasculitides. Multidisciplinary evaluation is essential for accurate diagnosis and appropriate management.

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Title: An Unexpected Cause of Dyspnoea at the 20th Kilometer of a Marathon: A Diagnostic Challenge in an Amateur Athlete

Author(s): Martyna Świerkowska

Tutor(s): Małgorzata Kurpaska, MD, PhD; Prof. Paweł Krzesiński, MD, PhD; Katarzyna Piotrowicz, MD, PhD

Abstract: Above-average exercise capacity and a high threshold for symptoms such as dyspnea or chest pain in athletes may create false reassurance regarding the absence of clinically significant coronary artery disease (CAD). The aim of this report is to present the diagnostic reasoning and therapeutic management of an amateur endurance athlete who developed exertional dyspnea during a marathon run. A 50-year-old male and amateur long-distance runner with a history of hypertension, hyperlipidemia reported recurrent exertional dyspnea with the onset approximately at the 20th kilometer of a marathon run, forcing short rest but not preventing completion. Cardiopulmonary exercise test (CPET) showed normal exercise capacity (peak oxygen uptake of 34 ml/min/kg, 104% of the predicted value). No dyspnea or chest pain occurred during maximal exertion, though ECG showed 1-2 mm ST-segment depression and T-wave changes in leads II, III, aVF, V5, and V6. Coronary computed tomography angiography (CCTA) showed a circumferential non-calcified plaque in the left anterior descending (LAD) artery; the appearance raised the possibility of spontaneous coronary artery dissection. Coronary angiography confirmed severe LAD disease with 80% stenosis in segment 6 and a critical lesion in segment 7. Two drug-eluting stents were implanted into the LAD during a single procedure. Firstly, supranormal exercise capacity and mildness of symptoms in endurance athletes may mask advanced CAD. Secondly, electrically positive CPET findings (1–2 mm ST-segment depression) warrant further anatomical assessment even in patients with low risk factor–weighted clinical likelihood. Finally, CCTA should be considered early in athletes with new-onset exertional symptoms, as it may reveal significant stenosis.

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Title: A rare case of incomplete Wolfram syndrome accompanied by a non-functioning PitNET

Author(s): Julia Wojciuk, Maja Łopatecka, Patrycja Turos

Tutor(s): dr hab. n. med. Agnieszka Łebkowska

Abstract: Introduction Wolfram syndrome type 1 (WFS1) is a rare autosomal recessive neurodegenerative disorder. While the syndrome frequently involves pituitary dysfunction—typically affecting the posterior pituitary and resulting in central diabetes insipidus—current clinical and neuropathologic studies do not describe an increased risk of pituitary tumors. We present an exceedingly rare case of an "incomplete" WFS1 phenotype co-occurring with a non-functioning pituitary neuroendocrine tumor (PitNET), expanding the known clinical spectrum of this syndrome. Case Report A 67-year-old female with WFS1 was admitted to hospital due to dizziness and persistent frontal headaches. Notably, the patient exhibited an incomplete WFS1 lacked diabetes mellitus, diabetes insipidus or visual disturbances. The family history was significant for a clustering of endocrine disorders: the patient's sister had a non-functioning pituitary macroadenoma and her daughter carries mutations in the WFS1, GCK, and GJB2 genes, presenting with a MODY diabetes phenotype. On physical examination, the patient presented with overweight. Neurological and ophthalmologic assessment confirmed bilateral hearing loss, speech disturbances, and signs of mild hemiparesis, without visual field defects. Hormonal assessment showed the low IGF-1 level and slightly elevated prolactin. The pituitary- thyroid and pituitary-ovaries axes were maintained. The stimulation test with 1ug adrenocorticotropic hormone was performed and revealed satisfied increase of cortisol level. Pituitary MRI revealed a nodular lesion measuring 12 × 20 × 18 mm located at the floor of the sella turcica, modelling diaphragma sellae with heterogeneous contrast enhancement. In February 2025, the patient underwent transsphenoidal resection of tumour. Histopathology confirmed a gonadotroph PitNET (positive for LH and alpha-subunit) with a Ki67 index of 1%. Conclusions This case highlights a rare clinical presentation of an incomplete Wolfram syndrome phenotype associated with a non-functioning PitNET. The absence of typical features like diabetes mellitus or diabetes insipidus may be explained by residual wolframin expression that preserves organ function. Disease progression and penetrance may change over time, so longitudinal follow-up is essential to monitor for the emergence of additional features.

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Title: Two Years of Symptoms, Three Weeks to Improvement: Delayed Diagnosis of Adolescent Macroprolactinoma

Author(s): Wiktoria Krasińska, Aleksandra Bielska, Maja Łopatecka

Tutor(s): Prof. dr hab. n. med. Artur Bossowski, Dr hab. n. med. Hanna Borysewicz-Sańczyk

Abstract: Introduction: Macroprolactinomas are rare in adolescents but tend to present with large tumor size and significant mass effect at the time of diagnosis. Because early endocrine symptoms may be subtle or overlooked, diagnosis is frequently delayed until neurological or visual complications occur. This case illustrates how prolonged endocrine dysfunction and progressive visual impairment may remain unrecognized for years, yet still respond dramatically to targeted pharmacological therapy. Case Report: A 16-year-old female was referred for evaluation of severe hyperprolactinemia and primary amenorrhea. She reported a two-year history of progressive visual deterioration that had markedly worsened shortly before admission. Ophthalmological assessment revealed a left-sided visual field defect, and otolaryngological examination identified right-sided hearing impairment. Galactorrhea was absent. Laboratory tests showed extremely elevated prolactin levels (>1200 ng/mL) with suppressed gonadotropins and estradiol, secondary adrenal insufficiency, central hypothyroidism, and decreased IGF-1 concentrations. Magnetic resonance imaging demonstrated a large sellar and suprasellar lesion measuring 28 × 21 × 31 mm, with a prominent cystic component and peripheral contrast enhancement. Imaging features suggested previous intratumoral hemorrhage. The mass compressed the optic chiasm predominantly on the left side and displaced the pituitary stalk, consistent with an invasive macroprolactinoma (Knosp grade 2). Treatment with cabergoline was initiated together with hormone replacement therapy including hydrocortisone and L-thyroxine. The therapeutic response was rapid: after three weeks prolactin levels decreased from >1200 ng/mL to 60.8 ng/mL and visual function improved. After two months of treatment, prolactin levels approached normalization (18 ng/mL). Conclusions: Adolescent macroprolactinomas may remain clinically silent for prolonged periods despite progressive tumor growth and evolving hypopituitarism. This case demonstrates the remarkable effectiveness of dopamine agonist therapy even in advanced disease. Early recognition of endocrine warning signs such as primary amenorrhea may prevent severe complications and significantly shorten the diagnostic delay. Long-term follow-up with repeat pituitary MRI after 3–6 months and regular echocardiographic monitoring during prolonged cabergoline therapy remains essential.

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Title: TSH out of control: Inappropriate TSH secretion as a diagnostic challenge between pituitary adenoma and thyroid hormone resistance syndrome (THRB)

Author(s): Zuzanna Bonk, Zuzanna Przystupa, Katarzyna Mrozek

Tutor(s): lek. Diana Leszczyńska

Abstract: Abstract Introduction Abnormal secretion of thyroid-stimulating hormone (IST) is characterized by elevated levels of free thyroid hormones (fT3, fT4) with unsuppressed TSH (1,2). A related condition is SITSH, which differs in the absence of elevated fT3. The main causes include a TSH-secreting pituitary adenoma (TSH-oma) and the rare beta-type thyroid hormone resistance syndrome (RTH-β) (1). The similarity of the biochemical profile complicates diagnosis, which involves hormonal testing, imaging, and dynamic tests (TRH, T3 suppression), as well as ruling out laboratory interferences (2,30). TSH-omas account for <1% of pituitary adenomas and lead to secondary hyperthyroidism (3). Symptoms of hyperthyroidism and mass effects are present, as well as features of excess other pituitary hormones (3,4). Typical findings include the absence of TSH suppression following T3 administration, lack of response to TRH, and elevated SHBG and alpha subunit levels (3,5,12). The treatment of choice is surgery, often supported by somatostatin analogs (6,26,31). RTH-β most commonly results from a mutation in the THRB gene and leads to reduced tissue sensitivity to thyroid hormones (6–9,14). Elevated fT4 is observed with normal or elevated TSH, normal dynamic tests, and a varied clinical presentation. Treatment is conservative, and avoiding unnecessary antithyroid therapy is crucial (5,8). Case Report A 49-year-old male patient with a history of nodular goiter was admitted for further evaluation of elevated TSH and thyroid hormone levels. A pituitary MRI yielded inconclusive results. An octreotide stimulation test revealed a >50% decrease in TSH. Macro-TSH measurement showed low recovery, suggesting a possible artifact. A TRH stimulation test resulted in a 10-fold increase in TSH, which ruled out a TSHoma. Genetic testing revealed a THRB mutation, confirming the diagnosis of RTH-β. Conclusions This case highlights the complexity of diagnosing SITSH and the need for a comprehensive approach involving clinical evaluation, hormonal testing, dynamic tests, imaging, and genetic testing. Differentiating between TSHoma and RTH-β is crucial to avoid inappropriate treatment, particularly unwarranted surgical intervention.

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Title: Lower Is Not Always Better: Hemodynamic Barriers in Malignant Hypertension

Author(s): Rozalia Tymińska-Romanowska, Julia Żekało, Marta Skarzyńska, Wiktoria Żakowicz, Aleksandra Kimera

Tutor(s): Prof. Dr.hab. Edyta Zbroch

Abstract: OBJECTIVE This case report presents a patient with malignant, treatment-resistant renovascular hypertension. Severe atherosclerotic disease with critical iliac artery obstructions led to multiorgan damage and acute kidney injury. The aim is to highlight diagnostic and therapeutic challenges in managing malignant renovascular hypertension, where blood pressure targets may require adjustment to preserve organ perfusion. DESIGN AND METHODS Case report of a man with multiorgan complications admitted due to malignant hypertension. Analysis focuses on the relationship between antihypertensive treatment and renal function in the presence of collateral circulation in renal arteries compensating for abdominal aortic occlusion, as well as associated treatment difficulties. RESULTS A 72-year-old patient with a history of abdominal aortic aneurysm, Leriche syndrome, left adrenal adenoma, and partial right nephrectomy due to cancer was hospitalized for treatment-resistant hypertension. During hospitalization, rapid progression of multiorgan complications was observed. Echocardiography showed ventricular hypertrophy and segmental contractility disorders, while fundus examination revealed stage II hypertensive retinopathy. Laboratory tests demonstrated elevated creatinine, NTproBNP levels, and hyperkalaemia. Malignant hypertension was suspected, and the patient was referred for further evaluation. Imaging revealed vascular abnormalities on MRI, and CT angiography showed critical iliac artery obstructions. Intensification of antihypertensive therapy led to increased creatinine levels and acute kidney injury. Due to renovascular hypertension, lack of causal treatment options, and contraindications to certain antihypertensive drugs, achieving optimal blood pressure control was not feasible and could be harmful given the hemodynamic conditions in the abdominal circulation. CONCLUSION The main challenge in this case was balancing organ protection (heart, brain, eyes) with the need to maintain adequate renal perfusion pressure, as kidney blood supply depended solely on collateral circulation.

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Title: Infectious Mononucleosis : A case study

Author(s): Anushka Poddar

Tutor(s): Kacper Toczylowksi, MD, PhD, Associate. Prof.

Abstract: Infectious mononucleosis is a common viral illness, typically caused by Epstein-Barr virus (EBV), with a wide spectrum of clinical manifestations ranging from mild symptoms to systemic complications. We present the case of a 16-year-old female who presented with a two-week history of high-grade fever, severe occipital headache, abdominal pain, and vomiting. Initial evaluation raised concern for meningitis due to associated photophobia, neck pain, and mild cerebrospinal fluid pleocytosis. However, further investigations revealed markedly elevated liver enzymes, positive EBV serology, and imaging findings of hepatosplenomegaly with acalculous cholecystitis. The patient was managed conservatively with supportive care, resulting in clinical and biochemical improvement. This case highlights the importance of recognizing atypical and systemic presentations of EBV infection, including hepatic involvement and gallbladder inflammation, which may mimic surgical or neurological conditions. Early identification can prevent unnecessary interventions and guide appropriate management.

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Title: Partial Miller Fisher Syndrome Without Ataxia – A Diagnostic Challenge

Author(s): Stanisław Lewańkow, Aleksandra Mejsak, Magdalena Bałdyga, Kinga Jurkin

Tutor(s): Dr hab. n. med. Katarzyna Kapica-Topczewska

Abstract: Miller Fisher syndrome (MFS) is a rare variant of Guillain–Barré syndrome, classically defined by the triad of ophthalmoplegia, ataxia, and areflexia. However, incomplete variants lacking one of these features may occur, leading to diagnostic difficulties. We present the case of a 38-year-old woman with no significant past medical history, who was admitted due to progressive visual disturbances. Over the course of one month prior to admission, she developed increasing difficulties with reading and computer work, accompanied by a decline in visual acuity and photophobia. Prior ophthalmological evaluation, including optical coherence tomography (OCT) and visual evoked potentials (VEP), did not reveal a clear cause of her symptoms. Neurological examination demonstrated bilateral ophthalmoplegia with absence of pupillary light reflexes, impaired convergence and accommodation, and anisocoria. Additionally, generalized hyporeflexia in the limbs were observed. Importantly, no ataxia or gait disturbances were present. Magnetic resonance imaging of the brain did not reveal significant abnormalities. Cerebrospinal fluid analysis showed no major deviations. Electroneurography (ENG) demonstrated features of demyelinating damage involving motor fibers of the ulnar, radial, and right peroneal nerves. Serological testing revealed the presence of anti-ganglioside antibodies, supporting the diagnosis of Miller Fisher syndrome. The patient was treated with intravenous immunoglobulins (IVIG), which resulted in gradual clinical improvement. This case highlights the clinical heterogeneity of Miller Fisher syndrome and emphasizes that the absence of ataxia does not exclude the diagnosis. Awareness of incomplete variants is essential for early recognition, appropriate management, and avoidance of diagnostic delays.

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Title: Multiple Sclerosis or Spinal Cord Tumour? Diagnostic challenges in an atypical spinal cord lesion in a young woman. A case report

Author(s): Małgorzata Szeląg, Natalia Rudzik, Alina Morhis

Tutor(s): dr hab. n. med. Agata Czarnowska, dr hab. n. med. Katarzyna Kapica-Topczewska, dr n. med. Dominika Jakubowicz-Lachowska

Abstract: Multiple sclerosis (MS) is a chronic autoimmune disease of the central nervous system that is characterised by inflammatory demyelination and most commonly presents with optic neuritis, sensory disturbances, or motor deficits. In rare cases, spinal cord lesions may be sufficiently large and contrast-enhancing to mimic spinal tumours, posing a significant diagnostic challenge. A 25-year-old woman with a history of depression was admitted to the neurology department due to several days of right-sided disturbances of pain and temperature sensation involving the limbs, chest, and abdomen. Neurological examination revealed impaired pain and temperature sensation on the right side beginning at the Th1 dermatome and pyramidal signs on the left side, including weakness of the left lower limb, ankle clonus, and a positive Babinski sign, consistent with an incomplete Brown-Séquard syndrome. Magnetic resonance imaging of the brain demonstrated two small hyperintense white matter lesions located periventricularly in the right parietal lobe and in the left frontoparietal region. Magnetic resonance imaging of the cervical spinal cord revealed a contrast-enhancing lesion at the C2 level measuring 7×5×11 mm with associated spinal cord edema, raising suspicion of a tumour. Cerebrospinal fluid analysis showed normal protein and glucose levels with mild pleocytosis (7 cells/μL) and oligoclonal bands type IV. The patient was treated with intravenous methylprednisolone (1 g daily for 3 days), resulting in significant clinical improvement with resolution of sensory disturbances and disappearance of pyramidal signs. Follow-up MRI demonstrated resolution of contrast enhancement of the spinal lesion, supporting a demyelinating etiology and allowing the diagnosis of multiple sclerosis to be established. This case emphasises an atypical presentation of multiple sclerosis manifesting as a relatively large, contrast-enhancing spinal cord lesion mimicking a tumor. In such cases, follow-up imaging and response to corticosteroid therapy are crucial for establishing the correct diagnosis and avoiding unnecessary invasive procedures.

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Title: Acute Coronary Syndrome Mimic in an Elderly Patient: A Case of Takotsubo Cardiomyopathy

Author(s): Ieva Naravaitė, Augustė Klišmontaitė

Tutor(s): Agnė Liuizė, MD

Abstract: Introduction. Takotsubo cardiomyopathy or “broken heart syndrome” is a syndrome characterized by reversible regional systolic dysfunction of left ventricle, mostly affecting the apex, manifesting with chest pain, electrocardiographic changes and elevated cardiac biomarkers despite the absence of obstructive coronary artery disease or acute plaque rupture. Its pathophysiology is yet to be understood but is thought to involve catecholamine-mediated myocardial stunning, often triggered by physical or emotional stress, leading to transient myocardial dysfunction. Case description. A 78-year-old woman with a history of arterial hypertension, dyslipidemia and type 2 diabetes mellitus presented to the Emergency Department with persistent chest pain, fluctuating arterial blood pressure and episodes of nausea and vomiting. Symptoms had progressively worsened over two days. Initial laboratory testing revealed significantly elevated high-sensitivity cardiac troponin I levels (977,4 ng/L), raising suspicion for non-ST-elevation myocardial infarction (NSTEMI). Based on clinical presentation and biochemical markers, a diagnosis of non-ST-elevation myocardial infarction (NSTEMI) was presumed, and the patient was urgently transferred for invasive evaluation. However, coronary angiography revealed no obstructive coronary artery disease or intracoronary thrombus, creating a diagnostic paradox between significant myocardial injury markers and the absence of coronary pathology. Transthoracic echocardiography showed moderately reduced left ventricular systolic function (ejection fraction ~40%) with regional wall motion abnormalities extending beyond a single coronary artery territory, predominantly involving the apical and anterior segments. Cardiac magnetic resonance imaging (MRI) revealed a dilated left ventricle with reduced systolic function and hypokinesia of the apical segments with no late gadolinium enhancement indicative of myocardial necrosis was observed. Increased native T1 and T2 mapping values suggested myocardial edema without necrosis. These findings established the diagnosis of Takotsubo (stress-induced) cardiomyopathy, a condition that can closely mimic acute myocardial infarction both clinically and biochemically. Summary. A 78-year-old woman presented with chest pain and considerably elevated troponin, initially suggesting NSTEMI. Absence of coronary obstruction and imaging findings of transient left ventricular dysfunction with apical hypokinesia and myocardial edema confirmed Takotsubo cardiomyopathy. Conclusions. Takotsubo cardiomyopathy should be considered in patients presenting with acute coronary syndrome-like features but without angiographic evidence of coronary obstruction, especially in older women. Multimodal imaging plays a crucial role in differentiating this condition from myocardial infarction and in guiding appropriate management.

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Title: Complicated course of acute pulmonary embolism in a young person

Author(s): Patrycja Siebiatyńska, Wiktoria Żakowicz, Mateusz Mazurczak, Julia Piesta, Paulina Jędrusik

Tutor(s): Anna Lisowska, MD, PhD

Abstract: Introduction Pulmonary embolism (PE) remains a significant clinical challenge and an important cause of cardiovascular morbidity and mortality worldwide. The clinical presentation of PE is often nonspecific, most commonly including dyspnea or chest pain, which makes early diagnosis difficult and necessitates the use of structured diagnostic algorithms that incorporate clinical probability assessment, D-dimer testing, and imaging studies. Anticoagulation remains the cornerstone of treatment, while patients with severe presentations may require advanced therapeutic strategies. Consequently, the diagnosis and management of acute PE, particularly in patients with complicated clinical courses, remain important challenges in contemporary clinical practice. Case presentation A 39-year-old man was hospitalized in May 2025 due to an episode of pulmonary embolism. After stabilization of the patient, he was discharged home with a recommendation for anticoagulant therapy with dabigatran. However, in the same month another incident of massive, central pulmonary embolism of high-risk occurred. The patient underwent percutaneous embolectomy of thrombi from the right atrium and the pulmonary arteries. The procedure was complicated by injury to the right ventricle of the heart and the development of acute cardiac tamponade, which required urgent cardiac surgical intervention and a one-week hospitalization in the intensive care unit. After stabilization of the clinical condition, the patient was transferred to the cardiology ward. Laboratory tests at that time revealed an elevated NT-proBNP concentration (269 pg/ml), mild anemia (Hb 11 g/dl), thrombocytosis (PLT 573 $\times 10^3/\mu l$), and a heart rate of 89/min, the rest of the parameters were within normal limits. After a few days, the patient was discharged home with anticoagulant therapy: warfarin due to the ineffectiveness of DOAC (dabigatran). During the diagnostic work-up in November 2025, complex congenital thrombophilia was also diagnosed, with the presence of heterozygous for Factor V Leiden and the prothrombin G20210A mutation and with suspected antiphospholipid syndrome. Transthoracic echocardiography (TTE) revealed dilation of the right ventricle, enlargement of the left atrium, and mild tricuspid valve regurgitation with a low echocardiographic probability of pulmonary hypertension. The patient was discharged home and advised to continue long-term anticoagulation therapy with warfarin until antiphospholipid syndrome is definitively ruled out. Conclusions The case of this young patient with recurrent pulmonary embolism highlights the importance of early and in-depth diagnostic evaluation for coagulation disorders in patients without typical risk factors for thromboembolic disease. The diagnosis of complex congenital thrombophilia enabled the initiation of appropriate long-term anticoagulant therapy and proper prevention of further thromboembolic episodes.

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Title: Complicated course of acute pulmonary embolism in a young person

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Title: Atypical presentation of infective endocarditis in a cancer patient: case report.

Author(s): Sara Sawicka, Zofia Gulińska, Małgorzata Sebestjaniuk, Wiktoria Parol

Tutor(s): Dr hab. n. med. Anna Lisowska

Abstract: Background Infective endocarditis (IE) is associated with high mortality and a significant risk of systemic complications. Treatment is based on prolonged targeted antibiotic therapy, and often requires surgical intervention, most commonly valve replacement or repair. However, a clinical course may be complicated by a coexisting malignancy, which raises a question – which condition should be treated first? Case report A 54-year-old male patient with infective endocarditis and a lip squamous cell carcinoma was transferred to the Cardiology Department from another hospital for surgical qualification purposes. Pre-transfer transesophageal echocardiogram (TEE) showed mitral regurgitation and an additional echo on the posterior cusp of the valve with a possible perforation. On admission the patient was hemodynamically stable with ECG signs of left ventricular hypertrophy. Laboratory tests revealed elevated CRP and NT-proBNP. Repeat TEE demonstrated progression to severe regurgitation, additional linear component on the vegetation and a newly identified linear echo on the aortic valve. The patient's antibiotic therapy was modified and a decrease in inflammatory markers was observed. Tumor resection was contraindicated by an anesthesiologist because of simultaneous infective endocarditis. After multidisciplinary consultation, surgical treatment with mechanical valve replacement was recommended. However, the patient opted for a less invasive reparative procedure, which carries a lower likelihood of complete excision of the vegetation. It was successful, but after completion of the antibiotic course, he developed abdominal pain with fever and chills, which raised a suspicion of IE reccurence. Blood cultures were negative and there were no abnormalities in TEE. Abdominal CT revealed a right perinephric inflammatory process. Urine culture revealed ESBL-producing Proteus mirabilis, and a Piperacillin/Tazobactam treatment led to stabilisation of the inflammatory markers. The patient was discharged, however 2 days later he got readmitted with fever and general fatigue. Laboratory tests showed elevated NT-proBNP, CRP, leukocytosis and hyperkalaemia. No evidence of recurrent IE was found on echocardiography; nasopharyngeal swabs, blood and urine cultures were negative. The patient was treated symptomatically and was discharged after the reduction of inflammatory markers and fever. A targeted oncological treatment was scheduled after the whole course of antibiotic therapy, Conclusions This case demonstrates the complex clinical course of infective endocarditis. Multidisciplinary approach, with consideration of both surgical and antibiotic treatment, is crucial to achieve favorable outcomes and prevent IE recurrence. It also underscores the importance of careful post-treatment monitoring, as secondary infectious complications and inflammatory responses may mimic recurrence of infective endocarditis.

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Title: Therapeutic Plasma Exchange for Severe Hypertriglyceridemia in a Critically Ill Patient: A Case Report

Author(s): Magdalena Voinič

Tutor(s): Mateusz Zawadka MD PhD Assoc. Prof.

Abstract: Severe hypertriglyceridemia (sHTG), defined as serum triglyceride (TG) levels >1000 mg/dL, is a recognized cause of acute pancreatitis, a serious complication that may lead to multiorgan failure. Therapeutic plasma exchange (TPE) enables rapid TG reduction and is considered in selected cases, with <500 mg/dL commonly used as a therapeutic target associated with lower pancreatitis risk. However, evidence for improved clinical outcomes is limited, and no ICU-specific guidance clearly defines sHTG management or TPE indications and timing. Data on ICU-acquired hypertriglyceridemia are scarce. We report a case of sHTG in a critically ill patient receiving total parenteral nutrition (TPN), managed with early and repeated TPE. A 42-year-old patient was admitted to the ICU after sigmoid colon perforation complicated by fecal peritonitis and septic shock after endovascular repair of acute aortic dissection. Comorbidities included class III obesity (BMI 40.1 kg/m²), type 2 diabetes and hypertension. The patient required multiple abdominal surgeries, including 30 peritoneal lavages. At ICU admission, serum TG was 226 mg/dL. At the time of rapid TG elevation, the patient required mechanical ventilation via tracheostomy and continuous renal replacement therapy, remaining relatively stable on norepinephrine infusion (0.02–0.04 µg/kg/min). Propofol had not been administered for at least 7 days prior to the observed TG increase. Owing to ongoing perforations and gastro-intestinal dysfunction, TPN was initiated. TG levels increased to 1063 mg/dL prompting transition to lipid-free TPN and later discontinuation, resulting in only a transient reduction (812 mg/dL). Recurrent TG elevation to 1014 mg/dL led to initiation of TPE, resulting in a rapid decrease to 530 mg/dL. Reinitiation of TPN was again associated with TG elevation (675 mg/dL), necessitating 3 additional TPE sessions. As an adjunctive strategy, an omega-3 fatty acid emulsion (10 g daily for 7 days) was administered. Subsequently, TG levels remained elevated but relatively stable around 500 mg/dL. This case highlights that: (1) sHTG may develop rapidly during critical illness, particularly in the context of TPN, emphasizing the need for close TG monitoring; (2) TPE can achieve rapid biochemical TG reduction, although its effect on clinical outcomes remains uncertain; and (3) modification of TPN strategies, including the use of omega-3-based lipid emulsions, may help stabilize TG levels and improve metabolic tolerance.

SHORT ORAL COMMUNICATIONS 2

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Title: When Work Depends on Smell - Olfactory Neuroblastoma in a Professional Yogurt Taste Tester: A Case Report

Author(s): Katarzyna Pogorzelska, Tymoteusz Czarnocki

Tutor(s): dr n. med. Bartosz Piszczatowski

Abstract: Introduction Olfactory neuroblastoma is a rare sinonasal malignancy characterized by nonspecific symptoms and potential for local invasion. Olfactory dysfunction may significantly impact quality of life and, in selected professions, occupational functioning. This report presents a case of olfactory neuroblastoma with emphasis on multidisciplinary treatment, histopathological progression, and functional and psychosocial outcomes. Case Report A 42-year-old female presented with right-sided nasal obstruction and olfactory dysfunction. The patient worked as a brand manager involved in the development and optimization of yogurt products, including daily sensory evaluation of flavor profiles, aroma, sweetness, acidity, and overall product balance. Precise taste and smell perception were essential to her professional duties. For this patient, loss of olfaction would not only impair quality of life but also directly threaten her professional identity and career. Initial endoscopic surgery (November 2022) with histopathological examination revealed olfactory neuroblastoma, Hyams grade I. Follow-up imaging showed residual tumor in the olfactory groove and anterior skull base. A second-stage interdisciplinary procedure (January 2023), involving otolaryngologists and neurosurgeons, included endoscopic partial skull base resection. Histopathological progression from Hyams grade I to III was observed. Adjuvant radiotherapy was administered following chemotherapy. During follow-up, no recurrence was detected. Importantly, a favorable oncological outcome was achieved alongside preservation of key sensory functions. Olfactory function partially recovered, taste remained preserved, and the patient successfully returned to her professional activity, including precise sensory evaluation of yogurt products. Conclusions Multimodal treatment of olfactory neuroblastoma can provide effective oncological control while preserving functional outcomes. This case highlights that successful treatment may enable not only disease control, but also full return to professional activity and maintenance of patient identity and psychosocial well-being.

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Title: Intrahepatic Intraductal Papillary Neoplasm of the Bile Ducts Mimicking a Giant Echinococcal Liver Cyst: A Case Report.

Author(s): Martyna Tamulionytė[1]

Tutor(s): Tomas Vanagas[2]

Intraductal papillary neoplasm of the bile ducts (IPNB) is a rare pathology, accounting for approximately 10–15% of all bile duct tumors worldwide, and occurs more frequently in East Asian populations. According to the 2019 WHO classification, IPNB is classified into low-grade dysplasia, high-grade dysplasia, and IPNB with associated invasive carcinoma. Approximately 40–80% of IPNB cases progress to invasive cholangiocarcinoma. Due to often nonspecific clinical and radiological findings, early diagnosis of this pathology remains challenging. Since the definitive diagnosis of IPNB can only be established by histological examination, this pathology is often misdiagnosed as other bile duct diseases. This case report presents a pancreatobiliary-type IPNB of the intrahepatic bile ducts.

A 61-year-old woman with liver cirrhosis and a history of transjugular intrahepatic portosystemic shunt (TIPS) placement underwent an abdominal ultrasound examination during routine follow-up. The patient reported no specific complaints. The MELD score was 12. Imaging revealed an 11.5 × 9.0 × 8.3 cm cystic lesion with clear contents and internal septations located in segment IV of the liver. A decision was made to continue radiological surveillance of the lesion.
Several months later, abdominal CT demonstrated significant enlargement of the lesion to a cystic structure measuring 14 × 12 × 10 cm, slightly compressing the gallbladder and extending toward the right iliac region, with mild displacement of the right kidney. Contrast enhancement of the cyst wall and internal septa was observed. Radiologically, an echinococcal liver cyst was suspected. Serological testing for anti-Echinococcus IgG antibodies was negative. Serum tumor markers (AFP, CA19-9, and CEA) were within normal limits. Given the patient's history of liver cirrhosis, abnormalities in liver function and injury markers were considered related to the underlying liver disease. No peripheral blood eosinophilia was detected. Percutaneous puncture of the cystic lesion was performed, and 800 mL of dark-brown, viscous fluid was aspirated. Cytological and histological examination revealed findings consistent with cyst contents, with no evidence of tumor cells.
Follow-up abdominal CT revealed further enlargement of the lesion to 14 × 12 × 17 cm, along with dilatation of the intrahepatic bile ducts. The patient underwent elective wedge liver resection with excision of the cystic lesion with limited liver parenchyma resection. The dimensions of the removed lesion were 18 × 15 × 11 cm. The surgical specimen was sent for histological examination. The postoperative course was uneventful. Final histopathology revealed a low-grade intraductal papillary neoplasm of the bile ducts without evidence of invasion, with abundant mucin production.

IPNB is a rare precancerous pathology of the bile ducts without specific laboratory diagnostic markers; therefore, the final diagnosis is usually established only after histological examination. Although this disease typically presents with an intraductal mass and bile duct dilatation, radiological findings are often nonspecific. In the present case, the main finding was a giant cystic liver lesion (~18 cm) radiologically mimicking an echinococcal liver cyst.

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Title: Surgical treatment of esophageal and gastric strictures with esophagectomy, gastrectomy, and reconstruction using small intestine and colon segments: a case report

Author(s): Ieva Stankaitytė

Tutor(s): Andrius Timpa

Esophageal stricture is a narrowing of the esophageal lumen resulting from mucosal injury and subsequent scarring, leading to dysphagia. A common cause is the ingestion of corrosive substances, most of which are accidental (~83.8%). Strong acids induce coagulative necrosis, leading to fibrosis and luminal narrowing; substances with a pH ≤2 or ≥12 are particularly harmful, and strictures typically develop within 3–4 weeks after injury.

A 70-year-old woman ingested concentrated acid in late 2021. She was hospitalized for 3 months due to corrosive esophageal injury complicated by mediastinitis, bilateral pneumothorax, sepsis, and shock. A jejunostomy was created for enteral feeding. After six months, esophageal recanalization was performed due to a 27 cm long esophageal stricture extending from the incisors to the stomach and involving a large portion of the stomach. The stricture was complete, and contrast radiography demonstrated no passage of contrast material through the esophageal lumen. Subsequently, the pyloric region was dilated with a 12 mm balloon. Following bougienage and balloon dilation, a posterior gastric wall perforation occurred, necessitating urgent gastrectomy and esophagostomy. After more than a year, esophageal reconstruction using a right colonic segment was performed. The colon segment was transposed to the retrosternal space, and the small intestine was anastomosed to the distal end of the reconstructed esophagus. One month after the operation, necrosis of the middle portion of the conduit was detected: 5 cm of the proximal segment and 10 cm of the distal segment remained viable, and the necrotic portion was removed. At the end of 2023, a second esophageal reconstruction was performed using a 30 cm ileocolic segment based on the ileocolic artery. An anterosternal tunnel was created to bring the segment to the neck. The cecum was separated from the transverse colon, and side-to-side cecoreservoir and ileotransverse anastomoses were performed. One month later, the transposed segment was anastomosed to the cervical esophagus. Some food passed through the newly formed esophagus and some through a cervical fistula. Closure of the esophagocutaneous fistula after one year was unsuccessful; however, the fistula later healed spontaneously. During outpatient follow-up, the patient gained 12 kg and now reported significant improvement in quality of life.

Esophageal strictures most commonly develop following corrosive substance ingestion, usually accidental, and result from mucosal injury, coagulative necrosis, and subsequent fibrosis leading to luminal narrowing. This case is characterized by a severe clinical course with a long-segment stricture, multiple life-threatening complications, and the need for repeated complex esophageal reconstructions after conduit necrosis. Despite this complexity, favorable functional outcomes can be achieved through staged multidisciplinary surgical management.

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Title: Clinical Experience with Omaveloxolone in a Patient with Friedreich's Ataxia: A Case Report

Author(s): Katarzyna Pogorzelska, Katarzyna Sołodyna

Tutor(s): Katarzyna Kapica-Topczewska, MD, PhD; Paulina Matys, MD

Abstract: Background: Friedreich's ataxia is a rare, autosomal recessive neurodegenerative disorder caused by GAA trinucleotide repeat expansion in the FXN gene, affecting approximately 1 in 50,000 individuals. It is characterized by progressive gait ataxia, followed by limb ataxia, dysarthria and sensory neuropathy, resulting in increasing disability over time. Until recently, no disease-modifying therapies were available. Omaveloxolone is the first and currently the only treatment for this condition, approved by the FDA in 2023 and the EMA in 2024. Case report: A 20-year-old male with genetically confirmed Friedreich's ataxia and symptom onset at the age of 7 was admitted to the Department of Neurology for continuation of treatment with omaveloxolone. The disease followed a progressive course, with initial symptoms presenting as balance disturbances and lower limb weakness, eventually leading to severe neurological impairment, including dysarthria, trunk and limb ataxia, absence of deep tendon reflexes, and pyramidal weakness in the lower limbs with bilateral pathological reflexes. Skeletal deformities, including right-sided scoliosis and pes cavus, were also present. The patient lost independent ambulation and currently requires a wheelchair for mobility. Hypertrophic cardiomyopathy was also diagnosed. Omaveloxolone therapy was initiated in September 2024 and subsequently continued within a national drug program from December 2025, ensuring uninterrupted treatment. It was well tolerated, with no reported adverse effects, and was associated with disease stabilization. Clinical assessment using the Friedreich's Ataxia Rating Scale showed a slight improvement from 113 points in December 2024 to 109.5 points in September 2025. No clinical deterioration was observed during follow-up. Conclusions: This case highlights the emerging therapeutic opportunities in Friedreich's ataxia, a condition previously lacking disease-modifying treatment, and demonstrates the feasibility of omaveloxolone use in clinical practice.

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Title: Does implant design influence gait and patient-reported outcomes after total knee arthroplasty? A prospective IMU-based study

Author(s): Wojciech Michalski

Tutor(s): Marcin Łapiński, MD

Abstract: Introduction Total knee arthroplasty (TKA) effectively improves pain and function in patients with advanced knee osteoarthritis. However, it remains unclear whether contemporary implant designs translate into measurable differences in routine gait performance. Aim of the study To compare gait performance and patient-reported outcomes between medial congruent and posterior-stabilized TKA designs during the first postoperative year. Material and methods This prospective observational study included a consecutive series of 93 patients undergoing primary TKA for osteoarthritis (posterior-stabilized, n = 56; medial congruent, n = 37). All surgeries were performed at the level III academic hospital by the same experienced surgical team using standard midline incision and medial parapatellar arthrotomy. All patients followed the same rehabilitation protocol. Spatiotemporal gait analysis was performed using a waist-mounted inertial measurement unit (Baiobit, Rivelo, BTS Bioengineering, Italy) during self-selected level walking preoperatively and at 12 months postoperatively. Primary outcomes were gait speed and double support time; cadence was analyzed exploratorily. Patient-reported outcomes included KOOS total and FJS-12. Statistical significance was set at $p < 0.05$. Results Baseline characteristics were comparable between groups (all $p > 0.05$). Both groups improved significantly over time (all $p < 0.05$). Gait speed increased from 0.77 ± 0.18 to 0.93 ± 0.12 m/s in the posterior-stabilized group and from 0.81 ± 0.16 to 0.96 ± 0.14 m/s in the medial congruent group. Double support time decreased from $41.6 \pm 7.8\%$ to $25.2 \pm 4.4\%$ and from $38.6 \pm 8.4\%$ to $23.7 \pm 3.9\%$, respectively. At 12 months, between-group differences in gait speed and double support time were not significant (both $p > 0.05$). KOOS total and FJS-12 were comparable between groups at 12 months. Conclusions Medial congruent and posterior-stabilized designs demonstrated similar early functional recovery after TKA. In this real-world walking assessment, implant subtype did not appear to meaningfully influence gait performance or patient-reported outcomes during the first postoperative year.

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Title: A Rare Complication of Stoma Creation That Should Not Be Overlooked: A Case Report

Author(s): Tymoteusz Czarnocki, Ustym Sytnyk, Marta Berczyńska

Tutor(s): lek. Kamil Waczyński

Abstract: Introduction An incarcerated inguinal hernia is a condition requiring urgent surgical intervention. When accompanied by bowel obstruction, surgical management may be extensive and may necessitate stoma creation. In elderly patients with multiple comorbidities, the risk of postoperative complications is significantly increased. Case Presentation A 78-year-old male with multiple comorbidities was admitted to the surgical department due to abdominal pain, vomiting, and a non-reducible right inguinal hernia. Computed tomography revealed a loop of the sigmoid colon within the hernia sac, along with signs of large bowel obstruction. Emergency surgery was performed, including Bassini hernia repair, exploratory laparoscopy, and creation of a loop sigmoid colostomy. On the fourth day after discharge, the patient was readmitted due to parastomal evisceration. Laparotomy was performed, followed by segmental sigmoid resection and side-to-side bowel anastomosis with drainage of the peritoneal cavity. In the postoperative period, symptoms of gastrointestinal obstruction developed and were confirmed by imaging studies. Conservative treatment was implemented, including gastrointestinal decompression, parenteral nutrition, and supportive therapy, resulting in gradual improvement in the patient's general condition. Conclusions Parastomal evisceration, although a rare complication, should be considered in the care of patients after stoma creation, particularly in high-risk individuals.

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Title: Giant Brenner Tumor with Serous Cystadenoma Mimicking Ovarian Malignancy

Author(s): Eglė Stanišauskytė, Aistė Pileckienė

Tutor(s): Dr. Vaida Atstupėnaitė

Abstract: Brenner tumors (BTs) are rare epithelial ovarian neoplasms, accounting for approximately 1-2% of all ovarian tumors. The vast majority (~95%) are benign, while borderline and malignant variants are uncommon (<5%). They are frequently small and asymptomatic, but in rare cases they may reach large sizes and present as complex solid-cystic masses, mimicking ovarian malignancy on imaging. We report a 48 years-old woman who presented with a one year history of right-sided lower abdominal discomfort. Clinical examination revealed a large, mobile, non-tender pelvic mass measuring approximately 10-15 cm in diameter. Tumor marker CA-125 was within normal limits (9.1 kU/L). Transvaginal ultrasound demonstrated a large solid-cystic mass (143×130×80 mm) located superior to the uterus, with a solid component measuring 75×72 mm and detectable vascularization. Computed tomography (CT) confirmed a right ovarian tumor measuring up to 16.0×9.9×12.0 cm, composed of a contrast-enhancing solid component with an additional cystic portion, as well as a small amount of free fluid (~1.7 cm). No lymphadenopathy or distant metastases were identified. Given the imaging features - large tumor size (>10 cm), solid vascularized component and complex morphology, malignancy for the lesion could not be excluded, even though tumor markers were normal. The patient underwent radical surgical treatment, including total hysterectomy with bilateral adnexectomy and omentectomy. Histopathological examination revealed a benign Brenner tumor coexisting with a serous cystadenoma, along with uterine leiomyomas. No malignant cells were identified in cytological or omental specimens. The importance of this case is that BTs are rare and typically benign, they can present as large, complex solid-cystic masses with imaging features highly suggestive of ovarian cancer. Awareness of BTs is important, as they can pose a diagnostic challenge and may lead to unnecessary extensive oncologic surgery despite being benign.

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Title: Bilateral Mature Cystic Teratomas with Elevated CA 19-9: Diagnostic and Fertility Sparing Challenges

Author(s): Eglė Stanišauskytė, Aistė Pileckienė

Tutor(s): Dr. Ingrida Pikūnienė

Abstract: Mature cystic teratomas (MCTs) are among the most common benign ovarian tumors arising from germ cells and are accountable for approximately 10-20% of all ovarian neoplasms. While they are typically unilateral, bilateral involvement occurs in only about 10-15% of cases, meaning that truly bilateral teratomas occur only in 1-2% of cases. They are composed of well differentiated tissues derived from multiple embryonic layers, often containing elements such as hair, sebaceous material or even bone and teeth. These tumors are typically asymptomatic and most often detected randomly in women of reproductive age. Bilateral occurrence may complicate both diagnosis and management, particularly when fertility preservation is a priority. We report a 31 year-old woman with no significant gynecological history, who was clinically asymptomatic and had regular menstrual cycles. During a routine gynecological examination, transvaginal ultrasound (TVUS) initially suggested a dermoid cyst in the left ovary. Follow-up evaluations revealed multiple cystic lesions in both ovaries, raising suspicion of bilateral disease. Laboratory tests showed a highly elevated carbohydrate antigen 19-9 (CA 19-9) level of 1191.2 kU/L, while other tumor markers remained within normal limits. Given that CA 19-9 is more commonly associated with gastrointestinal malignancies, additional imaging and diagnostic work-up were performed and Computed Tomography (CT) scan of the abdomen and pelvis further indicated bilateral ovarian lesions consistent with dermoid cysts and excluded signs of malignancy in other regions. Due to the bilateral involvement and diagnostic uncertainty, surgical management was chosen with careful consideration of ovarian tissue preservation. Histopathological examination confirmed the diagnosis of bilateral mature cystic teratomas. This case demonstrates that benign ovarian tumors can mimic malignant disease, particularly when presenting bilaterally with significant tumor marker elevation. It shows the importance of an individualized approach to management, ensuring oncologic safety while avoiding unnecessary radical treatment in women of reproductive age.

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Title: A Diagnostic Challenge of Struma Ovarii Mimicking Complex Ovarian Neoplasm

Author(s): Eglė Stanišauskytė, Aistė Pileckienė

Tutor(s): Dr. Vaida Atstupėnaitė

Abstract: Struma ovarii (SO) is a rare monodermal variant of ovarian teratoma, accounting for approximately 1% of all ovarian tumors and 2-5% of ovarian teratomas. In up to 90-95% of cases it is benign, even though its heterogeneous structure and variable imaging features can frequently imitate malignant ovarian neoplasms. Imaging-based risk stratification systems, such as O-RADS, are widely used in the evaluation of adnexal masses, however, in cases with complex and atypical features, accurate risk categorization may be challenging. That's why SO diagnostics remain challenging, as tumor markers are typically within normal ranges and radiological findings are often inconclusive. We present a 28 year old woman with a history of polycystic ovarian syndrome (PCOS), who was diagnosed with an incidentally found left ovarian mass. The patient was largely asymptomatic, reporting only minimal cyclic spotting. Blood work, including tumor markers and thyroid hormones, were within normal range. Transvaginal ultrasound (TUS) demonstrated a complex, multiloculated left ovarian mass measuring up to 74×45×80 mm, with heterogeneous content, septations, and echogenic foci causing acoustic shadowing. Pelvic Magnetic resonance imaging (MRI) revealed a 53×73×72 mm lesion with hemorrhagic components, calcifications, and a vascularized solid area (22×8 mm) showing diffusion restriction, resulting in an initial O-RADS 4-5 classification. However, multidisciplinary evaluation reduced the risk to O-RADS 3, favoring a benign etiology. The patient underwent laparoscopic ovarian cystectomy and after histopathological examination a definitive diagnosis of SO was confirmed. This case shows us the diagnostic challenge posed by SO, which can closely resemble malignant ovarian tumors on initial imaging despite benign pathology and normal biomarkers. It also points out the limitations of O-RADS classification in atypical presentations and emphasizes the importance of careful imaging interpretation, correlation with clinical findings and multidisciplinary assessment to avoid overestimation of malignancy risk and unnecessary treatment.

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Title: Median arcuate ligament syndrome – clinical presentation and laparoscopic treatment outcomes

Author(s): Laura Dąbkowska

Tutor(s): Ewa Płonowska, Hady Razak Hady

Abstract: IntroductionMedian arcuate ligament syndrome, also known as Dunbar syndrome, diagnosed with a frequency of approximately 2/100,000 patients per year, is a condition caused by chronic compression of the celiac trunk by the median arcuate ligament. MALS symptoms manifest as numerous gastrointestinal complaints consequent to restricted perfusion in thevisceral region. Non-specific clinical features complicate and delay the diagnostic–therapeutic process. Treatment methods are based on surgical intervention including robotically assisted decompression, an open and laparoscopic approach. Laparoscopy is the treatment of choice considering its high effectiveness, low risk of complication, and minimal invasiveness. Aim of the StudyThe aim of the study was to analyze the clinical presentation and medical history of patients diagnosed with MALS and qualified for surgical treatment. The research attempts to evaluate the clinical outcomes of laparoscopic decompression of the celiac artery. Materials and MethodsA retrospective analysis of 12 patients of mean age 54.0 ± 18.1 (9 females, 3 males) who underwent laparoscopic release of the median arcuate ligament in 2021–2025 at the University Clinical Hospital in Bialystok. Clinical parameters, previous medical history, and early and late postoperative outcomes were assessed. ResultsThe most common symptoms reported by patients were postprandial pain (66.67%), excessive sweating (41.67%), post-exertional pain (33.3%), nausea, and weight loss (25%). Four of the 12 patients had a history of neuropsychiatric disorders such as mood disorders, depressive and anxiety disorders, and opioid dependence. Connective tissue diseases were not present in the study group. No complications were observed postoperatively. In one case (a 76-year-old patient), pain complaints remained unchanged after the procedure. It is assumed that prolonged pressure from the median arcuate ligament on the celiac artery resulted in vessel wall remodeling and luminal stenosis. ConclusionsThe rare occurrence of Dunbar syndrome and the non-specific clinical manifestation pose a challenge in establishing theproper diagnosis. Due to limited clinical data, there are no standardized diagnostic criteria or treatment guidelines. Thelaparoscopic decompression of the celiac artery is the method of choice due to its high effectiveness and low complication rate.

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Title: A Silent Traveler to the Navel: Ovarian Endometrioid Adenocarcinoma Presenting in an Umbilical Hernia

Author(s): Wiktoria Lisińska

Tutor(s): Katarzyna Kwas MD, Maria Szubert MD; PhD, Agnieszka Wilamowska MD; PhD, prof. Jacek R. Wilczynski MD, PhD

Abstract: Introduction: Ovarian cancer remains a leading cause of gynecologic cancer–related mortality worldwide, largely due to delayed diagnosis stemming from vague and non-specific early symptoms. The disease is biologically heterogeneous, with epithelial ovarian cancer comprising approximately 90% of cases. Despite advances in imaging, tumor markers, and systemic therapies, no effective screening strategy exists for early detection in the general population. Rare and atypical presentations further complicate timely diagnosis and management. Metastatic involvement of the umbilicus, classically known as Sister Mary Joseph's nodule, is uncommon and may mimic benign conditions such as umbilical hernia, posing significant diagnostic challenges. Case Description: A 75-year-old woman with multiple comorbidities presented with abdominal pain and defecation disturbances. Laboratory evaluation revealed anemia, renal impairment, elevated thyroid-stimulating hormone, and a markedly increased CA-125 level. Imaging studies demonstrated large pathological masses involving the uterus and peritoneum, peritoneal grafts extending into an umbilical hernia, ascites, and suspicious lymphadenopathy. Urgent surgical intervention was undertaken due to subileus, consisting of cytoreductive but primarily palliative procedures, including hysterectomy with bilateral adnexectomy, peritonectomy, omentectomy, rectal shaving, excision of the umbilical tumor, and hernia repair. Histopathology confirmed ovarian endometrioid adenocarcinoma (G2), FIGO stage IV, with extensive peritoneal involvement. Although platinum-based chemotherapy was recommended, the patient declined further oncologic treatment. She maintained satisfactory quality of life for several months postoperatively but subsequently developed widespread metastases and died six months later. Conclusion: Ovarian cancer presenting within an umbilical hernia is exceedingly rare and may be misdiagnosed as a benign or incarcerated hernia, delaying appropriate oncologic management. Imaging plays a crucial role in identifying atypical hernia contents and associated intra-abdominal malignancy, while histopathological and immunohistochemical analyses remain definitive for diagnosis. Management requires a multidisciplinary approach, balancing oncologic radicality with symptom control, particularly in advanced-stage disease requiring urgent intervention. This case highlights an unusual presentation of advanced ovarian cancer and underscores the importance of maintaining clinical suspicion when evaluating umbilical hernias in elderly patients. Prompt imaging and surgical management are essential to prevent complications such as bowel obstruction and to optimize patient outcomes, even when treatment intent is palliative.

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Title: Surgical Treatment of an Intramedullary Conus Medullaris Ependymoma in a 36-Year-Old Female: A Case Report

Author(s): Piotr Łapuć, Adrian Gabriel Rzymski

Tutor(s): lek. Magdalena Rybaczek, dr hab. n. med. Tomasz Łysoń

Abstract: Background: Intramedullary spinal cord tumors are rare neoplasms of the central nervous system, among which ependymomas are the most common in adults. Due to their localization within the conus medullaris, these lesions may result in significant neurological deficits. Contrast-enhanced magnetic resonance imaging (MRI) constitutes the primary diagnostic modality, while surgical resection remains the treatment of choice. Case Presentation: A 36-year-old female was admitted to the Department of Neurosurgery, University Clinical Hospital in Białystok, with a one-year history of lumbosacral spine pain radiating to both lower extremities. Contrast-enhanced MRI revealed a cystic intramedullary lesion located within the conus medullaris at the Th11–L1 level, measuring approximately 7.2 cm in length and 1.8 × 1.6 cm in transverse dimensions. The lesion demonstrated ring-like contrast enhancement and the presence of blood degradation products, and completely filled the spinal canal at the Th11–Th12 level. Radiological findings were suggestive of ependymoma. Neurological examination revealed hyperesthesia of the left lower leg and foot, without motor deficits. Management and Results: On December 1, 2025, the patient underwent Th11–L1 laminoplasty with posterior myelotomy and resection of the intramedullary tumor under intraoperative neuromonitoring. The postoperative course was uneventful. The patient was transferred in good general condition to a rehabilitation unit. Histopathological examination confirmed the diagnosis of ependymoma. Conclusions: Early MRI-based diagnosis and surgical management with the use of intraoperative neuromonitoring enable safe resection of intramedullary tumors of the conus medullaris and are associated with favorable clinical outcomes.

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Title: Rectal perforation as a cause of extensive soft tissue infection of the lower limb – a case report

Author(s): Marta Berczyńska, Zofia Stankiewicz, Lorsan Meshidov, Tymoteusz Czarnocki

Tutor(s): dr Paulina Głuszyńska

Abstract: Introduction: Rectal perforation is a rare but life-threatening condition associated with high mortality. It may lead to extensive infections involving the pelvic and retroperitoneal spaces and may spread to the soft tissues of the lower limbs. Early diagnosis and aggressive surgical management combined with intensive care support are crucial for improving outcomes. Case presentation: A 41-year-old bedridden woman with a history of alcohol use disorder, alcoholic fatty liver disease, alcohol- related epilepsy, and severe neglect was admitted to the Emergency Department due to abdominal pain and dehydration. Laboratory tests revealed markedly elevated inflammatory markers, leukocytosis, anemia, and electrolyte disturbances. Computed tomography demonstrated rectal perforation with a presacral abscess and spread of the inflammatory process to the retroperitoneal space and toward the left lower limb. Gynecological examination revealed injury to the anal sphincter and rectum. At a later stage, the patient reported sexual assault as the cause of the trauma. The patient underwent urgent laparotomy with formation of an end colostomy, evacuation of the presacral abscess, and drainage of the peritoneal cavity. In the postoperative course, extensive soft tissue infection of the left lower limb with tissue necrosis developed, requiring multiple surgical revisions, decompressive incisions, and repeated debridement. The clinical course was complicated by cardiorespiratory failure requiring intensive care unit treatment, mechanical ventilation, and vasopressor therapy with norepinephrine. During hospitalization, the patient experienced an episode of cardiac arrest and was successfully resuscitated. Broad-spectrum antibiotic therapy, adjusted according to microbiological results, nutritional support, and intensive supportive therapy were implemented. Further surgical management included repeated debridement of necrotic tissue, evacuation of purulent collections, and wound irrigation with antiseptic and saline solutions. A second episode of cardiac arrest occurred, requiring readmission to the ICU. After stabilization and improvement of the patient’s clinical condition, she was transferred back to the surgical ward and remains under outpatient surgical follow-up. Conclusions: Rectal perforation may serve as the source of rapidly progressing, multi-compartment soft tissue infection leading to sepsis, multi-organ failure, and cardiac arrest. This case highlights the importance of early surgical intervention, aggressive source control, and close cooperation between surgical and intensive care teams in improving patient outcomes.

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Title: Ovarian tumor in twin pregnancy – difficult decisions, limited options.

Author(s): Wiktoria Lisińska

Tutor(s): Agnieszka Żalińska MD, PhD; Prof. Przemysław Oszukowski MD, PhD

Abstract: Introduction: Ovarian tumors occur in approximately 2.3–8.8% of pregnancies. Nevertheless, they pose a significant diagnostic and therapeutic challenge, requiring careful balancing of maternal treatment benefits against fetal safety. Clinical assessment and management strategies are particularly complex in multiple pregnancies, where the risk of obstetric complications, making any surgical intervention a high-risk procedure." Case report: A 36-year-old patient (G1, 12+4 weeks of gestation) with a dichorionic diamniotic twin pregnancy was admitted to the Department of Gynecology, Reproductive Medicine and Fetal Therapy, and the Department of Diagnosis and Treatment of Infertility due to a newly diagnosed right ovarian mass. The lesion in the right ovary had been first identified during hospitalization three months earlier. The patient reported pain in the right flank region; no vaginal bleeding or spotting was observed, and the fetal membranes remained intact. Owing to suspicion of an ovarian malignancy, the patient was managed under the care of a gynecologic oncology team. The pregnancy course remained uncomplicated until delivery. A vaginal delivery occurred at 22 weeks and 5 days of gestation (22+5 weeks). At 20:20, the first female twin was delivered, weighing 480 g, with Apgar scores of 1/1/1, followed three minutes later by the second female twin, weighing 370 g, with Apgar scores of 0/1/1. Both neonates were transferred to the neonatal intensive care unit. Three months postpartum, the patient was readmitted to the hospital. Imaging studies revealed a mass occupying the entire pelvis and extending to the level of the umbilicus; the lesion was poorly mobile and of indeterminate origin. The patient was qualified for surgical management consisting of relaparotomy (Pfannenstiel incision) with planned unilateral adnexectomy including tumor removal, intraoperative examination, and the possibility of extension of the surgical procedure in accordance with oncologic standards, with an intent to preserve fertility. At the time of hospitalization, the patient declined surgical intervention, requesting additional time to make an informed decision. Conclusions: Ovarian tumors diagnosed during pregnancy, particularly in multiple gestations, require an individualized and multidisciplinary approach. Postponing surgical treatment to the postpartum period can allow for more comprehensive diagnostics and safer operative planning.

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Title: Pancreatic Mucinous Cystic Neoplasm with Undifferentiated Carcinoma: A Diagnostic Challenge

Author(s): Martyna Tamulionytė

Tutor(s): Povilas Ignatavičius

Abstract: BACKGROUND Pancreatic cystic lesions encompass a spectrum of entities ranging from benign to malignant. Mucinous cystic neoplasms are premalignant lesions with the potential for progression to invasive carcinoma. In rare instances, they may be associated with undifferentiated carcinoma with osteoclast-like giant cells, a subtype accounting for less than 1% of pancreatic malignancies. However, imaging alone may be insufficient for accurate differentiation, and histopathological evaluation remains essential for definitive diagnosis. CASE REPORT A 33-year-old female presented with intermittent abdominal pain exacerbated by physical activity. The patient had no significant past medical or surgical history. Laboratory tests were within normal limits. CT demonstrated a lesion in S VIII of the liver consistent with focal nodular hyperplasia (FNH) and a pancreatic tail mass suggestive of a solid pseudopapillary tumor. Biopsy of the hepatic lesion confirmed FNH. Tumor markers were within normal ranges. At MDT discussion, the pancreatic lesion was interpreted as a solitary pseudopapillary tumor, and surgical treatment was recommended. The patient was scheduled for surgery; however, prior to the planned intervention, she developed signs of infection and surgery was postponed. The patient was treated with antibiotics and the cystic lesion was managed with percutaneous drainage. Cytological analysis of the cyst fluid showed no evidence of malignancy. The amylase level in the drain output was 410 U/L. After clinical improvement, the drain was removed. The patient remained asymptomatic, with no abdominal pain, weight loss, or other complaints. During the second admission, surgical exploration revealed a large cystic lesion involving the pancreas, spleen, small and large bowel, as well as venous shunts and multiple smaller peritoneal lesions. Due to the extent of the disease and uncertain intraoperative findings, multiple biopsies were obtained and the resection was not performed. Histopathological evaluation raised suspicion of a giant cell tumor. Postoperatively, the amylase level in the drain output increased markedly, reaching 131,000 U/L. During the third admission, the patient underwent distal pancreatectomy with splenectomy, along with proximal small bowel resection and primary anastomosis. The postoperative course was uneventful. Final histopathological examination revealed a pancreatic mucinous cystic neoplasm with high-grade dysplasia and an associated undifferentiated carcinoma with osteoclast-like giant cells. The tumor was staged as pT1c N1 G3 R0. CONCLUSION This case highlights a rare pancreatic mucinous cystic neoplasm with high-grade dysplasia, associated with an undifferentiated carcinoma with osteoclast-like giant cells. The misleading preoperative diagnosis underscores the limitations of imaging in differentiating pancreatic cystic lesions. Histopathological confirmation remains essential in rare cases for accurate diagnosis and management.

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Title: From obesity to the operating table - three times. A bariatric surgery nightmare. Case report

Author(s): Lorsan Mezhidov, Paulina Jastrzębowska, Marta Berczyńska

Tutor(s): Lek. Katarzyna Giedzicz

Abstract: In Poland, obesity (BMI > 30 kg/m²) affects 18.5% of the population. Bariatric surgery achieves substantially higher weight loss and comorbidity remission rates than lifestyle modification and medication therapy alone. In 2024, approximately 7,700 bariatric procedures were performed in Poland. Although generally safe, complications can arise immediately postoperatively and even years later. Case report: A 63-year-old male was electively admitted for the surgical treatment of obesity. His medical history included a sleeve gastrectomy performed 10 years earlier. On June 20, 2025, the patient had a laparoscopic mini-gastric bypass. During the surgery, peritoneal adhesions were released. Then a gastric pouch was created from the upper part of the stomach and anastomosed with an intestinal loop. Five days postoperatively, he was admitted again with diffuse abdominal pain. Fluoroscopy revealed an anastomotic leak in the subcardial area, indicating a perforation near the angle of His. Six days later, the patient underwent an emergency diagnostic laparoscopy with peritoneal lavage and drainage. Afterwards, a self-expanding metal esophageal stent was inserted by endoscope over the fistula to block the opening. Secondary to ongoing leakage and stent migration, a second covered self-expanding metal stent (SEMS) was placed three weeks later. Despite initial clinical improvement with combined nutritional support, the patient developed increasing inflammatory markers and an incarcerated ventral hernia appeared. Seven weeks later, an emergency laparotomy was conducted, which included adhesiolysis, resection of inflamed omentum, and a ventral hernia repair using a synthetic onlay mesh. Following successful treatment, the esophageal stent was removed and the patient was discharged two months later in stable condition on a liquid diet. Conclusion: Mini gastric bypass is an effective surgical treatment for morbid obesity. Reoperation might be necessary in cases of severe complications or failure of treatment. Endoscopic stent placement is a valuable minimally invasive option for managing gastrointestinal leaks. Successful treatment requires multidisciplinary care.

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Title: From womb to recovery: navigating the journey of complete d-TGA

Author(s): Wiktoria Lisińska

Tutor(s): Prof. Iwona Strzelecka PhD, Prof. Maria Respondek-Liberska MD, PhD

Abstract: Background: Transposition of the great arteries (TGA) is a congenital heart defect characterized by an abnormal connection between the heart's ventricles and the major arteries. In this condition, the aorta arises from the right ventricle, while the pulmonary trunk originates from the left ventricle. In about half of the affected children, TGA is associated with a ventricular septal defect (VSD). The fundamental condition for the survival of a newborn with TGA is the mixing of blood between the pulmonary and systemic circulation at the level of the atria, ventricles, or great arteries. The degree of blood oxygenation depends on the size and number of communication sites. Case Report: A 29-year-old pregnant woman was referred to a Prenatal Cardiology Clinic at 22 weeks and 6 days of gestation after a second-trimester ultrasound suggested a congenital heart defect. A fetal echocardiogram confirmed the presence of complete d-TGA with a ventricular septal defect (VSD) and outflow tract congenital heart disease (CHD), along with good atrial communication (FO index = 33%) and preserved pulmonary circulation. Prenatal monitoring at 25, 28, 30, and 34 weeks showed stable fetal hemodynamics and normal growth. Since the fetal heart maintained good atrial communication (FO index = 27%), an immediate Rashkind procedure (balloon septostomy) was deemed unnecessary postnatally. The baby was delivered via cesarean section, weighing 3700 g, with Apgar scores of 5/7/7. At two weeks of age, the infant underwent planned corrective cardiac surgery, which involved repositioning the aorta and pulmonary artery to their correct outlets, reimplanting the coronary arteries into the newly formed aorta, and reconnecting the pulmonary artery appropriately. Follow-up echocardiography confirmed good myocardial function and the absence of pericardial effusion. Conclusion: Early prenatal diagnosis of congenital heart defects like d-TGA plays a vital role in improving outcomes.

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Title: Pauci-immune crescentic glomerulonephritis as a manifestation of ANCA-associated vasculitis in an adolescent patient: a case report

Author(s): Julia Bartczak, Oliwia Mróz (presenting autor: Julia Bartczak)

Tutor(s): Anna Maria Wabik MD

Abstract: Background: ANCA-associated vasculitis (AAV) is a rare autoimmune disease in the paediatric population, characterized by necrotizing inflammation of small blood vessels associated with rapidly progressive glomerulonephritis. The disease may present as a renal-limited form or as a systemic vasculitis involving multiple organs. Clinical manifestations vary and include hematuria, proteinuria, hypertension, and progressive kidney dysfunction, while extrarenal involvement most commonly affects the lungs, skin, and joints. Diagnosis is based on clinical presentation, ANCA serology, and kidney biopsy. Histopathological examination typically reveals necrotizing crescentic glomerulonephritis with minimal or absent immune complex deposition (pauci-immune). Case report: A 14-year-old girl was referred to the Paediatric Nephrology Unit with urinary abnormalities detected in routine screening examinations. Microscopic hematuria along with non-nephrotic range proteinuria and mild microcytic anemia were reported on laboratory evaluation. The patient was asymptomatic and clinical findings were limited to kidney involvement. Renal function was preserved, serum creatinine was normal, with estimated glomerular filtration rate of 91 ml/min/1.73 m² calculated using the Schwartz formula. Repeated urinalyses further confirmed persistent hematuria and proteinuria. Renal ultrasonography showed normal renal dimensions with slightly diminished corticomedullary differentiation. Immunological studies showed significantly increased p-ANCA titers and anti-myeloperoxidase antibodies. Histopathological examination of a kidney biopsy revealed pauci-immune crescentic glomerulonephritis with secondary focal segmental glomerulosclerosis and mild interstitial fibrosis. High-resolution chest CT revealed small bilateral pulmonary nodules, with patient asymptomatic as far as respiration was concerned. The echocardiography demonstrated a bicuspid aortic valve with mild regurgitation. Management involved intravenous methylprednisolone pulses, rituximab, oral corticosteroids and avacopan. Conclusions: ANCA-associated vasculitis should be included in the differential diagnosis in pediatric patients presenting with hematuria and proteinuria. Prompt evaluation, incorporating renal biopsy, along with early initiation of immunosuppressive treatment, can significantly improve outcomes. Multidisciplinary care and long-term organ monitoring are essential in this group of patients.

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Title: Fetus-in-fetu Associated with Giant Omphalocele and Double-Outlet Right Ventricle: A Case Report

Author(s): Zofia Żelewska

Tutor(s): Beata Borek-Dzięcioł MD, PhD

Abstract: Background: Fetus-in-fetu is an extremely rare congenital anomaly with an estimated prevalence of 1 in 500000 live births. It arises from an embryonic developmental defect - incomplete division of the early bastocyst. Consequently, a malformed parasitic fetus develops within the host twin. Despite advanced organogenesis, it remains incapable of survival outside the host's body. Case report: We present the case of a male neonate delivered by a cesarean section at 38 weeks of gestation with prenatally detected giant omphalocele and double-outlet right ventricle (DORV). Postnatal physical examination revealed a parasitic twin structure, later diagnosed as fetus-in-fetu, which included dysplastic upper limbs, normally developed lower limbs, pelvis and male external genitalia. Preoperative computed tomography with three-dimensional reconstruction confirmed the presence of bone structures and partially developed internal organs of the parasitic fetus. On day 4th of life, the neonate underwent a complex surgery: resection of the parasitic twin structures with closure of the omphalocele, aortic arch reconstruction and pulmonary artery banding. Surgical correction of the double-outlet right ventricle was scheduled for the 13th month of life. Postoperative histopathological examination revealed well-differentiated tissues of the parasitic fetus, which allowed the exclusion of teratoma and establishment of the final diagnosis. The patient was discharged home in good general condition on the 28th day of life, 4 weeks after the resection surgery. Conclusions: The presented case illustrates the complex diagnostic and therapeutic challenges associated with the extremely rare, multisystem congenital anomaly of fetus-in-fetu coexisting with an extensive omphalocele and DORV. Successful management in such cases requires thorough prenatal diagnostics, multidisciplinary postnatal care, and individually tailored surgical strategy.

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Title: Involuntary movements in a patient with a JAK2 mutation – chorea in the course of hyperviscosity syndrome

Author(s): Martyna Najmrocka

Tutor(s): Monika Figura MD, PhD

Abstract: Introduction The presented case of a 43 year old patient with polycythemia vera (PV) and concomitant involuntary movements, specifically chorea and dystonia, represents a rare neurological complication of myeloproliferative neoplasms. While chorea in PV is documented, its pathogenesis is multifactorial, typically involving hyperviscosity syndrome and metabolic disturbances in the basal ganglia. Negative genetic testing for Huntington's and Wilson's disease confirmed the symptoms were secondary to the primary disease marked by the JAK2 mutation. Case Description The most common postulated cause is hyperviscosity syndrome leading to microcirculatory disturbances in the basal ganglia. Barow et al. reported a case of acute chorea with imaging confirming an ischemic stroke in the parietal cortex, correlating with findings by Calculli et al. regarding the caudate nucleus. In such instances, red blood cell parameters correlate closely with symptoms, and cytoreductive therapy typically yields rapid improvement. Regarding the patient's JAK2 mutation, the physiological and protective role of the JAK2-STAT3 pathway in the central nervous system is highly relevant. Abjean et al. demonstrated that this pathway is crucial for protein homeostasis in striatal astrocytes. Selective activation of JAK2-STAT3 in astrocytes enhances their proteolytic capacity, reducing toxic protein aggregation in neurons and limiting striatal atrophy in neurodegeneration models. This adds an intriguing perspective: while systemic JAK2 hyperactivity is a pathology requiring cytoreductive treatment, its activity within the striatum the structure responsible for involuntary movements is a desirable, neuroprotective mechanism. The patient was treated with Ruxolitinib, a JAK1/JAK2 inhibitor. While essential for polycythemia control, systemic inhibition might theoretically impact astrocyte function, as animal models show that blocking this pathway (via SOCS3 expression) can exacerbate neuropathological symptoms. Conclusions The patient's chorea is likely of vascular-metabolic origin rather than a neurodegenerative disorder like Huntington's. However, the critical role of the JAK2-STAT3 pathway in striatal function must be considered. This case highlights the complexity of the JAK2 kinase: a driver of oncogenesis in the hematopoietic system, yet a mediator of repair and protection in the nervous system.

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Title: Non-specific neurological symptoms as the first manifestation of metastatic lung cancer

Author(s): Gabriela Najfeld, Aleksandra Lampkowska, Kamila Koszykowska

Tutor(s): prof. dr hab. n. med. Edyta Zbroch

Abstract: Brain metastases may be the first manifestation of an underlying malignancy and frequently present with non-specific neurological symptoms, posing a significant diagnostic challenge and potentially delaying appropriate management. A 73-year-old woman with a history of arterial hypertension and hypothyroidism was admitted due to a three-week history of dizziness and balance disturbances. The symptoms were initially associated with episodes of hypotension following antihypertensive therapy. On admission, the patient was in good general condition, with stable vital signs and no focal neurological deficits on examination. Initial laboratory investigations revealed no significant abnormalities. Cardiological assessment, including electrocardiography, Holter monitoring, and echocardiography, showed no clinically relevant findings. Doppler ultrasound of the carotid and vertebral arteries excluded significant stenosis. Due to persistent neurological symptoms, contrast-enhanced computed tomography of the head was performed, revealing multiple hyperdense lesions distributed throughout the brain, with the largest located in the cerebellum (36 mm), suggestive of metastatic disease. Subsequent chest imaging demonstrated a mass in the left lung and multiple smaller lesions in the right lung, consistent with a primary lung malignancy with brain metastases. The patient was evaluated by pulmonology, neurology, and neurosurgery specialists, and further oncological diagnostics were recommended. Symptomatic treatment, including intravenous hydration, anti-edema therapy, anticonvulsants, and optimization of chronic treatment, was initiated. The patient was discharged in a stable condition with a plan for expedited outpatient diagnostic workup. This case highlights that common and non-specific symptoms such as dizziness and balance disturbances may represent the initial presentation of advanced malignancy. Early neuroimaging in patients with unexplained neurological symptoms is crucial for timely diagnosis of brain metastases and initiation of appropriate oncological management.

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Title: FATAL MULTIPLE ORGAN DYSFUNCTION SYNDROME AFTER AMMONIA POISONING

Author(s): Ieva Naravaitė

Tutor(s): Donatas Cibulskis, MD

Abstract: Introduction. Ammonia is a volatile strong alkali used in industry and cleaners. Inhalation causes airway irritation, edema and possible respiratory failure; ingestion leads to severe caustic injury with risk of ulceration and perforation. As a potent alkali, it causes deep liquefactive necrosis. Severe exposures may result in airway compromise, infection and sepsis. Case Description. A 75-year-old man with history of multiple strokes accidentally ingested 10 ml of 10% household ammonia. He had throat pain, dysphagia, drooling and dyspnea. Laryngoscopy showed oral burns with pharyngeal and laryngeal edema; endoscopy revealed Zargar IIB esophageal injury, erosive gastropathy and duodenitis. Initial labs showed renal impairment. Chest CT demonstrated ground-glass opacities suggesting chemical pneumonitis. His condition worsened with rising oxygen needs, hypernatremia, progressing kidney injury, increasing inflammatory markers and hypotension. He developed acute hypoxemic respiratory failure, sepsis and septic shock. In ICU, he was intubated and required vasopressors; renal failure progressed to anuria requiring hemodialysis. Despite maximal support, multiorgan failure progressed, culminating in asystole and unsuccessful resuscitation. Summary. Accidental ingestion and inhalation of 10% ammonia caused severe dual alkali injury to the airway and gastrointestinal tract, leading to chemical pneumonitis and aspiration. Aspiration marked a critical turning point, resulting in secondary bacterial pneumonia, sepsis, septic shock, acute kidney injury, hypernatremia and progression to MODS despite intensive care. This case highlights the high lethality of combined inhalational and ingested alkali exposure and underscores the need for early airway protection, aspiration prevention, prompt sepsis recognition and fluid and electrolyte management. Conclusions. Ammonia ingestion in elderly, comorbid patients can rapidly cause deep alkali injury, aspiration pneumonitis, sepsis and organ failure. Early airway assessment and ICU-level monitoring are essential.

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Title: Necrotizing Soft Tissue Infection In 36-Old Male: A Case Report

Author(s): Jakub Winckiewicz

Tutor(s): Sławomir Lech Czaban

Abstract: Streptococcus pyogenes (Group A Streptococcus, GAS) is a Gram-positive bacterium responsible for a wide range of human infections, ranging from mild respiratory illnesses to severe invasive diseases. Among the most life-threatening manifestations are septicemia and necrotizing soft tissue infections (NSTIs), which is characterized by nonspecific clinical presentation, rapid progression, and extensive tissue necrosis. We report the case of a 36-year-old male who developed a necrotizing soft tissue infection (NSTI) with septic shock due to S. pyogenes following a minor thumb injury. The patient initially presented with left shoulder pain and fever, which rapidly progressed to extensive scrotal edema, severe ecchymosis extending to the thorax, and multiorgan dysfunction. Management included immediate surgical intervention, empirical broad-spectrum antibiotic therapy, and intensive care support, including mechanical ventilation, continuous renal replacement therapy (CRRT), and vasopressor therapy. Local wound management followed the TIME framework, including systematic debridement, negative pressure wound therapy (NPWT), and adjunctive hyperbaric oxygen therapy (HBOT). After 61 days of intensive care, the patient achieved clinical stability with successful infection control and was transferred for further treatment. We assessed disease severity and treatment efficacy using the Sepsis-related Organ Failure Assessment (SOFA) and Acute Physiology and Chronic Health Evaluation II (APACHE II) scoring systems. The SOFA score was used to assess and monitor the degree of multiorgan dysfunction, while the APACHE II score provided additional prognostic information. Repeated evaluations facilitated monitoring of the patient's clinical trajectory and response to the implemented comprehensive therapeutic strategy. This case highlights the importance of early recognition, prompt surgical management, and comprehensive multidisciplinary supportive care in the successful treatment of severe S. pyogenes infections.

SESSION
CASE REPORTS 1

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Title: Mistaken Identity or Medical Myth? A Case of Apricot Kernel-Induced Cyanide Toxicity

Author(s): Paweł Niczyporuk, Helena Żórawska

Tutor(s): Dr hab.n.med. Marzena Wojewódzka-Żelezniakowicz

Abstract: Background: In the era of widespread access to information, internet myths regarding alternative treatment methods pose a real threat to patient health. The promotion of so-called "vitamin B17" (amygdalin) as an anti-cancer or prophylactic agent leads to cases of acute cyanide poisoning. We present the case of a patient who suffered intoxication after ingesting a large quantity of apricot kernels, highlighting the need for medical staff awareness regarding atypical etiologies of poisoning and their on-call treatment protocols. Case Description: A 29-year-old patient with no chronic illnesses presented to the Emergency Department (ED) approximately 30 minutes after ingesting about two handfuls of apricot kernels. According to the medical history, the patient claimed to have mistaken them for walnuts; however, the background of the incident suggests the influence of internet myths about vitamin B17. During observation, the patient experienced periodic bradycardia and dyspnea, which required oxygen therapy. Due to the unavailability of immediate blood cyanide level testing, the patient was monitored using serial blood gas analyses. The results indicated high pO2 values (up to 172 mmHg) and oxygen saturation (up to 99.3%), but contrary to expectations, lactate levels remained within the normal range (0.5-2.0 mmol/l). In consultation with the toxicology center in Warsaw, an urgent gastroscopy was performed to aspirate the remnants of ground seeds from the stomach. The patient did not require the administration of hydroxocobalamin (Cyanokit) available on the ward, and after stabilization, was discharged home in good condition. Conclusion: The growing popularity of pseudo-medical myths requires heightened vigilance from ED personnel. This case demonstrates that close cooperation with regional toxicology centers, patient monitoring using basic tools (blood gas analysis every 4 hours), and mechanical evacuation of the toxin via endoscopy allow for the safe and effective treatment of patients with potentially fatal cyanide poisoning.

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Title: Clinical Management of True Heparin Resistance During Continuous Renal Replacement Therapy.

Author(s): Zuzanna Czarnecka

Tutor(s): Mateusz Zawadka MD, PhD

Abstract: Heparin resistance is defined as the inability to achieve adequate anticoagulation despite the appropriate heparin dose. It usually refers to unfractionated heparin (UFH) and implies the need for doses exceeding 35,000 IU/day or >30 IU/kg/h to achieve a therapeutic activated partial thromboplastin time (aPTT). Clinically, it manifests as recurrent thrombosis, despite maintaining target parameters. The etiology of resistance is multifactorial, requiring distinction between two mechanisms. The main cause of true heparin resistance is antithrombin III deficiency (congenital or acquired). In true resistance, heparin is ineffective despite high doses, manifesting as shortened aPTT, low anti-Xa activity, and clinical thrombosis. This must be distinguished from pseudo-resistance, where despite an shortened aPTT, the patient has therapeutic drug concentrations, confirmed by a normal anti-Xa activity. This case highlights the value of rapid diagnosis of heparin resistance and anticoagulant therapy monitored by anti-Xa levels. A 21-year-old male with class III obesity was transported to the ICU with multiple organ failure due to alcohol-induced necrotizing acute pancreatitis. The patient was in critical condition, requiring vasopressors to maintain MAP > 65 mmHg. Anuria necessitated continuous veno-venous hemodialysis (CVVHD) with regional citrate anticoagulation. After the circuit clotted twice on the day 1, UFH was added. Despite high dose, clotting recurred. D-dimers were unmeasurable (above detection limit), and aPTT results were within the normal range. Tests revealed antithrombin III deficiency and low anti-Xa activity. UFH was discontinued, and low-molecular-weight heparin (LMWH) was initiated. LMWH administration under anti-Xa monitoring allowed for a stable anticoagulation. On day 19, the patient was transferred for further treatment in stable condition, hemodynamically stable, conscious, with restored diuresis, and without thrombosis recurrence. Recurrent clotting of the continuous renal replacement therapy (CRRT) circuit, despite citrate anticoagulation, should be considered a signal suggesting hypercoagulability and possible heparin resistance. It must be noted that in patients with severe inflammation and high inflammatory parameters, aPTT may be an inadequate indicator for monitoring heparin efficacy. Proper management in this patient group requires monitoring anti-Xa levels to avoid therapeutic errors resulting from pseudo-resistance.

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Title: Metabolic and Calcium-Phosphate Dysregulation in a 39-Year-Old Patient with 22q11.2 Deletion Syndrome.

Author(s): Weronika Dwojak

Tutor(s): Mgr. Milena Małecka-Giełdowska, Prof. dr hab. n. med. i n. o zdr. Olga Ciepiela

Abstract: Introduction: The 22q11.2 deletion syndrome is one of the most common chromosomal microdeletions and includes a wide spectrum of disorders collectively known as DiGeorge syndrome. Parathyroid hormone deficiency leads to disturbances in calcium–phosphate metabolism, resulting in chronic hypocalcemia and hyperphosphatemia, which promote deposition of calcium–phosphate salts in tissues. Case report: A 39-year-old man was admitted for evaluation of metabolic disturbances and calcium–phosphate imbalance. He had a myocardial infarction in 2021. Genetic testing revealed a 22q11.2 microdeletion with congenital hypoparathyroidism. Laboratory findings showed progressive destabilization of calcium–phosphate homeostasis with persistently low PTH levels (2022 – 12.00 pg/ml, 2023 – 12.20 pg/ml, 2024 – 12.30 pg/ml, 2025 – 8.30 pg/ml, 2026 – 12.1 pg/ml; reference: 15.00–65.00 pg/ml). Serum calcium levels fluctuated between 1.62 mmol/l and a critically low 1.53 mmol/l, confirming hypocalcemia (reference: 2.15–2.50 mmol/l). Chronic kidney disease was diagnosed (stage G3a, eGFR 45 ml/min/1.73 m², creatinine 1.48 mg/dl). Biochemical tests showed low total cholesterol (116 mg/dl) and HDL (32 mg/dl). Assessment of mineral metabolism revealed a dissociation between increased bone mass and its structural quality, with rising bone mineral density over six years. Elevated FGF-23 levels (up to 157.8 pg/ml) indicated strong activation of the bone–kidney axis. This likely acted as a compensatory mechanism against hyperphosphatemia, confirmed by significant hyperphosphaturia (59 mmol/24 h; reference up to 42 mmol/24 h). Imaging demonstrated basal ganglia calcifications characteristic of Fahr syndrome, along with features of metabolic syndrome, including obesity, hypertension, hyperlipidemia, and impaired fasting glucose. Conclusions: Long-term follow-up showed persistent hypocalcemia despite treatment, indicating limited metabolic compensation in hypoparathyroidism. Progressive kidney disease and increased FGF-23 levels highlighted ongoing bone–kidney axis activation. Clinically, this led to complications such as Fahr syndrome and premature cardiovascular disease, including myocardial infarction. Comprehensive monitoring of calcium–phosphate balance and cardiovascular risk factors is essential in these patients.

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Title: Pain Relief with a Hidden Cost: Meloxicam-Induced Hypertension Exacerbation

Author(s): Karolina Połubińska, Julia Garkowska, Paulina Jędrusik

Tutor(s): prof. dr hab. Edyta Zbroch

Abstract: Introduction: Nonsteroidal anti-inflammatory drugs (NSAIDs) are commonly used in the treatment of pain and inflammation. These medications can disrupt the mechanisms regulating renal hemodynamics, leading to an increase in blood pressure and worsening control of hypertension. Case presentation: A 58-year-old woman with a several-year history of arterial hypertension (previously well controlled with angiotensin-converting enzyme inhibitor monotherapy) was admitted to the Department of Hypertension and Internal Medicine due to markedly elevated blood pressure values (210/100 mmHg).Several weeks prior to hospitalization, the patient had been diagnosed with shoulder neuralgia in an outpatient setting and was prescribed a nonsteroidal anti-inflammatory drug (meloxicam).Laboratory investigations revealed mild hypokalemia (3.4 mmol/L) and elevated inflammatory markers (C-reactive protein [CRP] 13.63 mg/L, fibrinogen 401 mg/dL).Ambulatory blood pressure monitoring (ABPM) demonstrated increased mean arterial pressure: 180/97 mmHg (daytime: 182/100 mmHg, nighttime: 178/93 mmHg), with a preserved non-dipper profile.No significant arrhythmias were observed on Holter electrocardiographic monitoring.In the differential diagnosis, other causes of worsening blood pressure control were excluded, including renal artery stenosis.Management included discontinuation of NSAID therapy and modification of antihypertensive treatment in accordance with the Polish Society of Hypertension guidelines, by introducing a fixed-dose combination of an angiotensin-converting enzyme inhibitor and a thiazide-like diuretic.This resulted in a significant reduction of blood pressure to normotensive values. Conclusion This case highlights the need to consider the potential impact of nonsteroidal anti-inflammatory drugs (NSAIDs) on blood pressure levels, particularly in patients with pre-existing arterial hypertension. A thorough medical history is essential, along with careful assessment of comorbidities prior to initiating therapy. Patient education regarding the risk of blood pressure elevation during NSAID use is crucial, as is close monitoring of blood pressure following the introduction of a new medication.

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Title: When Hypertrophy Is Not Hypertensive: Multimodality Diagnosis of Primary Amyloidosis

Author(s): Stanisław Pankiewicz, Mateusz Zambrowski, Piotr Poznalski, Michalina Anna Majzit, Piotr Kazberuk

Tutor(s): Paweł Muszyński, MD, PhD

Abstract: Background Cardiac amyloidosis is an increasingly recognised cause of heart failure with preserved ejection fraction (HFpEF). Extracellular deposition of misfolded immunoglobulin light chains leads to progressive myocardial infiltration, restrictive cardiomyopathy and multiorgan dysfunction. Recent evidence suggests that cardiac amyloidosis may be responsible for previously unexplained HFpEF cases, especially in patients with increased left ventricular wall thickness. Case presentation A 65-year-old man with hypertension, hypercholesterolemia and multinodular goitre was admitted due to progressive exertional dyspnea and peripheral oedema. Several months earlier, he had been hospitalised for severe purulent cholecystitis complicated by septic shock caused by Streptococcus pyogenes. Laboratory tests revealed elevated NT-proBNP, macrocytic anemia and mildly increased troponin T without dynamic changes. The coexistence of disproportionate myocardial hypertrophy, diastolic dysfunction, elevated cardiac biomarkers and systemic manifestations raised suspicion of infiltrative cardiomyopathy. Transthoracic echocardiography demonstrated concentric left ventricular hypertrophy (maximal wall thickness approximately 20 mm), severe diastolic dysfunction with preserved ejection fraction (EF 50%) and a characteristic apical sparing pattern on longitudinal strain imaging. Cardiac magnetic resonance imaging confirmed diffuse myocardial involvement. Circumferential subendocardial late gadolinium enhancement was revealed in the left ventricle. There was also less pronounced enhancement in the right ventricle and thickening of the interatrial septum (6–7 mm). These findings strongly suggest amyloid infiltration. Further blood evaluation demonstrated monoclonal gammopathy with elevated free light chains (κ 92.49 mg/L, λ 145.66 mg/L). Serum immunofixation revealed both IgG lambda and kappa monoclonal components, while urine immunofixation detected monoclonal κ light chains. Gastric mucosal biopsy revealed amyloid infiltration of the lamina propria, confirming primary systemic amyloidosis with cardiac (combined echo and MRI images), renal (proteinuria ~900 mg/day), and hepatic involvement (significantly elevated ALP), corresponding to Mayo stage IIB. The patient was qualified for chemotherapy with the bortezomib–cyclophosphamide–dexamethasone (VCd) regimen. The patient underwent 4 courses of chemotherapy. Before 5th, he was hospitalised due to heart failure decompensation and died. Conclusion This case highlights the importance of determining the aetiology of cardiac hypertrophy. Despite available treatment prognosis in primary amyloidosis remains unfavourable.

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Title: Transthyretin Cardiac Amyloidosis as a Hidden Cause of HFpEF: Diagnostic Pitfalls and Therapeutic Advances

Author(s): Patrycja Oliwia Lipska, Wiktoria Urszula Kozłowska

Tutor(s): Emil Julian Dąbrowski, MD, PhD; Marcin Kożuch, MD, PhD

Abstract: Transthyretin cardiac amyloidosis (ATTR-CM) is a progressive infiltrative cardiomyopathy that remains underdiagnosed, particularly among elderly patients with heart failure with preserved ejection fraction (HFpEF). Its clinical presentation is often subtle and overlaps with common cardiovascular conditions, leading to frequent misclassification and delayed diagnosis. Increasing attention has been directed toward identifying “red flags,” such as unexplained left ventricular hypertrophy, discordance between imaging and electrocardiographic findings, atrial fibrillation, or coexistence of valvular disease. Failure to recognize these features contributes to diagnostic delay and limits the opportunity for early disease-modifying treatment. An 85-year-old woman with suspected aortic stenosis, permanent atrial fibrillation, and HFpEF was admitted due to a two-month history of exertional dyspnea (NYHA II), with partial improvement observed after discontinuation of antihypertensive therapy two weeks earlier. Her past medical history included left hip alloplasty and pyoderma gangrenosum. On physical examination, a systolic murmur, mild peripheral edema, and skin ulcerations were noted. Laboratory findings revealed elevated NT-proBNP (2728.7 pg/mL) and high-sensitivity troponin (32 ng/L). Electrocardiography showed atrial fibrillation with a mean QRS rate of 78 bpm and a normal axis. Transthoracic echocardiography demonstrated significant left ventricular hypertrophy, biatrial dilation, moderate aortic stenosis, and a hyperkinetic left ventricle with low cardiac output (EF 80%). Additional investigations, including tests recommended in the diagnostic workup of ATTR-CM such as assessment of serum and urine free light chains, revealed mildly elevated urine free lambda chains and serum IgA levels, which were attributed to chronic pyoderma gangrenosum. In the presence of multiple red flags suggestive of cardiac amyloidosis, bone scintigraphy was performed and confirmed ATTR-CM (grade 3 uptake). Genetic testing was initiated to distinguish between hereditary and wild-type ATTR-CM. The patient was referred for evaluation of disease-modifying therapy. This case highlights the importance of clinical vigilance and awareness of red flags in patients with HFpEF and coexisting structural and electrical abnormalities. Despite a clinical picture that could be attributed to common conditions such as aortic stenosis or atrial fibrillation, further diagnostic evaluation enabled correct identification of ATTR-CM. Early diagnosis is crucial given the expanding treatment options. Tafamidis remains the standard therapy, while newer agents such as acoramidis have shown benefits in reducing all-cause mortality and cardiovascular hospitalizations. In addition, therapies targeting transthyretin production, such as vutrisiran, represent an alternative approach. These advances emphasize the need for timely diagnosis and appropriate patient selection for targeted treatment.

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Title: The Use of an Autonomous Transcranial Doppler Measuring Robot Improves Cerebral Blood Flow Management During Anesthesia for Cardiac Surgery: A Case Report.

Author(s): Kacper Borawski

Tutor(s): dr hab. n. med. Piotr Jakubów

Abstract: Background Neurological complications remain a major concern in complex cardiac surgery requiring extracorporeal circulation and circulatory arrest. Both cerebral hypoperfusion and hyperperfusion may contribute to perioperative brain injury. Standard monitoring modalities, such as cerebral oximetry and arterial pressure measurements, provide indirect information about cerebral perfusion and may not adequately reflect real-time cerebral blood flow. Aim: We present a case of central nervous system (CNS) monitoring using an Autonomous Robotic Transcranial Doppler (ARTCD) system to optimize cerebral blood flow (CBF) and minimize the risk of neurological deficits during complex cardiac surgery. Case Presentation: A 60-year-old male patient presented with an aneurysm of the ascending aorta and the aortic arch. The surgical procedure included the replacement of the aortic arch, the brachiocephalic trunk, and both carotid arteries. The patient underwent a standard anesthetic protocol involving propofol, sevoflurane, sufentanil, and rocuronium. Advanced intraoperative monitoring consisted of cerebral oximetry, bilateral radial artery pressure, and the ARTCD system. Neuroprotection was maintained via local pharmacotherapy standards, hypothermia, and selective antegrade cerebral perfusion (ACP) according to the Kazui method, utilizing Alpha-Stat acid-base balance. Results: Intraoperative analysis demonstrated that standard monitoring methods, such as cerebral pulse oximetry and invasive pressure measurements (radial arteries and perfusion cannula), were inadequate for accurately reflecting the actual cerebral flow during extracorporeal circulation (ECC). Real-time ARTCD imaging revealed that the initial ACP flow rate of 10 ml/kg/min, calculated using the Kazui method, resulted in cerebral hyperperfusion. A subsequent 20% reduction to 8 ml/kg/min led to demonstrable hypoperfusion. Based on ARTCD data, the optimal flow was ultimately adjusted to 8.6 ml/kg/min, representing a 14% reduction from the original Kazui algorithm. Postoperative neurological assessments on days 3 and 7 confirmed the absence of any neurological deficits. Conclusions: The application of ARTCD monitoring in complex cardiac surgeries allows for the direct, real-time visualization of cerebral blood flow, enabling precise hemodynamic adjustments. This technology overcomes the limitations of standard flow-calculation algorithms and serves as a critical tool in the prevention of perioperative neurological complications

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Title: End-stage heart failure with coexistence of severe valvular disease in an elderly patient with extreme operation risk

Author(s): Mateusz Zambrowski, Stanisław Pankiewicz, Joanna Kruszyńska, Piotr Kazberuk, Emilia Świenc

Tutor(s): Paweł Muszyński, MD, PhD

Abstract: Background Despite the continuous development of the treatment, heart failure remains a significant medical problem with a serious prognosis. The mortality is very high, especially in patients over 75 years old, reaching up-to 50% in a 5-year follow-up. The presence of comorbidities in elderly patients additionally complicates the outcome and limits the therapeutic options. Case report An 81-year-old male with diabetes mellitus type 2 and chronic heart failure was admitted to the clinic due to dyspnoea. The patient previously underwent many cardiovascular procedures, including CABG (LIMA-LAD, PCI GO+DES), percutaneous coronary interventions, and implantation of a cardiac pacemaker. The ECG showed the sinus rhythm and ventricular stimulation with a wide QRS complex. Echocardiography showed dilatation of the cardiac cavities with severely reduced left ventricular ejection fraction (12%) and severe mitral and tricuspid regurgitation. Angio-CT rule out pulmonary embolism. The patient underwent innovative diuretic therapy and optimisation of pharmacotherapy (addition of ARNI and MRA). The extremely high risk of cardiac surgery limited the possible interventions (EUROSCORE II 41.42 %), and the availability of heart transplants remains low. The patient was qualified for coronary angiography to exclude ischemic heart disease as a cause of left ventricular deterioration and to upgrade of cardiac stimulation to cardiac resynchronisation therapy. Conclusions The end-stage heart failure with coexistence of valvular disease remains a challenge among elderly patients. The treatment options are limited due to the potential high procedural risk.

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Title: Anomalous Origin of the Left Coronary Artery from the Right Sinus: A Rare Trigger for Ventricular Arrhythmia.

Author(s): Jakub Bondaruk, Kacper Fałkowski

Tutor(s): dr Emil Julian Dąbrowski

Abstract: Abstract Background Anomalous aortic origin of the coronary arteries (AAOCA) is one of the congenital anomalies of the coronary arteries and is characterized by the abnormal origin of the coronary arteries from the aortic root. The prevalence is estimated to be <1% of the general population, despite a higher prevalence among patients with other congenital heart defects. The increasing use of advanced cardiac imaging techniques has led to more frequent detection of these anomalies. AAOCA is more commonly observed among young (<35 years) victims of sudden cardiac death, often during or shortly after exercise. Although many patients are asymptomatic, symptoms associated with AAOCA may resemble those of other cardiovascular diseases, making it difficult to make an accurate diagnosis. Case study A 51-year-old patient with a history of long-term nicotine usage and COPD, with numerous cardiovascular risk factors, heart palpitations during exertion and exertional dyspnea (NYHA class II) was admitted to the Invasive Cardiology Department for further diagnostics. At admission patient was asymptomatic in good general condition. An ECG and Echocardiography examination showed no abnormalities,ejection fraction was 55%. Due to the absence of typical anginal symptoms an exercise stress test according to Bruce protocol was performed, which was terminated due to ventricular arrhythmia in the form of premature ventricular contractions with bigeminy at peak exertion. Moreover, no significant changes were observed in the ECG during stress test and patient did not report any cardiac symptoms. 24h ECG monitoring did not reveal any significant abnormalities. The presence of ventricular arrhythmia during exertion implied further diagnostic evaluation with invasive coronary angiography to assess potential ischemic etiology. A coronary angiography was performed which revealed non significant changes in LCA and anomalous origin of the right coronary artery arising from the left aortic sinus. Due to insufficient visualization of the RCA in coronary angiography, it was decided to perform angio-CT which showed anomalous origin of the RCA originating from the left aortic sinus, with narrowing of the initial segment, which courses between the aorta and pulmonary trunk, directly anterior to the origin of the left coronary artery. In view of the CT coronary angiography findings indicating high-risk anatomical variant and symptoms, the Heart Team decided to proceed with surgical treatment. Conclusions AAOCA presents in many variants, resulting in variable clinical courses. Treatment approaches and current guidelines are not specific, leading to individual approach to every case. The presented patient presented high risk anatomy variant of AAOCA with atypical symptoms, which was an indication for surgical treatment.

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Title: A Single Dose, Severe Consequences: Testosterone-Associated Dilated Cardiomyopathy and Heart Failure

Author(s): Michał Mańkowski, Agata Pieńkos, Izabela Majewska

Tutor(s): Dr. Piotr Sielatycki, PHD, Professor Edyta Zbroch, PHD

Abstract: Objective This case report describes a patient with hypertension and dilated cardiomyopathy, potentially linked to testosterone administration. Testosterone use is associated with an increased risk of cardiovascular complications. The occurrence of dilated cardiomyopathy in younger individuals presents a considerable diagnostic challenge, particularly when severe heart failure develops. Design and Methods This is a case report of a male patient admitted with severe hypertension, likely related to recent testosterone injection. The report analyzes clinical symptoms and the diagnostic process undertaken. Results A 41-year-old man with no prior chronic illnesses was admitted to the Department of Hypertension, Gastroenterology, and Internal Medicine due to persistently elevated blood pressure (~200/140 mmHg) over several days, accompanied by dyspnea and chest pain. He reported administering intramuscular testosterone for the very first time three weeks earlier. Laboratory findings showed elevated liver enzyme levels, increased creatinine concentration, and persistently elevated high-sensitivity troponin. ECG revealed sinus tachycardia. Echocardiography demonstrated dilation of the left heart chambers, reduced left ventricular ejection fraction (LVEF 33%), widespread wall motion abnormalities, and the presence of a left ventricular thrombus. Anticoagulation and antihypertensive therapy were initiated. The patient was subsequently transferred to the Department of Invasive Cardiology. Coronary angiography showed no significant coronary artery disease. Cardiac magnetic resonance imaging confirmed a further reduced LVEF (20%) and identified intramyocardial fibrosis involving approximately 10% of the left ventricular mass, located in the interventricular septum and inferior wall. Holter ECG monitoring indicated intraventricular conduction disturbances. Heart failure treatment was optimized. The patient received low-molecular-weight heparin followed by rivaroxaban. Although initially considered for implantable cardioverter-defibrillator placement, improvement in LVEF led to withdrawal from this treatment option. Conclusions The temporal association between testosterone administration and the rapid development of severe heart failure, dilated cardiomyopathy, and myocardial injury suggests that testosterone may trigger serious cardiovascular complications, even in previously healthy individuals.

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Title: The decisive role of thrombectomy in multifactorial Acute Kidney Injury; a case report

Author(s): Anna Maria Modzelewska

Tutor(s): dr. hab. Grzegorz Młynarczyk

Abstract: Background: Acute kidney injury (AKI) typically arises from a confluence of multiple contributing factors, some of which may be clinically rare. Among these, renal vein thrombosis (RVT) represents an uncommon yet potentially devastating condition, with only a few documented cases linked to urinary tract infection (UTI) and acute nephrolithiasis. While endovascular therapy has been identified as an effective intervention, the scarcity of literature on its application in such contexts prompted us to highlight its role. This case emphasizes the critical importance of selecting advanced therapeutic options to successfully preserve renal perfusion and function in complex clinical scenarios. Case presentation: A 42-year-old woman was admitted with right flank pain, fever, and acute nephrolithiasis due to a ureteral stone. Despite appropriate urinary tract decompression and targeted antibiotic therapy, her clinical status worsened. Contrast-enhanced imaging demonstrated acute right-sided RVT with impaired renal perfusion. Taking into consideration patient's rapidly declining state and the failure of conservative management an endovascular treatment was commissioned. Urgent endovascular thrombectomy partially restored venous outflow and renal perfusion, followed by stabilization of kidney function. The patient was discharged in good clinical condition on non–vitamin K antagonist oral anticoagulant (NOAC). Conclusion: Anticoagulation remains the cornerstone of RVT management; however, this case demonstrates that endovascular thrombectomy can be a highly effective strategy in selected patients with a dangerously worsening clinical status. Early imaging of the renal vasculature and timely endovascular intervention may be crucial to prevent irreversible renal damage and optimize outcomes in selected patients with infection and obstruction related RVT. In our patient, this intervention proved to be a successful therapy that facilitated the return of normal renal function. Timely recognition of renovascular complications and a personalized approach to invasive treatment are essential for optimizing outcomes in complex cases of infection-related RVT.

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Title: Culture-Negative Endocarditis of an Aortic Bioprosthesis Presenting with Complete Heart Block

Author(s): Paweł Szutko, Maria Inga Masłowska, Marta Jamiołkowska, Mateusz Stanisław Mazurczak

Tutor(s): dr hab. n. med. Anna Lisowska

Abstract: Introduction: Infective endocarditis (IE) continues to be a life-threatening condition associated with considerable mortality and severe structural complications. With an estimated annual incidence of 15 per 100,000 individuals, the growing prevalence of surgical valve replacements has made prosthetic heart valves a prominent risk factor. A notable and dangerous complication of IE is the development of atrioventricular (AV) conduction abnormalities. Consequently, diagnosing and managing prosthetic valve endocarditis remains a critical issue in modern cardiology. Case report: We present the case of a 63-year-old male admitted to the cardiology ward with a one-week history of worsening dyspnea and generalized weakness. His medical background included arterial hypertension, a 2016 NSTEMI, multiple percutaneous coronary interventions (most recently in 2017), left renal cancer managed urologically, and surgical aortic valve replacement with a bioprosthesis in 2021 due to severe stenosis. Upon physical examination, bilateral lower extremity edema and crackles over the right lung field were noted. An electrocardiogram revealed a third-degree AV block with a ventricular escape rhythm of 50 bpm (confirmed for the first time). Laboratory analyses demonstrated elevated inflammatory and cardiac markers (CRP 60.7 mg/L, NT-proBNP 6784 pg/mL, leukocytosis 10.97 x10^3/µL) alongside impaired renal function (creatinine 2.14 mg/dL, urea 108 mg/dL). Transthoracic echocardiography (TTE) showed structural degeneration and dysfunction of the aortic bioprosthesis, accompanied by a dilated ascending aorta (48 mm), moderate mitral regurgitation, mild tricuspid regurgitation, and an intermediate probability of pulmonary hypertension. Although blood cultures yielded no growth, transesophageal echocardiography (TEE) identified a periannular root abscess adjacent to the non-coronary cusp and severe prosthetic stenosis, strongly suggesting IE. Meeting the criteria for possible IE according to the Duke classification, the patient was started on empiric intravenous vancomycin and gentamicin, supported by a salbutamol infusion. He was urgently referred for surgery, undergoing a modified Bentall procedure with the implantation of a new bioprosthetic aortic valve within a vascular graft and coronary ostia reimplantation. Epicardial leads were placed during surgery, and due to a lack of AV conduction recovery, a permanent pacemaker was implanted 10 days postoperatively. Conclusions: This case highlights the indispensable role of advanced echocardiography in diagnosing culture-negative infective endocarditis. Even in the absence of positive blood cultures, a major diagnostic criterion, TEE facilitated a rapid and accurate diagnosis. This allowed for the timely initiation of life-saving targeted therapy and urgent cardiac surgery in a patient initially referred solely for pacemaker implantation due to complete heart block.

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Title: Convulsive syncope due to ventricular tachycardia mimicking epilepsy: a case report of diagnostic challenge

Author(s): Justė Šimonytė, Indrė Kukanauskaitė

Tutor(s): Assoc. prof. dr. Neringa Balčiūnienė

Abstract: INTRODUCTION. Transient loss of consciousness (TLOC) is most commonly caused by syncope or epileptic seizures. Differentiating between these conditions is challenging because cerebral hypoperfusion during syncope may produce convulsive movements mimicking epilepsy. As a result, cardiac syncope may be misdiagnosed for years, delaying treatment and increasing the risk of life-threatening events. CASE PRESENTATION. An 80-year-old man was admitted after sudden loss of consciousness during a scheduled neurology consultation. His medical history included heart failure with reduced ejection fraction, chronic atrial fibrillation, arterial hypertension, ischemic heart disease and metastatic renal cell carcinoma. Due to recurrent syncopal episodes, a VVIR pacemaker had been implanted in 2024. Since 2021 the patient had experienced recurrent episodes of TLOC interpreted as epileptic seizures. In 2024 epilepsy was diagnosed after a convulsive episode with post-event confusion, although EEG showed no epileptiform activity. Antiepileptic therapy was initiated and later adjusted; despite therapeutic drug levels, episodes persisted. In January 2026 the patient collapsed in the neurology clinic waiting area. On initial assessment he was unconscious (GCS 3) but breathing spontaneously with a palpable carotid pulse. Shortly after admission to the ICU, cardiac monitoring revealed ventricular tachycardia progressing to electromechanical dissociation. Cardiopulmonary resuscitation was initiated and spontaneous circulation returned after approximately one minute. Laboratory tests and cardiac biomarkers did not indicate acute myocardial injury, while brain imaging showed no acute intracranial pathology. Considering the documented ventricular arrhythmia and clinical presentation, the previously diagnosed “epileptic seizures” were reconsidered as convulsive syncope caused by ventricular tachycardia. DISCUSSION. Convulsive syncope is a frequent cause of epilepsy misdiagnosis. Transient cerebral hypoperfusion may produce tonic or myoclonic movements, eye deviation, urinary incontinence and post-event confusion, closely resembling epileptic seizures. This clinical overlap may result in diagnostic delay. Certain clinical features should raise suspicion of a cardiac origin of apparent seizures: sudden onset without aura, short duration, rapid recovery and the presence of structural heart disease. Ventricular tachycardia is particularly important, as it may cause hemodynamic collapse and sudden cardiac death if untreated. CONCLUSIONS. Convulsive syncope caused by ventricular tachycardia may mimic epileptic seizures and lead to diagnostic delay. In patients with recurrent unexplained loss of consciousness, particularly those with structural heart disease, cardiac causes should always be considered even when epilepsy has previously been diagnosed. Early cardiovascular evaluation, including rhythm monitoring, is essential to avoid misdiagnosis and prevent fatal arrhythmias.

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Title: Rapidly progressive aortic valve infective endocarditis complicated by severe secondary mitral regurgitation and tricuspid regurgitation

Author(s): Wojciech Olszewski, Wiktoria Mazepa

Tutor(s): dr n. med. Anna Kaźmierczak-Dziuk

Abstract: Introduction Infective endocarditis (IE) remains a significant therapeutic challenge due to rapid progression, high risk of complications, mortality (20-30%), and prolonged antibiotic therapy. The complex pathomechanism includes valvular tissue destruction caused by bacterial vegetations. Treatment is crucial given the possibility of complications, such as subsequent valve regurgitation and secondary acute heart failure. Aortic valve infective endocarditis (AVIE) and its subsequent regurgitation could result in secondary regurgitation of other valves. We present a clinical image of the successful treatment of AVIE complicated by secondary mitral (MR) and tricuspid regurgitation (TR). Case presentation A 55-year-old male, with a history of embolized subarachnoid hemorrhage and bacteriemia caused by Staphylococcus Aureus a month before the hospitalization, was admitted to the cardiology department due to suspicion of IE. The patient reported reduced exercise tolerance, orthopnoea, and sharp chest pain. On admission, the patient was hemodynamically stable, and the auscultation revealed a loud systolic murmur. In electrocardiography, T-waves were inverted in V1-V4 leads. Transthoracic echocardiography (TTE) and transesophageal echocardiography (TEE) revealed a destruction of the right coronary leaflet of the aortic valve in the setting of AVIE, pseudoprolapse of the anterior leaflet of the mitral valve with severe MR, and severe TR. However, both valves demonstrated no suggestive features of IE. An ejection fraction was 47%. Due to sterile blood cultures, an empiric antibiotic therapy with gentamicin, cloxacillin, and ampicillin was initiated. Following the multidisciplinary Heart Team evaluation, the patient was scheduled for cardiac surgery. Searching for a potential source of infection, a maxillofacial computed tomography (CT) scan was performed, which revealed four teeth as active and two as a potential source of infection, therefore dental clearance was performed. A month after admission, cardiac surgery was performed under cardiopulmonary bypass. The patient underwent mechanical aortic and mitral valve replacement, along with tricuspid annuloplasty. Following the procedure, the patient remained hemodynamically and respiratory stable. Postoperative and 3-month follow-up TTE findings were unremarkable. Conclusions AVIE could rapidly cause a secondary regurgitation of other valves, therefore serial echocardiographic monitoring of all valves and regular clinical assessment are absolutely crucial. Additionally, active screening for primary sources of infection is essential to ensure their prompt eradication. Our case also emphasizes the role of Heart Teams, comprising cardiologists, cardiac surgeons, and intensive care specialists, which provide significant support in the management of challenging patients with IE.

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Title: Combined triple therapy and lipoprotein apheresis in treatment of familial hypercholesterolaemia with coexistence of extreme elevation of lipoprotein (a)

Author(s): Piotr Poznalski, Stanisław Pankiewicz, Mateusz Zambrowski, Emilia Świenc, Michał Gorlo

Tutor(s): Paweł Muszyński

Abstract: Familial hypercholesterolemia (FH) and elevated lipoprotein(a) [Lp(a)] are independent genetic risk factors for premature atherosclerotic cardiovascular disease. Their coexistence markedly accelerates the progression of coronary artery disease and significantly increases residual cardiovascular risk despite intensive lipid-lowering therapy. Case Report: A 59-year-old man with chronic coronary syndrome and familiar hypercholesterolemia diagnosed basing on the Dutch Lipid Clinic Network criteria (11 points) was referred to the Department of Cardiology, Lipidology and Internal Diseases due to failure to achieve LDL-C targets despite maximal standard therapy. His medical history included three myocardial infarctions (the first at age 37), prior coronary artery bypass grafting, and carotid artery stenosis. On treatment with rosuvastatin 40 mg and ezetimibe 10 mg, LDL-C remained 171 mg/dL, with an estimated untreated LDL-C of 564 mg/dL. The physical examination revealed Achilles tendon xanthoma which was confirmed by ultrasonography. Next-generation sequencing identified a heterozygous LDLR mutation (c.1775G>A; p.Gly592Glu). Lp(a) concentration was markedly elevated at 185 mg/dL. Inclisiran therapy (284 mg) was added, resulting in LDL-C reduction to 80 mg/dL after six months; however, Lp(a) increased to 251 mg/dL. Due to extremely high cardiovascular risk and failure to achieve the LDL-C goal (<40 mg/dL), lipoprotein apheresis was initiated. After two biweekly procedures, LDL-C decreased to 26 mg/dL with a simultaneous 66.5% reduction in Lp(a). Conclusion: The coexistence of familial hypercholesterolemia and markedly elevated Lp(a) leads to aggressive premature atherosclerosis and often requires multimodal treatment. This case highlights the importance of comprehensive lipid diagnostics and demonstrates the role of lipoprotein apheresis when pharmacological therapy alone is insufficient to achieve therapeutic targets.

SESSION
CASE REPORTS 2

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Title: Severe Recurrent Major Depressive Disorder in a Patient with Early-Stage Breast Cancer: A Diagnostic Challenge

Author(s): Elija Jankauskaitė

Tutor(s): Algirdas Musneckis, MD

Abstract: Introduction Depressive symptoms are frequently seen in patients with cancer and are usually interpreted as an expected psychological response to the diagnosis and treatment. In patients with a known psychiatric history, this interpretation may be problematic, as depressive symptoms can overlap with pre-existing mental illness and mask the need for targeted psychiatric care. Case Report The patient is a woman with a history of recurrent Major Depressive Disorder and a previous diagnosis of early-stage breast cancer. She perceived the cancer as detected at an early and potentially curable stage and reported minimal anxiety related to the oncological diagnosis. In contrast, her main source of distress was a persistent depressive episode, characterized by anhedonia, psychomotor slowing, fatigue, and a significant decline in daily functioning. Similar depressive episodes had occurred prior to the cancer diagnosis, with periods of full remission in between. The main clinical challenge was to distinguish whether the current symptoms represented a psychological reaction to the cancer diagnosis or a recurrence of Major Depressive Disorder. Given the severity and persistence of depressive symptoms, their limited relation to cancer-related stressors, and the patient's previous psychiatric history, a diagnosis of a severe depressive episode was considered most likely. As the initial response to standard antidepressant therapy was inadequate, psychiatric treatment was gradually intensified. This included combination pharmacotherapy, augmentation strategies, and later the introduction of intranasal esketamine. The main treatment aim was to achieve sufficient control of depressive symptoms and preserve the patient's functional status during ongoing oncological treatment, while minimizing the risk of clinically relevant drug interactions. Conclusions This case illustrates that depressive symptoms in oncology patients, particularly those with a prior mood disorder, require careful diagnostic consideration. Symptoms arising during cancer treatment should not automatically be viewed as an adjustment reaction, as they may indicate a recurrence of a primary psychiatric illness requiring timely and appropriate psychiatric care.

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Title: Sarcomatoid Transformation in Prostate Adenocarcinoma with Chondrosarcomatous Component

Author(s): Agata Zięba

Tutor(s): Agata Piłaszewicz-Puza MD

Abstract: Background Sarcomatoid carcinoma of the prostate is a rare malignant tumor of the prostate characterized by biphasic histological differentiation, combining carcinomatous and sarcomatoid elements. Its heterogeneous morphology and aggressive biological behavior make clinical management particularly challenging. Sarcomatoid carcinoma of the prostate can affect both middle-aged and elderly men. Patients most commonly present with lower urinary tract symptoms, including storage symptoms such as urinary frequency, urgency, dysuria, and nocturia, as well as voiding symptoms such as weak urinary stream, hesitancy, terminal dribbling, and a sensation of incomplete bladder emptying. Case A 75-year-old man with a history of cardiovascular disease, including a prior ischemic stroke treated with carotid artery stenting, presented with progressively rising prostate-specific antigen (PSA) levels, initially reaching 5.56 ng/mL, which prompted evaluation with multiparametric magnetic resonance imaging (mpMRI) of the prostate.Imaging revealed a focal lesion in the transition zone, classified as PI-RADS 4, indicative of a high likelihood of clinically significant prostate cancer. A targeted biopsy was performed, and histopathological examination demonstrated Sarcomatoid adenocarcinoma of the prostate gland. On admission, the patient reported lower urinary tract symptoms, including dysuria and urinary incontinence, despite ongoing tamsulosin therapy, with a measured PSA of 6.67 ng/mL. Prior to surgical intervention, he received neoadjuvant radiochemotherapy. Subsequently, he underwent transurethral resection of the prostate (TURP) to relieve bladder outlet obstruction. Histopathological analysis of the resected tissue confirmed adenocarcinoma with a Gleason score of 4+3, consistent with intermediate-grade disease exhibiting potential aggressiveness and an unfavorable prognostic profile. Follow-up serum PSA measurement after TURP demonstrated a decrease to below 4 ng/mL. Conclusion Sarcomatoid adenocarcinoma of the prostate is a rare and biologically aggressive variant of prostate cancer, associated with rapid progression and unfavorable clinical outcomes. Prognosis is highly stage-dependent, with organ-confined disease demonstrating the most favorable outcomes (≥5 years), whereas locally advanced tumors with bladder invasion and metastatic disease are associated with markedly reduced overall survival, averaging 9 and 7 months, respectively. Prompt and precise histopathological diagnosis is essential for guiding therapeutic decisions. A multimodal treatment approach, incorporating neoadjuvant radiochemotherapy and surgical interventions such as TURP for the relief of obstruction, may improve local disease control and patient symptoms. Due to the rarity of this variant, further research is necessary to better define optimal management strategies and long-term clinical outcomes.

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Title: Appendiceal neurofibromatosis masquerading as acute appendicitis

Author(s): Dominik Czarnomski, Maja Janowska, Ewa Zalewska, Jakub Szczerbicki

Tutor(s): Kamil Waczyński MD

Abstract: Background: Neurofibromatosis is an autosomal dominant multisystem genetic disorder, typically characterized by cutaneous, neurological, and skeletal manifestations. Gastrointestinal involvement is uncommon and manifests as neurofibromas of the stomach or intestines. Isolated appendiceal neurofibromatosis, particularly presenting as an inflammatory process in an adult with no prior diagnosis, or classic clinical stigmata of the disease is exceedingly rare. This report describes an unexpected histopathological diagnosis following a laparoscopic appendectomy, underscoring the diagnostic challenges of atypical appendiceal presentations. Case Presentation: A 48-year-old female presented to the hospital with a 7-day history of lower abdominal pain, nausea, and persistent low-grade fever. The prolonged clinical course prompted a thorough diagnostic workup, which successfully excluded gynaecological aetiologies. Subsequent abdominal ultrasonography revealed a thickened appendiceal wall with features indicative of inflammation. The patient was admitted to the I Department of General and Endocrine Surgery for definitive management and underwent an uncomplicated laparoscopic appendectomy. The excised appendix was submitted for routine histopathological examination. Unexpectedly, the microscopic evaluation revealed histological changes characteristic of neurofibromatosis, despite the patient's complete lack of typical clinical symptoms associated with the disease. To facilitate further systemic evaluation, risk stratification and specialized care, the patient was referred to a Genetic Counselling Clinic. Conclusions: This case highlights the critical importance of routine histopathological evaluation of all surgical procedures, as it can unveil rare, underlying systemic conditions that clinically mimic common surgical pathologies.

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Title: Inverted Papilloma of the Lacrimal Sac with Squamous Cell Carcinoma Arising Within: A Case Report

Author(s): Katarzyna Pogorzelska, Marta Jamiołkowska, Tymoteusz Czarnocki

Tutor(s): Bartosz Piszczatowski, MD, PhD

Abstract: Background: Inverted papillomas are benign tumors characterized by locally aggressive growth and a high rate of recurrence. They most commonly arise from the nasal cavity and paranasal sinuses, whereas primary involvement of the lacrimal sac is exceptionally rare, with only a few cases reported in the literature. Malignant transformation occurs in approximately 5% of inverted papillomas overall and has only rarely been documented in tumors of the lacrimal drainage system. Case report: A 48-year-old woman was admitted to the Department of Otolaryngology for surgical treatment of an unspecified tumor located in the medial canthal region of the right orbit. Ophthalmologic examination revealed excessive tearing of the right eye and a firm, painless mass measuring 1.0 × 0.5 cm in the right medial canthal region. Lacrimal irrigation demonstrated obstruction of the lower canaliculus. The patient underwent surgical excision of the lesion using a combined external and endonasal approach, including opening of the right maxillary and frontal sinus and removal of the right ethmoidal cells. Intraoperative pathological examination of the previously described mass confirmed inverted papilloma. The postoperative course was uneventful and the patient was discharged home in good general and local condition, with a follow-up visit scheduled after three weeks to review the results. However, final postoperative histopathological examination revealed inverted papilloma within the nasolacrimal duct and keratinizing squamous cell carcinoma (G2) arising within the inverted papilloma in the tumor from the medial canthal region of the right orbit. Additionally, a small focus of squamous cell carcinoma was identified in the periosteum of the right orbit. Conclusions: Inverted papilloma of the lacrimal sac is an extremely rare entity. This case highlights that malignant transformation, although infrequently reported, may remain clinically unsuspected, underscoring the importance of careful histopathological evaluation despite the low expected risk of malignancy.

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Title: Fibroepithelioma of Pinkus and Subsequent Desmoid-Type Fibromatosis of the Abdominal Wall – A Case Report

Author(s): Lorin Azzaddin, Michał Ziemba, Mateusz Niegierysz

Tutor(s): lek Katarzyna Giedzicz

Abstract: Fibroepithelioma of Pinkus (FeP) is a rare variant of basal cell carcinoma (BCC) whose classification remains a subject of debate. Although traditionally considered a subtype of BCC, FeP exhibits distinct histopathological features, including anastomosing epithelial cords within a fibrous stroma and the presence of Merkel cells, which are typically absent in conventional BCC. Clinically, FeP often presents with non-specific features and may mimic benign cutaneous lesions such as intradermal nevi, resulting in diagnostic delay. Unlike classic BCC, which commonly arises in sun-exposed areas, FeP predominantly occurs on sun-protected regions of the lower trunk and demonstrates no clear association with ultraviolet radiation. It is reported more frequently in female patients. FeP generally follows an indolent, non-invasive clinical course, with no documented cases of metastasis, in contrast to untreated BCC, which may show locally aggressive behavior. We present the case of a 41-year-old female with hypothyroidism, morbid obesity, and hypertension who was admitted for planned radical excision of a giant abdominal wall skin lesion combined with reconstructive surgery. Clinical examination revealed a nodular lesion measuring 68.5 × 64 cm with deep subcutaneous involvement and multiple ulcerations. Histopathological evaluation demonstrated cystic structures, fibrous septa, necrotic areas, and evidence of local extension beyond the pseudocapsule. Postoperative recovery was favorable, emphasizing the importance of early recognition, comprehensive histopathological assessment, and meticulous surgical planning in the management of extensive cutaneous tumors. This case highlights the diagnostic challenges of FeP and suggests the possibility of coexisting epithelial and mesenchymal tumors in the abdominal wall, contributing to the limited literature on FeP occurring in atypical locations.

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Title: Never Too Late for Intervention: From Back Pain to Diagnosis of Advanced Multiple Myeloma

Author(s): Marta Skarzyńska, Wiktoria Żakowicz, Natalia Łukasiak, Rozalia Tymińska-Romanowska, Julia Żekało

Tutor(s): prof. dr hab. n. med. Edyta Zbroch

Abstract: Introduction Multiple Myeloma (MM) is a neoplastic disorder characterized by initially asymptomatic clonal plasma cell proliferation that progressively leads to structural damage and hematological impairment, reflected in the CRAB criteria. Stage III of the Salmon-Durie classification corresponds to an advanced tumor burden with reduced hematopoietic function. While the disease was once considered terminal, the introduction/advent of Daratumumab-based triplet therapy (DRd) has significantly improved clinical outcomes, shifting treatment goals from palliation toward achieving deeper and more durable responses. In our case, we will present how treatment led to substantial hematological improvement in a 67-year-old patient with spinal collapse and severe anemia (hemoglobin 7.5g/dL to 13.6 g/dL). Case Report A 67-year-old man presented to the Emergency Department with chronic lower back pain accompanied by unintentional weight loss exceeding 5% over a three-month period. Laboratory tests revealed macrocytic anemia (Hb 7.5 g/dL; MCV 103), leukopenia, mildly elevated inflammatory markers, as well as increased levels of creatinine, NT-proBNP, D-dimer, and uric acid. Serum protein electrophoresis demonstrated the presence of an additional monoclonal band in the gamma-globulin fraction, while immunofixation revealed elevated levels of IgA and kappa light chains. The patient was referred to the hematology department, where further diagnostic work-up was performed, and the biopsy results confirmed the previous suspicion, leading to a diagnosis of multiple myeloma. Immediately after diagnosis, treatment with a daratumumab-based triplet regimen (DRd) was initiated, achieving a favorable therapeutic response despite the advanced stage of the disease at presentation. During the course of the disease, the patient also developed a spinal compression fracture, which was successfully treated with vertebroplasty. Conclusions This case demonstrates that even advanced Multiple Myeloma with a severe clinical presentation can be effectively treated using modern therapeutic methods. Despite the advanced stage of the disease and severe anemia, the patient achieved significant improvement in hematologic parameters and overall clinical condition, highlighting the importance of prompt initiation of modern therapy. Importantly, this case also illustrates that continuous advances in medical science expand therapeutic possibilities and improve outcomes even in high-risk and advanced-stage disease.

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Title: Leiomyosarcoma of the Inferior Vena Cava Requiring Multiorgan Resection and Vascular Reconstruction: A Case Report.

Author(s): Joanna Hołdakowska

Tutor(s): Jerzy Leszczyński MD, PhD

Abstract: Background Leiomyosarcomas are rare malignant soft tissue cell tumours and primary vascular leiomyosarcoma is an even more uncommon subset of these tumours. They usually affect middle-aged and elderly adults, especially women. Symptoms are often nonspecific or entirely absent, which results in delayed diagnosis, leading to a generally poor prognosis, largely due to local invasion of surrounding organs, major blood vessels and high risk of distant metastases. Complete tumour resection, often requiring vascular reconstruction, serves as the most effective treatment option. Case report A 64-year-old woman was referred to the surgical department due to a rapidly growing mass located in the right retroperitoneal space in the area of the right adrenal gland. She also suffered from hormonally inactive left adrenal adenoma, primary hyperparathyroidism, hypertension, autoimmune hypothyroidism, cyst of the right lobe of the liver, and spondylosis. On admission, the general condition and sensation of the patient were good. The patient was obese, with no other clinical signs of hypercortisolism or hyperandrogenism on physical examination. ACTH, DHEAS levels, and testosterone were within normal limits; the cortisol circadian rhythm was normal. The right open adrenalectomy was performed. The tumour surrounded the right adrenal gland and infiltrated the right renal capsule, invading between the vessels of the renal hilum and the inferior vena cava (IVC), narrowing its lumen by approximately 50–60% and causing destruction of the posterior wall of the IVC. This resulted in resection of its approximately 8 cm segment, replaced by a silver knitted 18 mm vascular graft implanted using an end-to-end anastomosis. The left renal vein was anastomosed end-to-side to the graft. The tumour was removed from the right retroperitoneal space. Due to suspected infiltration of the right renal vein and the necessity of right renal artery ligation, the surgery was extended to right nephrectomy. Removed tissues were sent for histopathological analysis, which revealed a right retroperitoneal leiomyosarcoma, Grade 3 (FNCLCC), arising from the IVC wall and infiltrating surrounding adipose tissue. It extended to the right adrenal gland, surrounding it without infiltrating its tissue. The maximum diameter of the tumour was 9.5 cm. Residual tumour tissue remained (R1). The surgical wound healed properly. During the postoperative period, transient hemodynamic disturbances and renal insufficiency occurred. The patient was discharged in good condition after 11 days. Conclusions The aforementioned case reveals that vascular reconstructions play a crucial role in managing non-standard, demanding multiorgan resection situations. IVC reconstruction allows for tumour resection. However, further oncological treatment is crucial when complete surgical resection is impossible because of the involvement of adjacent structures.

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Title: Palmar–plantar Erythrodysesthesia Associated with Long-Term Capecitabine Therapy: A Case Report

Author(s): Kinga Tylczyńska, Renata Pajdzik

Tutor(s): Magdalena Pałdyna, MD; Ewelina Biało-Wójcicka, MD, PhD

Abstract: Palmar–plantar erythrodysesthesia, also known as hand–foot syndrome (HFS), is a relatively common adverse effect of several chemotherapeutic agents, particularly capecitabine and 5-fluorouracil. Although the condition is not life-threatening, it may significantly impair patients' quality of life and frequently requires modification of oncologic therapy. We present the case of a 60-year-old female with metastatic breast cancer treated with long-term capecitabine who developed severe HFS. The patient was admitted with erythematous, desquamative lesions accompanied by edema on the palms and soles, as well as painful erosions, fissures, and onychomadesis. Loss of palmar fingerprints was also observed. The lesions first appeared several days after initiation of capecitabine therapy 12 years earlier and showed partial remission during treatment breaks. Histopathological examination demonstrated marked hyperkeratosis, epidermal acanthosis, dermal fibrosis with increased fibroblasts, and sparse lymphocytic infiltrates around dermal vessels. HFS typically develops after the first or subsequent cycles of chemotherapy, with severity depending on drug dose and cumulative exposure. Early symptoms include paresthesia and burning sensations, followed by well-demarcated erythema, edema, and desquamation, which may progress to blistering, ulceration, and painful hyperkeratosis. The exact pathogenesis remains unclear; proposed mechanisms include the accumulation of chemotherapeutic metabolites in sweat and inflammatory pathways involving cyclooxygenase-2. Currently, treatment mainly involves dose reduction or temporary discontinuation of the causative drug, combined with supportive measures aimed at symptom relief and prevention of secondary infections. The patient showed spectacular improvement after vitamin B6. This simple intervention yielded amazing results. Preventive strategies and symptomatic treatments have been explored, although strong evidence supporting their effectiveness remains limited. Early recognition and appropriate supportive care are essential to maintain patient comfort and allow continuation of anticancer therapy whenever possible.

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Title: Unusual Case of two Cancers Treated with One Surgery - Case Report

Author(s): Mateusz Mucha

Tutor(s): M.D., Ph. D. Piotr Zapała

Abstract: We present the case of a 77-year-old man diagnosed with synchronous bladder cancer and metastatic hormone-sensitive prostate cancer. He was referred because of an elevated prostate-specific antigen level. Multiparametric MRI showed a PIRADS 5 lesion in the prostate and a mass protruding into the bladder lumen. Transurethral resection of the bladder tumor and prostate mapping biopsy confirmed bladder carcinoma in situ and prostatic adenocarcinoma Gleason 3+4. Initial CT staging suggested metastatic lesions in the liver, lungs, right femur, and thoracic vertebrae. The patient had lost 10 kg within one month and reported severe dysuria and lower urinary tract symptoms. Because metastatic hormone-sensitive prostate cancer with synchronous bladder cancer was suspected, systemic treatment was started. After further assessment and multidisciplinary review, the metastatic status was reconsidered and the patient was qualified for radical surgery with curative intent. Robotic-assisted surgery was performed to treat both tumors during one procedure. Final histopathology showed invasive urothelial carcinoma with adipose tissue infiltration, lymphovascular invasion, neuroinvasion, and additional carcinoma in situ, staged as ypT3N0R0. At the same time, acinar and ductal prostate adenocarcinoma with two dominant tumors, Gleason scores 7 and 8, was identified and staged as pT3a, also with lymphovascular invasion and neuroinvasion. The postoperative course was uneventful, and the patient was discharged on postoperative day 5. At 3-month follow-up, contrast-enhanced CT showed no evidence of active disease, with iN0M0 status. This case shows the importance of careful staging in patients with suspected metastatic disease. It also indicates that radiologic findings suggestive of M1 disease may not always confirm true metastatic spread. A multidisciplinary approach can support selection of patients for radical treatment, and robotic-assisted surgery may be feasible in complex oncologic cases.

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Title: Solid Pseudopapillary Neoplasm of the Pancreas Presenting as a Suspected Adrenal Tumor

Author(s): Laura Sikorska

Tutor(s): Magdalena Kwapisz, MD, PhD

Abstract: Solid pseudopapillary neoplasm (SPN) of the pancreas is a rare low-grade malignant tumor that predominantly affects young women. Due to its potential to reach large sizes and its variable anatomical location, SPN may radiologically mimic tumors of adjacent organs, posing a significant surgical and diagnostic challenge. This case illustrates an unusual presentation of SPN masquerading as an adrenal tumor and emphasizes the importance of considering pancreatic lesions in the differential diagnosis of large retroperitoneal masses. A 19-year-old female was admitted to the Department of Oncological Endocrinology and Nuclear Medicine at the National Institute of Oncology in Warsaw for further evaluation of a left adrenal mass incidentally detected during psychiatric hospitalization for paranoid syndrome. The patient reported a history of vague abdominal pain and nausea approximately six months earlier but was asymptomatic at presentation. Magnetic resonance imaging (MRI) demonstrated a heterogeneous mass measuring 83 × 81 × 106 mm in the left adrenal region, initially interpreted as a non-adenomatous lesion suspicious for pheochromocytoma. Despite suggestive imaging findings, the patient exhibited no clinical features of catecholamine excess, and comprehensive hormonal evaluation, including plasma and urinary metanephrines, remained within normal limits. The patient was qualified for surgical exploration due to the suspicion of a non-functioning adrenal tumor with uncertain malignant potential. Intraoperatively, a large encapsulated tumor (approximately 16 cm in diameter) was identified, closely adherent to the pancreatic tail and splenic hilum. Due to the tumor's anatomical relationships, an extended resection was required, including distal pancreatectomy with splenectomy. Following en bloc resection, a normal left adrenal gland was identified within the tumor bed, confirming the pancreatic origin of the lesion. The postoperative course was complicated by acute pancreatitis and pancreatic fistula, both recognized complications following pancreatic surgery, which were successfully managed with percutaneous drainage and conservative treatment. Histopathological examination confirmed solid pseudopapillary neoplasm. Immunohistochemical analysis demonstrated strong nuclear expression of β-catenin, loss of E-cadherin expression, and a Ki-67 proliferation index of 6–9%. Capsular angioinvasion was present, with no evidence of neuroinvasion. Conclusion: This case highlights an important surgical pitfall in the management of large retroperitoneal masses, as misinterpretation may lead to inappropriate surgical planning (e.g., adrenalectomy instead of pancreatic resection). Accurate preoperative assessment is crucial, as it directly impacts the surgical approach and extent of resection. Multidisciplinary management remains essential in optimizing patient outcomes.

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Title: Recurrent Secondary Hyperparathyroidism after Total Parathyroidectomy with Autotransplantation: A Case Report Highlighting Anatomical Limitations for Reintervention

Author(s): Jonas Orintas

Tutor(s): Augustas Beiša MD, Assoc. Prof.

Abstract: BACKGROUND: Secondary hyperparathyroidism is a common complication of end-stage renal disease (ESRD), often requiring surgical treatment. Total parathyroidectomy with autotransplantation is an established approach; however, recurrence may occur due to hyperplasia of transplanted tissue. Management of recurrent disease can be particularly challenging when the autograft is located in anatomically unfavorable regions, especially near critical neurovascular structures, limiting the feasibility of repeat interventions. CASE REPORT: A middle-aged male with ESRD due to polycystic kidney disease, on long-term hemodialysis, developed secondary hyperparathyroidism. Before surgery in 2019, laboratory findings showed elevated parathyroid hormone (PTH) levels (138.13 pmol/L) with borderline elevated calcium levels. Histopathological examination confirmed hyperplasia of all four parathyroid glands. The patient underwent total parathyroidectomy with autotransplantation into the right thigh. Postoperatively, biochemical parameters normalized (PTH 15.7 pmol/L, calcium within normal range). Several years later, recurrent hyperparathyroidism was observed, with progressively increasing PTH levels despite persistently normal serum calcium concentrations. Imaging studies identified hyperfunctioning autotransplanted parathyroid tissue in the proximal right thigh. Minimally invasive treatment was attempted. Radiofrequency ablation resulted in partial reduction of the lesion (~60–70%), but complete ablation was limited. A subsequent cryoablation procedure with hydrodissection (2025) was prematurely terminated due to the close proximity of the lesion to the femoral nerve, as the ice ball approached the nerve margin, posing a high risk of nerve injury. Follow-up biochemical evaluation demonstrated persistent elevation of PTH (70.1 pmol/L), while calcium remained within normal limits (2.41 mmol/L). Due to anatomical constraints and procedural risks, further interventional options remain limited. Kidney transplantation has not yet been performed. CONCLUSIONS: Recurrent secondary hyperparathyroidism after autotransplantation can present significant therapeutic challenges, particularly when the graft is located near critical neurovascular structures. This case highlights that anatomical localization may significantly limit the effectiveness and safety of repeat minimally invasive procedures. Careful consideration of graft placement during initial surgery and awareness of potential reintervention limitations are essential in long-term management.

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Title: When Left Becomes Right: Perforated Sigmoid Diverticulitis Mimicking Acute Appendicitis - A Case Report

Author(s): Aleksandra Uklejewska, Konrad Filip Kowalski

Tutor(s): lek. Andrii Zahorodnii, lek. Katarzyna Giedzicz

Abstract: Introduction Acute diverticulitis typically presents with left lower quadrant pain, whereas right iliac fossa pain usually suggests acute appendicitis. In rare cases, however, a redundant and mobile sigmoid colon may displace the inflammatory process to the right side, resulting in an atypical presentation and delayed diagnosis. Case Report A 38-year-old man presented to the Emergency Department with several days of worsening right iliac fossa pain, fever, and weakness. Physical examination revealed right lower quadrant tenderness with peritoneal signs. Laboratory tests showed leukocytosis and markedly elevated inflammatory markers, including C-reactive protein of 228.9 mg/L. Contrast-enhanced computed tomography demonstrated a large inflammatory infiltrate in the right iliac fossa with an intra-abdominal abscess measuring approximately 7-9 cm. Owing to the severity of the clinical condition, urgent surgery was performed. Diagnostic laparoscopy was converted to laparotomy because of extensive inflammatory changes and difficult assessment of the anatomical relationships. Intraoperatively, an inflammatory mass involving the sigmoid colon, cecum, and adjacent small bowel loops was identified. Further exploration revealed perforation of a diverticulum within a redundant and mobile sigmoid loop displaced into the right iliac fossa, with formation of a single abscess involving the appendiceal region and causing secondary inflammatory changes of the appendix. Abscess evacuation, appendectomy, and sigmoid resection with primary end-to-end anastomosis were performed. Microbiological cultures grew ESBL-producing Escherichia coli and anaerobic bacteria. The postoperative course was complicated by wound hematoma requiring evacuation; the patient was discharged in good general condition. Conclusions Perforated sigmoid diverticulitis may mimic acute appendicitis, particularly in patients with a redundant and mobile sigmoid colon. Computed tomography is crucial for accurate diagnosis and surgical planning. Awareness of this atypical anatomical variant may improve diagnostic accuracy and enable timely treatment.

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Title: Complex Management of Postoperative Enterocutaneous Fistula Following Appendectomy in a 19-Year-Old Patient: A Case Report

Author(s): Adrian Gabriel Rzymski, Gabriela Jakociuk, Wiktor Chmielarz

Tutor(s): lek. Andrii Zahorodnii, lek. Katarzyna Giedzicz, prof. dr hab. n. med. Hady Razak Hady

Abstract: Background: Postoperative complications following appendectomy, such as intra-abdominal abscesses and enterocutaneous fistulas, are rare but serious consequences of surgical treatment for acute appendicitis. Their management often requires a multidisciplinary approach including surgical intervention, nutritional support, and close endoscopic monitoring. Case presentation: We present the case of a 19-year-old patient who underwent an appendectomy in May 2025 at a regional hospital due to phlegmonous appendicitis, confirmed by histopathological examination. The postoperative course was complicated and required two relaparotomies, including peritoneal lavage, adhesiolysis, and evacuation of an infected hematoma located near the right hepatic lobe. In July 2025, the patient was transferred to the 2nd Department of General and Gastroenterological Surgery at the University Clinical Hospital in Białystok, a tertiary referral center, due to intra-abdominal abscesses and an enterocutaneous fistula. A relaparotomy with peritoneal lavage and drainage was performed, and fistula drainage was established using a Pezzer catheter. Colonoscopic evaluation revealed the fistula opening in the hepatic flexure of the colon, which was subsequently closed using an endoscopic clip. During hospitalization, the patient received broad-spectrum antibiotic therapy, negative pressure wound therapy, and total parenteral nutrition. In the following months, implantation of a Broviac catheter was required due to protein-calorie malnutrition associated with the persistent fistula. In January 2026, the patient was admitted electively for further diagnostic evaluation and assessment of fistula closure. Follow-up colonoscopy showed no evidence of the fistula tract. Oral feeding was gradually reintroduced with good tolerance. The patient was discharged in good general condition. Conclusions: This case highlights the complexity of managing postoperative complications following appendectomy and underscores the importance of combined surgical, endoscopic, and nutritional management in the treatment of enterocutaneous fistulas.

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Title: From Toe Gangrene to Cardiogenic Shock: A Multisystem Cardiovascular Emergency

Author(s): Evenika Mekšraitytė, Ignas Jusis

Tutor(s): Greta Žiubrytė, prof. dr. Ramūnas Unikas

Abstract: BACKGROUND: Chronic limb-threatening ischemia (CLTI) represents the most severe stage of peripheral arterial disease, manifesting as ischemic rest pain, non-healing ulcers, or gangrene due to arterial occlusion [1]. Because CLTI often coexists with systemic atherosclerosis, many patients also have coronary and cerebrovascular disease [2]. These comorbidities substantially increase the risk of perioperative cardiac complications, including myocardial infarction and arrhythmias [3]. Consequently, management of such high-risk patients is complex and increasingly relies on a multidisciplinary team [4]. CASE REPORT: A 73-year-old man with a history of a syncopal episode six months earlier was urgently admitted to our hospital due to gangrene of the right hallux and progressive rest pain. Computed tomography angiography confirmed critical limb ischemia with complete bilateral superficial femoral artery occlusion. The right common iliac artery showed ~70% focal stenosis, while the external iliac arteries were stenosed bilaterally (left up to ~70%, right up to ~50%). Both popliteal arteries demonstrated only thread-like distal filling, more reduced on the left side. Admission electrocardiogram revealed third-degree atrioventricular block with a ventricular rate of ~35 bpm, delaying vascular surgery. During preparation for permanent pacemaker implantation, recurrent ventricular fibrillation occurred and was successfully terminated by defibrillation, followed by dual-chamber (DDDR) pacemaker implantation. After rhythm stabilization, distal autovenous bypass of the right lower limb was performed but complicated by acute graft thrombosis. The postoperative course was marked by perioperative myocardial infarction with cardiogenic shock; troponin I peaked at 34,613 ng/L, and norepinephrine 0.14 µg/kg/min was required. Coronary angiography demonstrated diffuse three-vessel disease with critical (90–99%) stenoses in segments S2, S6, S7, S9, S12, and S14. Given the very high surgical risk (EuroSCORE II 27.18%), the multidisciplinary team opted for multivessel percutaneous coronary intervention (PCI). In total, eleven stents were implanted in segments S2, S3, S6–S9, S11, S12, and S14, restoring coronary flow. During hospitalization, the patient developed hyperactive delirium with partial disorientation and agitation. Despite cardiovascular stabilization, echocardiography showed left ventricle dysfunction (LVEF 25% decreasing to 15%) and significant aortic stenosis. As revascularization options were exhausted and necrosis progressed, major limb amputation remained the only treatment option. CONCLUSIONS: CLTI management in patients with multivessel coronary artery disease and advanced heart failure presents an extreme clinical challenge, requiring a multidisciplinary team approach. Despite successful complex PCI and pacemaker implantation, systemic disease progression may exhaust revascularization options, leaving major amputation as the only viable outcome.

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Title: Incidental Duplex Collecting System with Segmental Renal Atrophy Mimicking Renal Pathology.

Author(s): Eglė Stanišauskytė, Aistė Pileckienė

Tutor(s): Dr. Ingrida Pikūnienė

Abstract: Congenital anomalies of the collecting system are in most cases asymptomatic and often detected accidentally. Duplex collecting systems are relatively common (reported in ~0.7% of healthy adults and up to 2-4% of patients investigated for urinary symptoms), but when associated with focal parenchymal atrophy and calyceal deformity, they may mimic renal pathology, including neoplastic or ischemic lesions. An adult patient was referred for evaluation of a suspected left renal lesion detected on ultrasound during workup for noticeably elevated liver enzymes. The patient had no urological or nephrological complaints and denied any prior kidney disease. Renal function was preserved, with no significant proteinuria or hematuria. Laboratory tests showed hyperbilirubinemia, elevated inflammatory markers, positive anti-HCV antibodies, and circulating cryoglobulins, thus indicating possible systemic involvement. An abdominal ultrasound (US) showed a smaller left kidney with an unclear and irregular lower pole contour. Contrast-enhanced Computed tomography (CT) revealed a duplex collecting system, with two renal pelvises merging into a single proximal ureter, along with deformation of the lower pole, calyceal distortion, parenchymal thinning, and small calyceal calcifications. No contrast-enhancing mass was identified. These findings were due to residual changes (post-inflammatory or ischemic) rather than malignancy. Duplex collecting systems are common, but their coexistence with segmental atrophy can create imaging appearances that appear as more serious conditions. This case demonstrates how a duplex collecting system with focal renal atrophy could mimic pathological renal lesions. Extensive correlation of imaging findings with laboratory and clinical data is important, especially in patients with systemic disease, to avoid misdiagnosis and unnecessary invasive interventions.

SESSION
CASE REPORTS 3

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Title: Listeria monocytogenes encephalitis in an immunocompetent adult

Author(s): Mateusz Zambrowski, Aleksandra Smuniewska, Marta Matwiejuk, Stanisław Pankiewicz, Piotr Kazberuk

Tutor(s): Anna Parfieniuk-Kowerda

Abstract: BACKGROUD Listeriosis is a condition caused mainly by Listeria monocytogenes- a gram-positive, relatively anaerobic bacterium that spreads via oral pathway. It is rather it is an uncommon cause of illness in the general population. The most common clinical manifestation is diarrhea. A mild presentation of fever, nausea, vomiting, and diarrhea may resemble a gastrointestinal illness. Severe consequences of listeria infection pertain to pregnant women, newborn babies, elderly individuals and immunocompromised individuals. The symptoms of invasive listeriosis includes meningitis, brain inflammation, pneumonia, sepsis. Empiric antimicrobial treatment that include ampicillin, a first-line antibiotic acting against Listeria monocytogenes is recommended for the newborns and people over 50 years old. Listeria has many virulence mechanisms such as flagellum and listeriolysin O that is crucial it is adaptation and invasiveness. CASE REPORT A 36-year-old male without medical history of chronic disorders was admitted to the hospital due to fatigue, vomiting, fever, altered mental status and diplopia. On physical examination meningeal symptoms were present as well as left-sided abducens nerve palsy. CSF examination revealed: elevated cytosis 1305 cells/µl, glucose concentration 13 mg/dl, protein concentration 345 mg/dL, albumins concentration 190 mg/dl (positive Pandy and Non-Apelt tests) suggesting bacterial aetiology. Recommended empirical antibiotic therapy of 3rd generation cephalosporin and vancomycin was started immediately. On the 2nd day microbiological examination of CSF showed the growth of Listeria spp. Additionally, CSF examination with RT PCR was positive for Listeria monocytogenes DNA. Consequently antimicrobial therapy was adjusted and changed to ampicillin and trimetoprime/sulfometoxazole. Serological tests for HIV, EBV, HHV and CMV were negative. In CNS MRI, fine (3 mm) focal lesions scattered in both hemispheres were found. No relevant changes were present in abdominal imaging and chest x-ray. After completing 21-day therapy with ampicillin and trimethoprim/sulfamethoxazole clinical improvement was achieved. However, some neurological symptoms, like 6th cranial nerve palsy, persisted for several weeks. During hospitalization, the patient was not diagnosed with any apparent conditions related to immunosuppression. CONCLUSIONS This case indicates that Listeria monocytogenes infection should be taken into account in the differential diagnosis of severe meningitis and encephalitis in patients who are not at risk of complicated listeriosis. This example highlights the diagnostic and treatment challenges accompanying this rare disease.

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Title: Autoimmune encephalitis with the presence of anti-GAD65 antibodies caused by a uterine neoplastic process - Case report.

Author(s): Gabriela Grobel, Wiktoria Kuczyńska, Anna Kornatowska

Tutor(s): MD PhD Agata Czarnowska, MD PhD Katarzyna Kapica-Topczewska

Abstract: INTRODUCTION Paraneoplastic syndromes are rare immunological disorders resulting from neoplastic disease. Anti-glutamic acid decarboxylase antibodies (anti-GAD65) serve as biomarkers for autoimmune diseases of the central nervous system and are typically associated with stiff-person syndrome or cerebellar ataxia. Their manifestation as an amnestic syndrome in the course of leiomyosarcoma is extremely rare and presents a significant diagnostic challenge. CASE REPORT We would like to present the case of a 64-year-old female patient with autoimmune encephalitis caused by a uterine neoplastic process, presenting as an amnestic syndrome with the presence of anti-GAD65 antibodies. The patient was admitted to the neurology department due to progressive memory impairment and symptoms of cerebellar ataxia. The symptoms had been progressing over several months. Her medical history revealed a past history of uterine cancer. Brain neuroimaging revealed bilateral inflammatory changes within the medial temporal lobes, and a neuropsychological evaluation confirmed limbic structure dysfunction. During an extended oncological diagnostic, a tumor in right lung was identified, which proved to be a neoplastic metastasis upon histopathological examination. The presence of anti-GAD65 antibodies was confirmed. Immunotherapy was administered, resulting in only partial improvement of neurological functions and stabilization of the patient's condition. CONCLUSION This case emphasizes the importance of maintaining oncological vigilance in patients presenting with sudden symptoms of amnestic syndrome and illustrates how atypical paraneoplastic syndromes can be. Our observation indicates that amnestic syndrome with anti-GAD65 antibodies may represent the first manifestation of metastatic neoplastic disease, even in patients with a distant history of cancer. Regular follow-up examinations of oncologically treated patients can increase the detection rate of neoplastic processes, which plays a crucial role in patient prognosis and enables causal treatment

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Title: Non-compliance as a subtle factor compromising treatment of IgG4-related infundibulo-hypophysitis: a case report

Author(s): Tymoteusz Czarnocki

Tutor(s): dr hab. n. med. Katarzyna Maliszewska

Abstract: Introduction IgG4-related infundibulo-hypophysitis is a rare inflammatory disorder of the pituitary gland and stalk. It may cause pituitary dysfunction and central diabetes insipidus. Glucocorticoids constitute first-line therapy, with hormone replacement or rituximab considered in selected cases. Case report A 73-year-old patient was admitted to the Endocrinology Clinic for evaluation of a thickened pituitary stalk detected on head CT. The patient reported generalized weakness and visual disturbances. Endocrine work-up revealed multiple anterior pituitary hormone deficiencies, and laboratory investigations showed elevated serum IgG4. Replacement therapy with hydrocortisone and levothyroxine was initiated. Following differential diagnosis, IgG4-related infundibulo-hypophysitis was diagnosed and dexamethasone was started, resulting in resolution of symptoms suggestive of central diabetes insipidus. After gradual steroid tapering and transition to oral prednisone, the patient was discharged in good general condition. During follow-up, clinical improvement, normalization of hormonal parameters, and a decline in serum IgG4 were observed. MRI showed pituitary asymmetry and narrowing of the stalk. Nine months later, the patient was readmitted with deterioration of general condition, hormonal disturbances, and recurrent symptoms of diabetes insipidus. Imaging demonstrated enlargement of the pituitary gland and stalk. Treatment led to symptom resolution, but suboptimal adherence was suspected. Two months later, the patient was hospitalized again with worsening symptoms and visual field defects. Hormonal evaluation indicated exacerbation of IgG4-related hypophysitis. MRI revealed enlargement of the pituitary gland and stalk with compression of the optic nerves and optic chiasm, indicating marked disease progression. Given the risk of vision loss and likely poor adherence to previous recommendations, intravenous methylprednisolone was initiated under close clinical and imaging surveillance. Subsequent radiological and laboratory regression was observed, and treatment was converted to oral steroids with close outpatient follow-up. Conclusions This case underscores the pivotal role of patient adherence in determining therapeutic success. Effective treatment requires selecting a strategy that is not only medically justified, but also feasible for the patient to follow.

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Title: Chronic sphenoid sinusitis with orbital complications- diagnostic and therapeutic challenges

Author(s): Alicja Opadczuk

Tutor(s): Dor. n. med. Małgorzata Kosmala-Litwiniuk

Abstract: Background Chronic sphenoid sinusitis is a rare clinical entity that often presents with nonspecific symptoms, which significantly complicates and delays accurate diagnosis. Moreover, due to its anatomical location, the disease may lead to serious intracranial and orbital complications. Surgical access to the sphenoid sinus is also technically demanding, constituting a significant therapeutic challenge. Case report A 32-year-old female patient was urgently admitted to the Department of Otorhinolaryngology and Head and Neck Surgery, MUW, in December 2025 due to a lesion involving the left sphenoid sinus, with the indication for surgical treatment. Since June 2025, the patient had been experiencing recurrent, intermittently worsening symptoms, including severe headaches, left-sided ptosis, diplopia on right and left gaze, hypesthesia of the left side of the face, and transient nasal obstruction. She was also treated for type 1 diabetes mellitus. Based on a clinical presentation, the differential diagnosis included myasthenia gravis, tumor and vascular malformations in the brainstem. Endoscopic examination revealed edema of the inferior nasal turbinates, deviation of the nasal septum to the right, and a presence of postnasal drip. CT of the paranasal sinuses demonstrated a hypodense inflammatory lesion within the left sphenoid sinus, without clear radiological features suggestive of a proliferative process. The patient was qualified for surgical treatment. Endoscopic left-sided sphenoethmoidectomy with simultaneous septoconchoplasty was performed. Intraoperatively, no proliferative lesions were identified within sphenoid sinus. However, inflammatory contents were present. The surgical procedure and postoperative court were uneventful. The patient was discharged home on the second postoperative day in good general condition. At the time of discharge, all orbital complications had completely resolved. Conclusion Chronic sphenoid sinusitis may present with a wide range of nonspecific clinical symptoms and can lead to potentially serious orbital complications. Therefore, it requires a high level of diagnostic vigilance.

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Title: A Living Souvenir from Africa - Case Study of Myiasis

Author(s): Małgorzata Resiak, Aleksandra Soprych, Agnieszka Adamiak

Tutor(s): dr n. med. Dagny Krankowska, dr hab. n. med. Tomasz Mikuła

Abstract: Introduction: People travelling to tropical countries can be susceptible to various tropical diseases. For some, the etiological agents are larvae of flies (Diptera). Such an infestation of a live human body is called myiasis. Different body regions may be involved, however the most common site is the skin. This case report describes the cutaneous form caused by Cordylobia anthropophaga (tumbu fly). Case report: A 53-year-old man with no previous chronic diseases was admitted to an Infectious Diseases Department in Poland due to cutaneous myiasis after returning from a two-week stay in Senegal and Gambia. The patient had painful nodules with surrounding erythema and central ulceration on the right lower limb and in the left groin. In laboratory results where as follows: white blood cell was within norms 8.46 × 109/l (norm 4.23-9.07 × 109/l), eosinophiles 0.24 × 109/l (2.8%), (norm 0.03-0.39 × 109/l) and slight CRP 12.8 mg/l (norm <5mg/l) elevation was noted. The patient himself removed two larvae a few days after returning to Poland and brought them to the hospital during his admission. The larvae were sent for parasitological examination and identified as Cordylobia antropophaga. The patient underwent a surgical consultation during which no more larvae were found in wounds, mild local inflammation was noted. Normal skin microbiota was isolated from wound culture. The patient was discharged home with a recommendation of cleaning the wounds with water and soap and disinfection with octenidine + phenoxyethanol. Conclusion: In this case report, we aim to highlight the importance of appropriate pre-travel education for individuals planning to visit tropical regions. Furthermore, clinicians should be aware that the initial manifestations of cutaneous myiasis may clinically resemble a furuncle, typically associated with Staphylococcus aureus infection. Therefore, in patients presenting with furuncle-like lesions and a recent history of travel to tropical areas, a parasitic etiology and other tropical diseases should be considered in the differential diagnosis.

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Title: Pulsed Radiofrequency for chronic postoperative pain: A Case Report

Author(s): Viktorija Staseliūnaitė, Gabrielė Jurkšaitė

Tutor(s): PhD. Liuda Brogienė

Abstract: Introduction Glossopharyngeal neuralgia is a rare cranial nerve disorder characterized by severe paroxysmal pain in the distribution of the glossopharyngeal nerve. Microvascular decompression is considered one of the most effective surgical treatments. However, persistent postoperative pain may occur and can be challenging to manage. Interventional pain procedures are increasingly used when pharmacological treatment fails. Case Report A female patient presented with chronic pain in the left occipital region around a postoperative scar, radiating to the vertex, left ear, tongue, eye and neck. The pain was rated 6/10 on the numerical pain scale. In 2020, the patient underwent microvascular decompression for glossopharyngeal neuralgia. Approximately three months later, persistent occipital pain developed and gradually intensified. Pharmacological therapy was ineffective. Several interventional treatments were attempted with limited benefit. Occipital nerve blocks produced only short-term relief, while ketamine infusions and cervical steroid injections resulted in transient improvement. An ultrasound-guided occipital nerve block around the postoperative scar later resulted in complete pain relief for two weeks. Based on this response, pulsed radiofrequency treatment of the left occipital nerve was performed under imaging guidance without complications. Following the procedure, pain intensity decreased by 70%, leaving only mild dull discomfort. The patient described the outcome, stating that “now it is possible to live again,” reflecting a significant improvement in daily functioning and quality of life. Discussion Chronic postsurgical pain is defined as pain developing or increasing after surgery and persisting beyond the normal healing period, typically >3 months. About 10% of surgical patients develop chronic postsurgical pain, often with a neuropathic component. Persistent occipital pain after cranial nerve surgery may result from nerve irritation or scar-related neuropathy and is often resistant to pharmacological therapy. In such cases, interventional techniques may provide meaningful relief. Pulsed radiofrequency has been increasingly used in the treatment of occipital neuralgia and other neuropathic pain syndromes. Studies have reported significant reductions in pain intensity and improved functional outcomes after the procedure. Compared with repeated nerve blocks, pulsed radiofrequency may provide longer-lasting pain relief while remaining minimally invasive and well tolerated. This case demonstrates that pulsed radiofrequency can significantly reduce pain even in long-standing postoperative neuropathic pain resistant to multiple therapies. Conclusion Chronic postoperative occipital pain can severely impair quality of life and may be difficult to treat with medication alone. Pulsed radiofrequency of the occipital nerve may represent an effective minimally invasive treatment option for refractory neuropathic occipital pain.

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Title: Linear Lichen Planus Along the Lines of Blaschko: A Diagnostic Challenge

Author(s): Deimantė Blažauskaitė, Beatričė Abugelytė

Tutor(s): Milda Kairytė, Skaidra Valiukevičienė

Abstract: Introduction. Lichen planus (LP) is an inflammatory papulosquamous skin disease classically presenting with pruritic, violaceous papules affecting the extremities and occasionally mucous membranes [1]. Linear lichen planus (LLP) is a rare clinical variant of LP characterized by polygonal, violaceous papules distributed in a linear or blaschkoid pattern, typically corresponding to the lines of Blaschko [2,3]. Due to its atypical skin lesion distribution, LLP may present a diagnostic challenge. Case Presentation. A 67-year-old woman presented with a two-year history of an intermittently intense pruritic eruption on the flexural surface of the left leg. Previous treatment with topical betamethasone showed no significant improvement. Clinical examination revealed linearly arranged erythematous-violaceous papules and plaques on the flexural surface of the left lower leg and thigh, with excoriations, erosions, and crusting. Treatment with topical dexamethasone 0.005% cream and narrowband UVB 311 nm phototherapy was initiated. To exclude contact allergy as a possible trigger, patch testing with 40 European standard series of contact allergens was performed. Although no contact sensitization was detected. During follow-up, erosions resolved, erythema and infiltration decreased, and pruritus of lesions improved from 7 to 2–3 points on the Visual Analog Scale. Discussion. The LLP typically presents as unilateral linear lichenoid lesions following the lines of Blaschko [3]. Blaschko-linear inflammatory dermatoses are thought to arise from somatic mosaicism, and later-life manifestation may require an additional triggering factor [4]. The differential diagnosis includes lichen striatus, inflammatory linear verrucous epidermal nevus, herpes zoster, linear psoriasis, and linear Darier–White disease, which differ clinically and histopathologically [5]. LLP generally follows a benign course with gradual regression, although residual post-inflammatory pigmentation may persist [6]. Topical glucocorticoids are considered first-line therapy; refractory cases may require systemic corticosteroids, phototherapy, calcineurin inhibitors, or retinoids [6]. Conclusions. LLP is a rare variant of LP characterized by linear skin lesion distribution corresponding to the lines of Blaschko. Due to its atypical clinical presentation, the condition may be misdiagnosed, particularly in elderly patients. Careful clinical assessment and, when necessary, histopathological evaluation are essential to establish an accurate diagnosis. References 1. Boyd AS, Neldner KH. Lichen planus. J Am Acad Dermatol. 1991;25(4):593–619. 2. Singh A, Rusia K, Bhatt D, et al. Case of Unilateral Linear Lichen Planus with Bilateral Mucosal Involvement. J Primary Care Specialties. 2024;5(2):127–129. 3. Rousseau MA, Nelson EE, Rashid RM. A Review of Linear Lichen Planus Case Reports. Am J Dermatopathol. 2024;46(9):553–562. 4. Theodosakis N, Levy L, Cowper S, et al. Somatic Mosaicism in Blaschkolinea

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Title: A Bite with Lasting Consequences: Permanent Brachial Plexus Palsy in a Woman

Author(s): Weronika Hojka, Anna Maria Lebensztejn

Tutor(s): prof. dr hab. n. med. Joanna Zajkowska

Abstract: Introduction: Tick-borne diseases represent a growing epidemiological problem, and their incidence has been increasing in recent years. It is associated to climate change and increased human exposure to vectors. The main pathogens transmitted by ticks are Borrelia burgdorferi and the tick-borne encephalitis virus (TBEV). The disease presents in various forms, ranging from a mild flu-like infection to central nervous system inflammation leading to severe complications. One of the complications that permanently impair quality of life is brachial plexus palsy, which manifests as pain and/or loss of function in the affected limb. Case report: We present the case of a 67-year-old woman with a history of hypothyroidism who was admitted to the Department of Infectious Diseases and Neuroinfections with pain in the cervical spine and reduced muscle strength in both upper limbs, more pronounced in the left extremity, with no other symptoms of the disease. Patient reports a tick bite 2 months prior to the onset of symptoms and states she has not been vaccinated against TBEV. The patient's laboratory examination on admissionn revealed leukopenia. In the cerebrospinal fluid (CSF) analysis: cytosis with a predominance of lymphocytes (138/µL) and protein (93 mg/dL). Additionally, serological tests revealed positive IgM anti-TBEV antibodies in the CSF, as well as positive IgM and IgG antibodies for Borrelia burgdorferi in the CSF and serum. In the differential diagnosis presence of other pathogens was exclude. During hospitalisation, the patient was treated with antibiotic, neuroprotective therapy and physical therapy. Treatment resulted in clinical improvement, a gradual normalization of inflammatory parameters, and increased mobility of the upper limbs, however full function was not restored. The patient was discharged with recommendations to continue the treatment administered in the hospital and to maintain rehabilitation while adhering to a non-strenuous lifestyle. Conclusion: Tick-borne diseases represent a significant and growing epidemiological problem with a varied clinical course. The case described here presents an atypical involvement of the brachial plexus palsy without a prodromal phase, leading to irreversible functional deficits that chronically impair quality of life despite rehabilitation.This emphasises the importance of prevention- vaccination against TBEV and the use of direct tick protection-in reducing the risk of long-term complications.

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Title: Between Function and Somatics: Paroxysmal Neurological Symptoms in Functional Neurological Disorder and Latent Tetany - a Case Report

Author(s): Karolina Połubińska, Małgorzata Sebastjanuk

Tutor(s): dr hab. n. med. Katarzyna Kapica-Topczewska, lek. Anna Mirończuk

Abstract: Introduction Functional neurological disorder (FND) is increasingly recognized as a common cause of disabling neurological symptoms, yet it remains diagnostically challenging, particularly when accompanied by findings suggestive of an underlying somatic condition. Latent tetany, associated with heightened neuromuscular excitability, may overlap with or obscure the clinical picture by producing symptoms that resemble neurological dysfunction. This case highlights the diagnostic complexity. Case report A 38-year-old previously healthy woman was referred to the Department of Neurology for evaluation of recurrent paroxysmal episodes that had been occurring for several months. These events were characterized by generalized weakness, psychomotor restlessness, progressive muscle tightness affecting the neck, trunk, and limbs, painful cramps, and transient inability to initiate movement. Episodes were often preceded by hyperventilation and accompanied by shortness of breath and a sensation of internal heat. She additionally described brief involuntary jerks of the upper limbs, more prominent on the right, intermittent diplopia, and transient difficulty controlling facial movements. Throughout the attacks, she remained conscious, coherent, and without postictal confusion. Neurological assessment showed fluctuating weakness in the absence of fixed focal deficits. During admission, the symptom pattern was notable for inconsistency and variability: manifestations intensified during direct examination, diminished with distraction, and gait improved when support was provided. Hoover’s sign was positive. Brain MRI revealed dysgenesis of the corpus callosum and hippocampal commissure with colpocephaly, but no focal abnormalities accounting for the presenting symptoms. CT angiography, serial EEGs, and video-EEG were non-contributory, while tetany testing was positive and myasthenic testing negative. Psychiatric evaluation identified chronic occupational stress and sleep disturbance. Taken together, the clinical picture supported a diagnosis of FND coexisting with latent tetany. The patient was managed with psychoeducation, psychological follow-up, pregabalin, magnesium and vitamin supplementation, and symptomatic anxiolytic therapy. Conclusions This case highlights that a positive tetany test alone may not account for the full range of paroxysmal neurological symptoms. Positive clinical features of FND, including internal inconsistency, distractibility, and Hoover’s sign, were central to establishing the diagnosis and preventing unnecessary further investigation for structural neurological disease. Coexistence of FND and latent tetany can create a misleading and clinically complex presentation, underscoring the importance of careful clinical interpretation and an interdisciplinary management strategy.

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Title: Multivessel Compression: A Key Factor in Trigeminal Neuralgia.

Author(s): Kacper Michałowski, Patrycja Zabrocka

Tutor(s): lek. Magdalena Rybaczek

Abstract: Trigeminal neuralgia (TN) is a disorder which manifests as spontaneous and elicited electric shock-like or stabbing pain in the area of the trigeminal nerve (CN V) division's territory. Pain in TN could be triggered by everyday activities and is described as one of the most incapacitating pain conditions, impairing individuals' quality of life. Moreover, management of prolonged pain is considered one of the main burdens of TN. More often than not, pharmacological management is suboptimal. Pathogenesis of TN remains unclear; however, evidence suggests that TN could require neurovascular compression to develop. Because of that, microvascular decompression (MVD) is usually considered the surgical treatment of TN. Still, the surgical treatment is not considered a first-line approach, possibly due to a lack of literature on comparative trials of neurological interventions as the first-line intervention. Moreover, MVD could be performed in many ways. Often not the whole nerve is exposed during the procedure, which leads to an untrue assumption that the TN was caused by a sole blood vessel when it was not. This further varies the outcome of the same-named procedure. Usually conflicts involving only one blood vessel, mainly the superior cerebellar artery (SCA), are considered. Only relatively recent publications draw attention to the need for intraoperative identification of conflicts of various morphology. In which there is particular emphasis on venous conflicts. Our findings indicate that the occurrence of "classic" one-vessel compression in TN is rare. Our goal was to characterise intraoperative neurovascular conflict types. We analysed 150 consecutive surgeries based on the surgeon's drawings done from 2010 to 2025. A "classic" nerve conflict with solely the SCA was found in only 10% of patients. In 64% of patients, the conflict was caused by both arterial and venous vessels, while in as many as 22% of patients, only a venous conflict was found. Nevertheless, we observed an SCA conflict in 70% of all studied neurovascular conflicts. The most common vein in all of the conflicts was the superior Petrosal Vein (60% of all conflicts). Our analysis shows that the "classic" conflict of the trigeminal nerve only with the superior cerebellar artery is the exception rather than the norm. Understanding the variability in blood vessel conflicts can redefine surgical strategies and enhance patient outcomes. A thorough intraoperative inspection of the entire course of the nerve allows all forms of conflict to be identified, with 90% clinical effectiveness of decompression (long-term pain-free patients).

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Title: Bronchial asthma as a mask of eosinophilic granulomatosis with polyangiitis with cardiac involvement - a case report

Author(s): Oliwia Porucznik, Urszula Rusiłowicz, Weronika Samełko

Tutor(s): prof. dr hab. n. med. Edyta Zbroch

Abstract: Background: Eosinophilic granulomatosis with polyangiitis (EGPA) is a rare systemic vasculitis of small and medium-sized vessels, characterized by eosinophilia and multi-organ involvement, most commonly affecting the respiratory system. Cardiac involvement, among others, through eosinophilic myocarditis, coronary vasculitis, or pericarditis represents one of the most serious variants of the disease and significantly worsens the prognosis. Cardiac manifestations can lead to acute heart failure and may precede full-blown vasculitis, complicating early diagnosis. Case Report: A 24-year-old female patient with a long-term history of bronchial asthma reported symptoms of disease exacerbation, which was the reason for her primary hospitalization. Laboratory tests indicated severe inflammation, cardiac overload, and myocardial injury. In the echocardiogram, the left ventricular ejection fraction (LVEF) was approximately 55%. Two weeks after discharge, she returned to the Emergency Department due to worsening resting dyspnea, stabbing chest pain, productive cough, and fever up to 39.5°C. She also reported weakness, weight loss, and lower limb pain. Upon admission to the ward, physical examination revealed SpO_2 91% on room air, visible respiratory effort, and a regular heart rate of 100 bpm. Laboratory tests showed leukocytosis with marked hypereosinophilia, elevated levels of CRP, fibrinogen, LDH, microcytic anemia, and folic acid deficiency. Elevated levels of troponins and NT-proBNP were also found. HRCT of the chest revealed bilateral infiltrative changes with consolidations and mediastinal lymphadenopathy; abdominal CT showed hepatosplenomegaly. During hospitalization, hemodynamic deterioration occurred. Echocardiography showed a decrease in LVEF to 39%, left ventricular wall hypertrophy and mild tricuspid regurgitation. The ECG showed ST-segment depression and biphasic T-waves. Cardiac magnetic resonance imaging revealed features of active myocarditis. Due to the coexistence of asthma, significant hypereosinophilia, pulmonary lesions, and acute cardiac involvement, EGPA was suspected. Systemic glucocorticosteroids and standard treatment for heart failure were initiated, resulting in clinical improvement. Conclusions: Patients with bronchial asthma and hypereosinophilia require particular vigilance, especially when multi-organ symptoms appear. Unexplained cardiac dysfunction occurring alongside the aforementioned symptoms should prompt consideration of EGPA. Such an approach allows for faster implementation of treatment and a real improvement in clinical outcomes.

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Title: Cutaneous Ulcerations Associated With Suspected Krokodil (Desomorphine) Abuse Complicated by Sepsis and Acute Kidney Injury: A Case Report

Author(s): Lorin Azzaddin, Wiktoria Stawarz, Mateusz Niegierysz

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Abstract: Krokodil refers to an illicitly manufactured injectable opioid preparation that emerged in Eastern Europe, particularly in Russia and Ukraine, as a low-cost alternative to heroin. The preparation is intended to contain desomorphine, a semi-synthetic opioid derived from codeine; however, its crude, non-pharmaceutical production process introduces numerous toxic contaminants. Use of this substance has been associated with severe vascular and cutaneous complications, including thrombophlebitis, ulceration, gangrene, and rapidly progressive tissue necrosis, often resulting in limb loss or death. Available evidence indicates that these clinical manifestations are largely attributable to synthesis-related toxic byproducts rather than to desomorphine itself. We present the case of a 20-year-old male with a history of illicit drug use, including methamphetamine and tetrahydrocannabinol (THC), and no known chronic medical conditions.The patient sustained injuries to the right shoulder, left knee, and both hands and feet during a physical assault on 27 July 2025 and was initially admitted to the emergency department on 30 July 2025, where conservative management was instituted. He re-presented to the emergency department on 1 August 2025 in a severe general condition. On the same day, due to the development of acute kidney injury and sepsis, he was urgently transferred to the Second Department of Nephrology, Hypertensiology, and Internal Diseases with a Dialysis Unit for further management. During hospitalization, numerous blisters were observed on the lower extremities, which over subsequent days progressed to necrosis with epidermal detachment. The hospital course was complicated by episodes of psychomotor agitation and anxiety, leading to two instances of refusal of postoperative wound care, including dressing changes and wound cleaning. The patient underwent dermatological and vascular surgery consultations and was evaluated multiple times by the surgical team for wound management; vascular thrombosis was excluded. Subsequently, he was transferred to the Second Department of General Surgery, Gastroenterology, and Oncology for further treatment. This case underscores the potential for severe, rapidly progressive cutaneous necrosis in patients with suspected krokodil exposure.

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Title: When Syncope Is Not Just Anxiety: A Hidden Diagnosis

Author(s): Michalina Anna Majzit, Agata Zyśkowska, Jakub Bondaruk

Tutor(s): prof. dr hab. Edyta Zbroch, dr med. Piotr Sielatycki

Abstract: Background: This case report presents a 67-year-old female patient who experienced syncope during blood sampling. Although vasovagal syncope is common and usually harmless, this case shows that seemingly typical syncope may occasionally be related to underlying cardiovascular disease. This possibility should be considered especially in older patients and those with atherosclerotic risk factors. Case Report: A 67-year-old woman with a history of hypertension and COPD presented with syncope during blood sampling in the Emergency Department and was referred to the Department of Hypertensiology, Gastroenterology and Internal Medicine. Initial head computed tomography (CT) showed no intracranial bleeding or traumatic lesions. Physical examination revealed no abnormalities. Further diagnostic work-up was performed. Holter ECG monitoring did not reveal any significant abnormalities. Echocardiography demonstrated mild left ventricular dysfunction (EF 48%) with hypokinesis of the inferior wall. Carotid Doppler Ultrasound showed diffuse atherosclerotic changes, borderline stenosis of the right internal carotid artery, and features of grade III subclavian steal syndrome of the left vertebral artery. Based on these findings, the patient was referred to the Invasive Cardiology Clinic. During subsequent imaging studies, including coronary angiography with angiography of the carotid arteries, significant stenosis was identified at the origin of the right internal carotid artery (RICA) (80-90%) as well as stenosis at the origin of the right vertebral artery (50-60%). Follow-up echocardiography showed no significant abnormalities in myocardial contractility (EF 58%). The patient was referred to the Vascular Surgery Clinic. Conclusion: This case highlights that even a seemingly minor event, such as fainting during blood sampling, may indicate underlying cardiovascular disease. Syncope should not be automatically attributed to anxiety or vasovagal reactions, particularly in patients with vascular risk factors, and warrants careful evaluation to uncover potentially serious conditions. The patient's episode illustrates how complications can arise in the early stages of atherosclerosis. Identifying such changes requires a thorough cardiovascular evaluation.

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