RIMSA CONGRESS 3-RD EDITION

Rzeszow International Medical Students' Association

24-25 October 2025

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Rzeszów International Medical Students' Association Congress 2025

ABSTRACTS

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Welcome message

Ladies and Gentlemen,

Welcome to the Rzeszów International Medical Students' Association Congress 2025 (RIMSA Congress 2025), organized by the Association of Medical Students affiliated with the College of Medical Sciences, University of Rzeszów.

RIMSA Congress 2025 is an international medical conference organized by students of the University of Rzeszów on an unprecedented and prestigious scale. The event brings together students, young researchers, and physicians from Poland and abroad – all united by their passion for medicine and biomedical sciences.

This year's Congress features a rich scientific program, including student oral and poster sessions divided into thematic panels, as well as keynote lectures delivered by distinguished professors and medical experts – recognized authors of numerous scientific publications and authorities in their respective fields.

On behalf of the Scientific and Organizing Committees of RIMSA Congress 2025, we wish all participants an inspiring and rewarding experience in Rzeszów!

This Abstract Book contains all scientific abstracts presented during RIMSA Congress 2025.

Agata Wawrzyniak
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LIST OF THE SESSION:

1. **Basic science**
2. **Gynecology**
3. **Internal disease session**
4. **Neurology**
5. **Pediatrics**
6. **Pharmacology**
7. **Surgery**

Basic science session

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Title of presented paper: From bands to bioluminescence: demonstrating NanoLuc HiBiT as a superior assay for PROTAC-mediated BRD4 degradation

Author: Jona Garcia
Supervisor: Naoki Kanoh

Affiliation: Advanced Therapeutic Technologies, Royal College of Surgeons in Ireland, Dublin, Ireland

Type of the paper: Original paper

Introduction and aim. Drug discovery increasingly relies on targeted protein degradation to tackle previously "undruggable" proteins. Proteolysis-targeting chimeras (PROTACs) are leading this field, but progress is often slowed by limitations in how protein degradation is measured. Western blotting, the current standard, is labour-intensive, variable, and poorly suited for high-throughput screening. The NanoLuc HiBiT system offers a faster, more sensitive, and reproducible alternative for real-time protein quantification in live cells. The aim was to establish NanoLuc HiBiT as a superior platform for evaluating PROTAC-mediated protein degradation, demonstrated through the synthesis and testing of trivalent PROTACs targeting BRD4.

Material and methods. The trivalent PROTAC 1,2,5T-EG2-MeVHL and its positional isomers were synthesised following published protocols. BRD4 degradation was quantified in live cells using HiBiT, with MZ1 as a benchmark. Luminescence was measured across concentrations and time points, and results were compared with published Western blot data to assess sensitivity, reproducibility, and assay fidelity.

Results. HiBiT revealed clear, dose-dependent BRD4 degradation. Both 1,2,5T-EG2-MeVHL and MZ1 showed strong activity, while 1,2,6T was the most potent isomer, highlighting linker-position effects. HiBiT outperformed Western blotting, providing faster, higher-resolution, and more reproducible data. Minor differences were attributed to cell line variability.

Conclusion. NanoLuc HiBiT is validated as a next-generation assay for targeted protein degradation, offering a scalable, robust, and high-throughput platform to accelerate degrader research, streamline PROTAC development, and advance drug discovery.

Keywords. NanoLuc HiBiT, PROTACs, targeted protein degradation

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Title of presented paper: Mastering neuroanatomy: essential digital resources for medical students

Authors: Shubham Verma, Het Bhaveshkumar Modi, Asif Muhammad, Anfal Hameed
Supervisor: Yana Milyushina

Affiliation: Department of Anatomy, Histology and Topographic Anatomy named prof. Khlopov N.A., Semey Medical University, Semey, Kazakhstan

Type of the paper: Original paper

Introduction and aim. Neuroanatomy is one of the most challenging subjects in medical education. Traditional cadaveric dissections and textbooks remain essential but may not provide sufficient visualization or interactivity. This study aimed to evaluate key digital applications and websites that aid medical students in learning the nervous system.

Material and methods. Twenty second-year medical students studying the module Normal Nervous System reviewed widely used digital platforms. Mobile applications (Complete Anatomy, Visible Body, 3D Brain) and websites (Kenhub, TeachMeAnatomy, AnatomyZone) were assessed for visualization quality, accessibility, clinical relevance, and usefulness for self-study using a three-point scale (1=Poor, 2=Average, 3=Excellent).

Results. Applications offered interactive 3D models, dissections, and dynamic brain and spinal cord views, improving spatial understanding. Websites provided structured explanations, quizzes, and case-based learning, strengthening theoretical knowledge and exam readiness. Comparative analysis showed all resources were beneficial, but Complete Anatomy stood out as the most comprehensive, integrating advanced visualization with clinical content.

Conclusion. Digital anatomical tools significantly enrich neuroanatomy learning by complementing traditional teaching, enhancing engagement, and supporting long-term retention. While Complete Anatomy proved most effective overall, combining multiple platforms yields the best educational outcome.

Keywords. anatomical resources, applications, medical education, nervous system, websites

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Title of presented paper: Analysis of antibiotic resistance profile of E. coli strains isolated from urinary catheters from hospitalized patients

Authors: Marcin Górski, Gabriela Nowak
Supervisor: Agnieszka Magryś

Affiliation: Chair and Department of Medical Microbiology, Faculty of Medicine, Medical University, Lublin, Poland

Type of the paper: Original paper

Introduction and aim. Nosocomial infections remain a major concern, with urinary tract infections among the most frequent. Their occurrence is strongly linked to indwelling urinary catheters. Uropathogens such as *Escherichia coli*, often harbor resistance mechanisms, complicating treatment. The aim was to evaluate the prevalence and resistance profiles of *E. coli* strains isolated from urinary catheters in hospitalized patients.

Material and methods. The study included 26 patients hospitalized at the Department of Urology and Urological Oncology who had an indwelling urinary catheter for at least 48h. Catheters were aseptically removed, placed in saline and vortexed to dislodge adherent bacteria. The resulting suspensions were inoculated onto MacConkey agar and cultured under standard conditions. Bacterial isolates were identified using the Vitek2 Compact system. Antimicrobial susceptibility testing was performed according to EUCAST guidelines.

Results. Among 26 catheter samples, 9 strains (34.6%) were identified as *E. coli*. Resistance to ampicillin was most prevalent, observed in 8 strains (88.9%). Six strains (66.7%) were resistant to trimethoprim-sulfamethoxazole, 4 (44.4%) to ciprofloxacin, and 2 (22.2%) to nitrofurantoin. None of the isolates demonstrated resistance to ertapenem, and no carbapenemase-producing Enterobacterales (CPE) were detected. One strain (11.1%) produced ESBL and was resistant to gentamicin.

Conclusion. A considerable proportion of *E.coli* strains from urinary catheters were resistant to ampicillin and trimethoprim-sulfamethoxazole, with lower resistance to ciprofloxacin and nitrofurantoin, while ESBL production was rare. These findings emphasize the importance of susceptibility testing to guide effective antibiotic therapy.

Keywords. antibiotic resistance, *Escherichia coli*, urinary tract infections

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Title pf the paper: The neurochemical coding of the nerve fibers supplying the porcine urinary bladder wall and containing the phoenixin-preliminary studies

Authors: Jakub Skowron, Paweł Janikiewicz, Emilia Lemkowska, Hubert Ćwikliński
Supervisor: Agnieszka Bossowska

Affiliation: Department of Human Physiology, Faculty of Medical Sciences, University of Warmia and Mazury in Olsztyn, Poland

Type of the paper: Original paper

Introduction and aim. Phoenixin (PNX), a newly discovered hypothalamic neuropeptide has recently been suggested not only to change different autonomic functions of the hypothalamus (e.g., release rate of gonadotropins from the pituitary gland), but also to be present in the sensory neurons of dorsal root ganglia (DRGs) and the spinal cord. However, there is no detailed information dealing with the potential involvement of PNX in innervations of the urinary bladder wall. The aim of the present study was to identify the expression of PNX in nerve fibers (NF) supplying the urinary bladder wall and to determinate the chemical coding of these fibers containing PNX.

Material and methods. The study was carried out on 3 female pigs. Samples from the bladder wall were processed for double-labelling immunofluorescence with antibodies against PNX, substance P (SP), somatostatin (SOM), nitic oxide synthase (NOS) and dopamine beta hydroxylase (DBH).

Results. A small number of PNX-immunoreactive fibers (9%) were observed in the submucosa layer. Fibers containing PNX were much more numerous in the muscular layer of the bladder wall (20%). A moderate number of PNX-IR nerve fibers distributed in the muscular layer contained additionally SP and/or SOM (25 and 20%, respectively). Single PNX-IR NFs found in the muscular layer contained also NOS (6% of all PNX+ fibers). In contrast, single PNX+ fibers were observed in the submucosa, additionally being either SP- (70%) or SOM-immunoreactive (20%). Results of this study showed for the first time that PNX contributes to the innervation of the porcine bladder wall.

Conclusion. The colocalization of PNX with NOS in the muscular layer may suggest the influence of PNX on muscle contractility. On the other hand, the presence of PNX and SP in the same nerve fibers suggests that PNX may play a role in sensory transmission from the urinary bladder.

Keywords. immunofluorescence, phoenixin, urinary bladder innervation
Keywords. nerve fibers, phoenixin, urinary bladder"

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Title of presented paper: "Sulfur granules" and hidden polymicrobial army – *Actinomyces canaliculitis* revealed: a case report

Authors: Nicole Kosmider [1], Aleksandra Czępińska-Myszura [1]
Supervisors: Małgorzata M. Kozioł [2], Beata Rymgayłło-Jankowska [3]

Affiliation: [1] Students Scientific Association at the Chair and Department of Medical Microbiology, Medical University of Lublin, Lublin, Poland
[2] Chair and Department of Medical Microbiology, Medical University of Lublin, Lublin, Poland
[3] Clinic Department of Diagnostics and Microsurgery of Glaucoma, Medical University of Lublin, Lublin, Poland

Title of presented paper: Case report

Introduction and aim. Lacrimal system infections frequently complicate diagnostic assessment, due to their ambiguous clinical features. *Actinomyces* spp., Gram-positive anaerobic bacteria, are one of the most predominant etiologic agents of canaliculitis. Epiphora, chronic conjunctival hyperemia, or purulent discharge, may resemble other ocular surface diseases, causing diagnostic delay. Identifying yellow concretions, commonly called "sulfur granules," indicates a classic finding. How often do we realize that actinomycetes rarely acts alone, often hiding among co-infecting bacteria? As a result, our case focused on improving the diagnosis, avoiding the delay in the detection in addition to highlighting the possible polymicrobial biota.

Description of the case. A 65-year-old male reported persistent left-eye redness and pruritus for three months. Purulent discharge developed two weeks prior, with swelling of the lower eyelid noted a day before admission. Initial empiric therapy with levofloxacin and amikacin showed no efficacy. During slit-lamp examination, the lacrimal sac ostium was distended, and grey-yellow concretions resembling "sulfur granules" were expressed on palpation. Swabs and granules from the conjunctival sac and canaliculi were collected. Direct microscopy of crushed granules confirmed the presence of *Actinomyces* spp.. Swab cultures revealed coexisting growth of *Klebsiella pneumoniae* (ESBL-negative), *Staphylococcus epidermidis*, and *Corynebacterium* spp.. After topical therapy with moxifloxacin and gentamicin, the patient was referred for dacryocystography and subsequent dacryocystorhinostomy.

Conclusion. *Actinomycotic canaliculitis* is commonly overlooked owing to its non-distinct symptoms and mixed microbial involvement. Definitive treatment requires a combination of antimicrobial therapy and surgical intervention to restore lacrimal drainage patency. Detecting "sulfur granules" and fostering collaboration between ophthalmologists and microbiologists are pivotal to achieving successful outcomes.

Keywords. actinomycetes, lacrimal tract infection, *Klebsiella pneumoniae, Staphylococcus epidermidis, Corynebacterium* spp.

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Title of presented paper: Dorsal hand veins as a unique biometric identifier: a study in the Omani population

Authors: Abdullah Al Lawati, Abdulrahman Al-Hadhrami, Srijit Das
Supervisor: Srijit Das

Affiliation: Department of Human & Clinical Anatomy, College of Medicine and Health Sciences, Sultan Qaboos University, Muscat, Oman

Type of the paper: Original paper

Introduction and aim. Dorsal hand veins form distinctive, stable subcutaneous patterns that may support secure biometric identification. This study observed and analyzed dorsal metacarpal vein (MCV) characteristics in young adults from Oman.

Material and methods. In a descriptive observational study, 99 students (50 males, 49 females; mean age 21 years) were imaged bilaterally using a Vein Scanner mobile application and 48–64 MP photography on a fixed tripod in reflection mode, with standardized lighting and post-capture processing. Images of poor quality, obscured veins, or no visible veins were excluded. Of 198 hands, 190 met quality criteria; 10 lacked a prominent vein and were excluded from vein-specific counts. Vein prominence (1st–4th dorsal MCV) was recorded; demographics and hand-use activities were surveyed. Ethical approval: SQU MREC #3131.

Results. Among 180 hands with a prominent vein, the second dorsal MCV dominated (n=94; 49.47%), followed by the third (n=68; 35.79%), fourth (n=15; 7.89%), and first (n=3; 1.58%). By gender, the second vein was most prominent in both males (n=44) and females (n=50). The third vein was more frequent in males (n=41 vs. 27), whereas the fourth was more frequent in females (n=10 vs. 5). Laterality was similar across left (n=95) and right (n=95) hands. Participants reporting heavy lifting (n=16) or musical instrument use (n=8) tended to show more prominent veins.

Conclusion. In this Omani cohort, the second dorsal MCV is the predominant vessel, supporting the feasibility of dorsal hand-vein–based biometrics. Population-specific baselines such as these can inform algorithm design; broader, infrared-based studies are warranted to optimize accuracy and generalizability.

Keywords. biometrics, branching patterns, dorsal hand veins, identification, Omani population, vein prominence

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Title of presented paper: Role of interleukin 6 and interleukin 4 in the regulation of wound healing during photobiomodulation therapy

Authors: Yevheniia Shcherbyna, Daria Yankovska
Supervisor: Sergey Pavlov

Affiliation: Kharkiv National Medical University, Kharkiv, Ukraine

Type of the paper: Original paper

Introduction and aim. The study aimed to investigate the effect of PBM therapy on the expression of key regulatory proteins, interleukin-6 (IL-6) and interleukin-4 (IL-4), which influence the development of reparative processes in chronic wounds.

Material and methods. The experiment was conducted on 18 rats. Chronic wounds were simulated in 12 animals. Photobiomodulation therapy was applied to 6 animals. Interleukin 6 and interleukin 4 were determined in blood serum.

Results. In the animals whose wound defects were exposed to PBM therapy, on the 28th day of the experiment, there was a 1.56-fold decrease in serum IL-6 levels ($p < 0.05$) compared to the same indices of the control group animals (Fig.A). This is likely related to the anti-inflammatory activity of laser radiation. At the same time, on the 14th day after surgery, there were no differences in the levels of this cytokine in the control and experimental groups.

Conclusion. PBM therapy is an effective method to regulate the expression of cytokines IL-6 and IL-4 at different stages of chronic wound healing. It is necessary to continue researching the effect of PBM therapy on the wound process, paying attention to both cellular and molecular mechanisms of wound healing and optimization of laser radiation parameters.

Keywords. chronic wound, photobiomodulation, wound healing

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Title of presented paper: Assessing the need for emergency medicine in the medical curriculum at RCSI

Authors: Elise Coughlan, Matthew King, Brooke Mackinnon, Nadim Sayani
Supervisor: Izabella Orban

Affiliation: Connolly Hospital, Royal College of Surgeons in Ireland, Dublin, Ireland

Type of the paper: Original paper

Introduction and aim. Emergency Medicine (EM) provides an excellent learning environment for medical students to develop essential skills such as critical thinking, problem-solving, and decision-making, which are crucial for managing undifferentiated patients and are fundamental for the future healthcare workforce, regardless of specialty (IFEM). Currently, RCSI lacks a dedicated undergraduate EM curriculum and offers limited EM clinical exposure. This study aims to assess Senior Cycle 1 and 2 students' opinions on the need for an EM curriculum and their self-reported competence in performing core EM tasks.

Material and methods. This is a descriptive cross-sectional mixed-method study, approved by the RCSI Student Engagement and Partnership Programme (StEP, Level 1 project), using an anonymous online survey with 9 questions (including open-ended questions) targeting fourth- and fifth-year medical students. The survey was distributed to 776 students from March 21 to May 16, 2025, and data will be analyzed using statistical and content analysis. Preliminary results were extracted after one week and are presented herein.

Results. In week 1, the response rate was 7.47% (58 responses), with 60.3% SC1 and 39.7% SC2 students. Regarding EM exposure: 27.6% had none, 10.3% completed an EM sub-internship, and 22.4% participated in an ED observership, while 13.8% had EM placement or pre-hospital exposure. A significant 72.4% of students reported that the lack of EM exposure affected their professional development. Common competencies students felt unprepared to perform included identifying critically ill patients (17.4%) and performing resuscitation (15.2%). Based on the content analysis, the majority of students suggested a mandatory 2–4-week EM rotation with more emphasis on simulation and ultrasound training.

Conclusions. Preliminary results suggest a strong student's desire for formal EM education at RCSI. This project will seek Level 2 funding through the RCSI StEP programme to engage stakeholders and relevant experts in developing an EM curriculum."

Keywords. emergency medicine, needs assessment, undergraduate medical curriculum

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Title of presented paper: Antioxidant properties of selected plants from the *Amaranthaceae* family (*Amaranthaceae* Juss.)

Author: Natalia Januszczak
Supervisor: Michalina Grzesik-Pietrasiewicz

Affiliation: Student Scientific Association "Molecule", Faculty of Medicine, University of Rzeszów, Poland

Type of the paper: Review

Introduction and aim. Plants from the *Amaranthaceae* family (*Amaranthaceae* Juss.) are a rich source of biologically active compounds with well-documented antioxidant, anti-inflammatory, and antimicrobial properties. These properties make them attractive for potential therapeutic and nutraceutical applications. The aim of this study was to summarize current knowledge on the antioxidant potential of selected *Amaranthaceae* species – *Amaranthus spp.*, *Chenopodium quinoa*, *Spinacia oleracea* and *Celosia spp.* – and to analyze the factors affecting the phenolic content and antioxidant activity of the studied plants.

Material and methods. A literature review of studies published between 2010 and 2024 was conducted. The analysis included *in vitro* and *in vivo* studies evaluating total phenolic content and antioxidant capacity. Data concerning environmental and genetic influences, as well as post-harvest processing, were also considered to determine their impact on antioxidant potential.

Analysis of the literature. Among the analyzed species, the highest total phenolic content and antioxidant activity were observed in *Chenopodium quinoa* and *Celosia spp.*. Extracts from *Amaranthus cruentus* exhibited strong ferric-reducing and radical-scavenging capacity, while *Spinacia oleracea* demonstrated additional antioxidant effects related to carotenoids such as lutein and zeaxanthin. Genetic and environmental factors – including genotype, salinity, drought stress, and developmental stage – were shown to modulate phenolic accumulation and antioxidant enzyme activity.

Conclusion. The reviewed evidence indicates that *Amaranthaceae* species exhibit strong and diverse antioxidant potential, primarily attributed to phenolic compounds, flavonoids, and betalains. This biochemical diversity underpins their potential use as natural antioxidants in functional foods and health-promoting formulations. Nevertheless, substantial interspecific and environmental variability underscores the necessity for methodological standardization and further clinical validation.

Keywords. *Amaranthus* spp., antioxidants, functional food, oxidative stress, polyphenols

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Title of presented paper: The prevalence of imposter syndrome and its association with psychological distress: a cross-sectional study

Authors: Abdullah Al Lawati [1], Azzan Al-Wahshi [1], Tamadhir Al-Mahrouqi [2], Younis Al-Mufargi [3]
Supervisor: Hamed Al-Sinawi [2]

Affiliation: [1] Sultan Qaboos University, Muscat, Oman
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[3] Department of General Surgery, Medical City Hospital for Military and Security Services, Muscat, Oman

Type of the paper: Original paper

Introduction and aim. Imposter Syndrome (IS) is characterized by persistent self-doubt and feelings of intellectual fraudulence despite evidence of competence. It is highly prevalent among high-achieving individuals, particularly university students. Although IS is believed to be linked with psychological distress such as anxiety and depression, regional data from the Middle East remains limited. Understanding this phenomenon is vital in environments driven by performance. This study aimed to assess the prevalence of IS among undergraduate students at Sultan Qaboos University (SQU) and assess its association with depression and anxiety.
Material and methods. A cross-sectional study was conducted among 504 stratified-randomly selected full-time undergraduate students at SQU. Participants completed a validated online questionnaire including the Clance Imposter Phenomenon Scale (CIPS), Patient Health Questionnaire-9 (PHQ-9), and Generalized Anxiety Disorder-7 (GAD-7). Statistical analyses included Pearson's correlation, chi-square testing, and logistic regression.
Results. IS was present in 56% of participants. CIPS scores were moderately correlated with depression ($r=0.486$, $p < 0.001$) and anxiety ($r=0.472$, $p < 0.001$). Students who experienced imposter syndrome showed a higher probability of developing depressive symptoms ($\chi2=45.63$, $p < 0.001$, OR=3.49) and anxiety symptoms ($\chi2=32.96$, $p < 0.001$, OR=2.86). Logistic regression showed that depressive (B=0.096, $p < 0.001$) and anxiety symptoms (B=0.075, $p=0.003$) were significant predictors of IS.
Conclusion. This study reveals a strong link between imposterism, depression, and anxiety among students, underscoring the need for targeted counseling interventions and clinical recognition of the phenomenon.
Keywords. anxiety, depression, imposter syndrome, Oman, students

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Title of presented paper: miRNA panels as a tool for early cancer detection

Author: Wiktoria Kot
Supervisor: Marek Cieśla

Affiliation: Student's Scientific Club of Medical Analysts "GENOM", Medical College of Rzeszów, University of Rzeszów, Poland

Type of the paper: Original paper

Introduction and aim. Breast cancer remains the most frequently diagnosed malignancy in women worldwide. Despite advances in imaging and molecular diagnostics, early detection is still a major clinical challenge. Circulating microRNAs (miRNAs) are stable, non-invasive biomarkers detectable in blood and other body fluids. While single miRNAs often lack sufficient sensitivity and specificity, combining multiple miRNAs into diagnostic panels may enhance accuracy. The study aimed to identify and validate circulating miRNA combinations in plasma that could serve as effective diagnostic tools for early-stage breast cancer.

Material and methods. Plasma samples from patients with early-stage breast cancer and healthy controls were analyzed. Candidate miRNAs were screened using high-throughput profiling, followed by statistical selection and evaluation of multi-marker combinations. Machine learning models were applied to optimize diagnostic performance. Receiver operating characteristic (ROC) analysis was used to assess accuracy, expressed as area under the curve (AUC), sensitivity, and specificity.

Results. Several multi-miRNA panels demonstrated superior diagnostic power compared to individual biomarkers. The most promising panel achieved an AUC above 0.90, enabling robust discrimination between early breast cancer patients and healthy individuals. Multi-marker analysis significantly reduced both false-positive and false-negative rates compared with single miRNA detection.

Conclusion. The findings support the potential of multi-miRNA panels as a promising approach for non-invasive early breast cancer diagnostics. Coupling miRNA profiling with bioinformatics and machine learning methods may accelerate the development of accurate screening tests.

Keywords. biomarker, breast cancer, diagnostic potential, miRNA, molecular diagnostics

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Title of presented paper: Densitometric analysis of bone density depending on physical activity

Author: Dominika Bać
Supervisor: Aleksandra Pusz-Sapa

Affiliation: Student's Scientific Club "Młoda Elektroradiologia", Medical College of Rzeszów, University, Rzeszów, Poland

Type of the paper: Original paper

Introduction and aim. The aim of the study is to assess the bone mineral content (BMC) and bone density (BMD) T-Score and Z-Score in young physically active individuals compared to a group of individuals who only engage in daily activities.

Material and methods. The study group consisted of 60 students aged 20-25. The physically active group (sports group) consisted of students of physical education (15 women and 15 men - mean age 21.2 years). The physically inactive group (control group) consisted of students of other fields (pedagogy, electroradiology, and public health) (15 women and 15 men - mean age 21.6 years). Each participant underwent three densitometric measurements: the total body, the lumbar spine L1-L4 in the Posterior-Anterior projection (the L1-L4 segment was assessed), and the proximal femur (right and left). The examination was performed using the Lunar iDXA device (GE Healthcare) using dual-beam X-ray absorptiometry. Bone mineral content (BMC), bone density (BMD), T-scores, and Z-scores were analysed for each measurement in each group. Results were compared between groups and gender using the Student's t-test.

Results. Based on the obtained results, statistically significant differences were found in BMD, T-Scores, and Z-Scores at the assessed locations – higher values were obtained in the overall athletic group. In men, statistically significant differences were observed in BMD, T-Scores, and Z-Scores of the entire skeleton and the L1-L4 segment – higher values were obtained in the physically active group. Furthermore, higher BMC, BMD, T-Scores, and Z-Scores were observed for measurements of the proximal end of the right and left femurs in the physically active group compared to the inactive group, but these differences were not statistically significant. In women, statistically significant differences were observed for BMC, BMD, T-Scores, and Z-Scores of the entire skeleton and the proximal end of the right and left femurs. Higher values were obtained in the physically active group of women. Moreover, statistically insignificant differences were noted in the measurement of BMC, BMD, T-Score and Z-Score of the L1-L4 section – higher values were obtained in the group of active women.

Conclusion. Higher bone density values were obtained in the physically active group.

Keywords. bone density, bone mineral content, densitometry

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Title of presented paper: The role of microRNAs in genomic instability during aging and carcinogenesis

Author: Julia Połeć
Supervisor: Sabina Galiniak

Affiliation: Student Scientific Association "Molecule", Faculty of Medicine, University of Rzeszów, Poland

Type of the paper: Review

Introduction and aim. Genomic instability is recognized as a hallmark of both aging and cancer. A key determinant of genomic stability is epigenetic regulation, which relies on DNA and histone modifications as well as microRNAs (miRNAs). miRNAs are short non-coding RNAs that mediate gene silencing through mRNA degradation or translational repression.

Material and methods. A systematic literature review was conducted using the PubMed database. Articles published between 2020 and 2025 were considered. The search strategy included the following Keywords. cell aging, miRNA, and miRNA aging. Studies were included if they investigated the molecular role of miRNAs in DNA damage response, chromosomal cohesion, mitotic checkpoint regulation, or aging-related genomic alterations.

Analysis of the literature. Recent studies highlight the dual role of miRNAs in maintaining or disrupting genomic stability. For instance, the miR-34 family regulates p53-dependent DNA damage responses, while miR-29 is involved in DNA methylation and repair mechanisms. Dysregulation of miR-155 and miR-21 has been linked to impaired DNA repair and increased chromosomal instability in cancer. Age-associated changes in miRNA expression (e.g., downregulation of miR-146a, upregulation of miR-217) further compromise DNA repair pathways and mitotic fidelity, thereby accelerating genomic instability. These aberrant miRNA profiles act as drivers of both carcinogenesis and age-related pathologies.

Conclusion. miRNAs represent crucial regulators at the intersection of aging, genomic instability, and cancer development. Specific miRNAs have been identified as key modulators of DNA repair and chromosomal stability. Further investigations are required to elucidate the precise mechanisms and specific miRNAs implicated in aging and tumorigenesis. Such insights may facilitate the development of novel therapeutic targets and biomarkers of disease progression.

Keywords. aging, cancer, miRNA, genomic instability

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Title of presented paper: Oxidative stress in mothers of premature infants

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Supervisors: Mateusz Mołoń, Sabina Galiniak

Affiliation: Faculty of Biology, Nature Conservation and Sustainable Development, Rzeszów University, Rzeszów, Poland

Type of the paper: Original paper

Introduction and aim. Oxidative stress, resulting from an imbalance between reactive oxygen species and antioxidant defense mechanisms, plays a significant role in the pathogenesis of many diseases, as well as during pregnancy and the development of the newborn. Neonatal children, especially preterm infants, are particularly vulnerable to oxidative damage due to their immature defense systems. The aim of this study was to determine the level of oxidative stress in mothers of preterm infants.

Material and methods. The study compared 36 urine samples from mothers of preterm infants with 63 urine samples from mothers of full-term infants. Selected markers of oxidative stress were analyzed, including malondialdehyde (MDA), Amadori products, advanced oxidation protein products (AOPP), and total antioxidant capacity (TAC) using the ABTS and FRAP methods.

Results. In our study, we noted that a significantly higher level of MDA was observed in mothers of preterm infants compared to mothers of full-term infants. This difference was statistically significant (p=0.001), indicating increased lipid peroxidation. Moreover, the TAC, which was measured using two methods: FRAP and ABTS, noted that the level of FRAP was lower in mothers of preterm infants compared to mothers of full-term infants. The difference was statistically significant (p=0.015).

Conclusion. The results showed the presence of oxidative stress in mothers of preterm infants, suggesting a possible link between increased oxidative stress and preterm birth.

Keywords. premature infants, oxidative stress, mothers

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Title of presented paper: Oxidative stress biomarkers in neonatal patients

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Type of the paper: Original paper

Introduction and aim. Oxidative stress is defined as an imbalance between the production of reactive oxygen species and the body's antioxidant capacity. Newborns, particularly those born prematurely, are highly vulnerable to oxidative stress due to immature antioxidant defenses. This imbalance can damage biological molecules and contribute to diseases. Our study aimed to compare specific oxidative stress markers in premature versus full-term newborns.

Material and methods. 38 prematurely born newborns and 62 full-term newborns were included. We determined the urine levels of advanced oxidation protein products (AOPP), Amadori products, malondialdehyde (MDA), and total antioxidant capacity (TAC) were assessed using two independent methods: FRAP and ABTS.

Results. The study results showed a significant reduction in TAC values determined by the FRAP method in the preterm infants compared to the control group ($p=0.008$). A different trend was observed for ABTS measurements, with higher TAC values obtained in the study group ($p=0.045$). No significant differences in AOPP levels were observed between the study groups. However, lower MDA concentrations ($p<0.001$) and increased levels of Amadori products were observed in the preterm infants ($p=0.014$).

Conclusion. The obtained results confirm the complex role of oxidative stress in the pathophysiology of newborns, with particular emphasis on the population of premature infants hospitalized in neonatal units.

Keywords. biomarkers, oxidative stress, preterm infants

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Title of presented paper: Use of mesenchymal stromal cells (MSCs) secretome components as an alternative to cells in regulating neutrophilic inflammation in an experimental asthma model

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Type of the paper: Original paper

Introduction: The immunosuppressive properties of mesenchymal stromal cells (MSCs) have been successfully demonstrated in numerous preclinical studies involving chronic inflammatory diseases, including asthma. Unfortunately, scientific efforts showing MSC efficacy did not result in therapy optimization. Therefore, we developed an alternative approach utilizing MSC-derived extracellular vesicles (EVs) reflecting the properties of the whole cell, while minimizing safety concerns.

Aim of the work: Here, we aimed to assess the effectiveness of MSC-derived extracellular vesicles in regulating neutrophilic inflammation in the house dust mite (HDM) induced experimental asthma model.

Materials and methods: C57BL/6 mice were challenged with HDM extract (100mg) for 5 consecutive days in each of 2 weeks to induce neutrophilic lung inflammation. Moreover, on the 13th day of the experiment, mice were administrated EVs isolated from unstimulated MSC culture media mixture or pre-educated with inflammatory cytokines (pr-EVs).

Results: Firstly, we confirmed that both EVs limit neutrophilic airway inflammation. Moreover, analysis of canonical and noncanonical pathways revealed the downregulation in arachidonic acid metabolism and lipid metabolism using both MSCs and EVs. Interestingly, in contrast to MSCs only EVs administration caused the decrease in the levels of Th2-driven cytokines and certain CXCL and CCL chemokines in BAL.

Conclusions: In summary, we confirmed that MSC-derived EV may reflect the beneficial effects of MSCs in neutrophilic airway inflammation.

The research was conducted under the project "Student Scientific Clubs Create Innovations" (No. SKN/SP/602497/2024) funded by the Ministry of Science and Higher Education.

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Title of presented paper: Educational needs in healthcare: transgender and non-binary patients

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Type of the paper: Original paper

Introduction and aim. Estimated data from the USA indicates that non-binary and transgender people constitute around 2.6% of the population. Because of a higher risk of psychological disorders and more common risky health behaviors, these patients require specialized medical care. Evaluating medical students' self-assessed knowledge educational needs regarding healthcare for transgender patients.
Material and methods. A survey study was conducted among medical students from March to December 2024. The original questionnaire consisted of closed-ended and open-ended questions and was distributed in electronic form. The questions concerned students' opinions on the educational needs regarding healthcare for transgender and non-binary patients and their self-assessed knowledge.
Results. The study involved 263 respondents, 61% of whom believed that content concerning care of transgender and non-binary patients should be included in the curriculum. Respondents rated their competencies highest in patient communication and lowest in their knowledge of surgical and hormonal treatment methods, despite the vast majority (86%) reporting no contact with these patients. Social media was the main source of information for 73% of the participants. 81% of respondents did not feel prepared to interact with transgender and non-binary patients. 88% of those surveyed reported that no content on caring for this patient group was provided during their classes.
Conclusion. There is a need to create sources of knowledge on the care of transgender and non-binary patients. The students' feeling of being unprepared to care for this group and their low self-assessed knowledge in this area indicate a necessity to include this information in the curriculum.
Keywords. medical education, non-binary patients, transgender healthcare

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Title of presented paper: Rare histiocytic neoplasm: a case report

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Type of the paper: Case report

Introduction and aim. Histiocytic neoplasms are rare disorders characterized by abnormal proliferation of cells derived from the monocyte-macrophage lineage. Due to their rarity and histological heterogeneity, diagnosis may be challenging. The aim of this case report is to present an unusual localization of a histiocytic lesion and to emphasize the importance of histopathological and immunohistochemical evaluation in differential diagnosis.

Description of the case. A 76-year-old man presented with progressive weakness and sensory loss in the lower limbs. MRI revealed an intramedullary lesion at T5 with syringomyelia from C7 to T10. The lesion was surgically removed. Histopathology showed spindle-shaped histiocytes with mild atypia and low mitotic activity. Immunohistochemistry was positive for CD68 and CD163, and negative for S100, conforming to an atypical histiocytic neoplasm.

Conclusion. This case highlights the diagnostic difficulties in identifying rare histiocytic neoplasms, especially in atypical locations such as the spinal cord. Comprehensive histological and immunohistochemical evaluation is essential for accurate diagnosis and differentiation from other histiocytic or inflammatory lesions.

Keywords. case report, histiocytic neoplasm, histiocytosis, spinal cord

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Title of presented paper: Mosaic loss of chromosome Y in men: implications for aging, disease risk and male health

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Type of the paper: Review paper

Introduction and aim. Mosaic loss of chromosome Y (mLOY) is a common somatic genetic alteration observed in aging men, characterised by the progressive loss of chromosome Y in blood cells. It has been associated with increased risk of age-related diseases including cancer, cardiovascular and neurodegenerative disorders like Alzheimer's and Parkinson's. The Y chromosome carries genes essential for male fertility, immune function and genomic stability. The presence of mLOY may impair these biological functions and contribute to men's shorter lifespan in comparison to women. This review aims to assess mLOY's prevalence, mechanisms, and clinical implications.

Material and methods. A literature review was conducted focusing on studies published from 2020 to 2025, using databases PubMed and Research Gate. Keywords applied included: mosaic loss of chromosome Y, somatic mosaicism, aging, neurodegenerative diseases, male health. Publications selected reported clinical and epidemiological data on mLOY's prevalence, molecular mechanisms, and health impacts. Studies lacking clinical relevance were excluded.

Results. Evidence indicates that mLOY frequency increases with age, affecting up to 40% of men over 70 years old. This chromosomal loss correlates with heightened inflammation and genomic instability. Men with mLOY show higher rates of cardiovascular diseases, prostate and hematological cancers as well as neurodegeneration. The loss of the Y chromosome impairs immune competence by disrupting hematopoietic stem cell function. The growing evidence suggests a link between mLOY and biological aging. Besides age, smoking and SNPs (single nucleotide polymorphism) in cell cycle genes increase its prevalence. However, the exact pathways by which mLOY influences disease require further research.

Conclusion. Mosaic loss of chromosome Y is a promising biomarker of biological aging and a contributing factor to increased disease risk and deteriorating male health. Monitoring mLOY could improve early identification of men at risk of age-related pathologies. Further research into targeted therapies to mitigate mLOY effects may improve health and reduce morbidity in aging men.

Keywords. Alzheimer's disease, cardiovascular disease, mosaic loss of chromosome Y, neurodegeneration, somatic mosaicism

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Title of presented paper: Migrasomes in health and disease: insights into mechanisms, pathogenesis, and therapeutic opportunities

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Type of the paper: Review paper

Introduction and aim. Migrasomes are newly discovered, migration-dependent organelles that play critical roles in intercellular communication, organ development, mitochondrial quality control, and disease pathogenesis. Recent studies have revealed their involvement in diverse pathological contexts, including kidney disease, cancer progression, proliferative vitreoretinopathy, viral infections, and myocardial infarction. This review explores the understanding of their biology, implications in health and disease, and explores emerging perspectives on harnessing migrasomes for diagnostic and therapeutic applications.

Material and methods. PubMed, Web of Science, Embase, and Science Direct were used in the formation of this literature review. Using keywords, Migrasomes, Migracytosis, intercellular communication, Tetraspanins, 92 papers ranging from 2015 to current were analysed and compared. Only studies in English were included.

Analysis of the literature. Migrasomes are novel organelles, discovered by Ma et al.2015, which have been compared to exosomes. The nature of migrasomes has been found to differ from those of exosomes despite their shared role in cell signaling. Migrasomes enable direct cell-to-cell communication through a process called migracytosis, which influences both physiological and pathological processes in numerous cancers, acute and chronic diseases. There is a link between migrasomes and tumor progression, which highlights the potential to alter migrasome formation.

Conclusion. Research findings offer a promising foundation for developing migrasome formation inhibitors, allowing future research to explore this potential further. The possibility of reverse engineering the migrasome-mediated disease pathway has been proposed and could significantly transform disease management.

Keywords. intercellular communication, migracytosis, migrasomes, tetraspanins

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Title of presented paper: Pine pollen as a natural modulator of liver function under androgen deficiency

Authors: Oliwia Szeredko [1], Piotr Prokopiak [1], Oktawia Wojtaszek [1], Jakub Balawejder [2]
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Type of the paper: Original paper

Introduction and aim. Hypogonadism, characterized by testosterone deficiency, disrupts lipid metabolism, promotes hepatic triglyceride accumulation, and enhances oxidative stress, increasing susceptibility to non-alcoholic fatty liver disease (NAFLD).This study investigated whether pine pollen, a natural source of phytohormones with androgen-like and antioxidant properties, could improve lipid balance, liver structure, and oxidative status in Wistar rats with gonadal hormonal inactivity.

Material and methods. Thirty male Wistar rats (~3 months old) were maintained under standard conditions. The control group (CON-SHO) underwent a sham operation, whereas experimental groups were bilaterally orchidectomized (ORX) under isoflurane anesthesia. After 7 days of recovery, rats received daily treatments for 60 days: physiological saline (CON-SHO, ORX), pine pollen (50 or 150 mg/kg BW; ORX-PP50, ORX-PP150), or testosterone (7 mg/kg BW per week; ORX-TEST). Blood was collected post-experiment for biochemical analyses, and liver tissue obtained post-euthanasia was used for histomorphometric and oxidative stress assessments.

Results. Pine pollen at 150 mg/kg BW significantly reduced serum triglycerides, LDL, and VLDL to near-control levels, while the highest total and HDL cholesterol occurred in ORX-PP50 rats. Orchidectomy caused hepatic congestion, vacuolar degeneration, and collagen deposition, which were alleviated by pine pollen or testosterone. High dose of pine pollen restored hepatic MDA, SOD, and GSH to control values, while testosterone showed weaker effects. CAT remained unchanged.

Conclusion. Pine pollen supplementation mitigated orchiectomy-induced hepatic dysfunction and oxidative stress in a dose-dependent manner, supporting its hepatoprotective potential as a natural alternative to testosterone therapy.

Keywords. lipid profile, liver, orchidectomy, oxidative stress, pine pollen

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Title of presented paper: Hepatoprotective effects of whey protein supplementation in Wistar rats exposed to cadmium

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Type of the paper: Original paper

Introduction and aim. Cadmium (Cd) is a toxic metal that accumulates in the liver, kidneys, and bones, leading to oxidative stress and metabolic disorders. This study aimed to assess whether protein supplementation can improve the lipid profile and liver structure in rats exposed to cadmium.
Material and methods. Three-week-old male and female Wistar rats were divided into four groups (n=12): I – positive control (C+, $CdCl_2$), II – negative control (C–, H_2O), III – whey protein + Cd (WP+Cd), and IV – whey protein (WP). Cadmium chloride ($CdCl_2$, 19.4 mmol/L) was administered in drinking water for 10 weeks. The diets were supplemented with 11.5% whey protein concentrate (WPC80). After the experiment, blood samples were collected for biochemical analysis, and liver sections were obtained for histomorphometric examination.
Results. In female rats, the highest cholesterol and triglyceride levels were observed in the Cd-exposed control group. In males, a significant increase in GGT activity occurred in the negative control. Relative liver mass was lower in Cd- and/or WPC-treated females and Cd-exposed or WPC-supplemented males. Histological analysis showed that Cd caused necrosis, inflammation, and steatosis, whereas WPC reduced degenerative changes. In males, WPC without Cd exposure led only to mild inflammation and smaller hepatocytes, confirming its hepatoprotective effect under cadmium intoxication.
Conclusion. Whey protein mitigated cadmium-induced liver damage and improved lipid metabolism, confirming their hepatoprotective effect.
Keywords. Cd-intoxication, lipid profile, liver, whey protein

Gynecology session

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Title of presented paper: Upregulation of DEK expression in uterine myomas and cervical cancer as a potential prognostic factor

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Type of the paper: Original paper

Introduction and aim. Gynecological tumors, including uterine myomas and cervical cancer, significantly affect women's health worldwide. Despite advances in diagnostic tools, reliable biomarkers remain limited. DEK, a protooncogene involved in chromatin remodeling, DNA repair, and transcription regulation, has shown potential as a prognostic marker in several malignancies. This study investigates DEK expression in uterine myomas and cervical cancer tissues compared to normal uterine tissues.

Material and methods. Tissue samples from Chinese female patients undergoing surgery for uterine myomas or cervical cancer were collected. DEK mRNA levels were investigated using quantitative real-time polymerase chain reaction (qRT-PCR), and DEK protein levels were analyzed using immunohistochemistry and Western blotting. Statistical analyses, including ANOVA, Tukey's HSD, Kruskal-Wallis H, and Mann-Whitney U tests, were performed to assess differences in expression among tissue types.

Results. Immunohistochemical analysis revealed significantly elevated DEK protein expression in cervical cancer tissues, moderate expression in uterine myomas, and minimal expression in normal uterine tissues. Western blotting confirmed these findings, showing statistically significant differences in DEK protein levels between normal and pathological tissues. However, qRT-PCR results indicated no statistically significant differences in DEK mRNA expression across tissue types.

Conclusion. Elevated DEK protein expression in cervical cancer and uterine myoma tissues suggests its involvement in both tumor development and suppression, making it a promising biomarker for early detection in gynecological tumors. Further research is necessary to elucidate DEK's mechanisms in gynecological tumorigenesis and its potential as an early biomarker, addressing a critical need in women's health.

Keywords. cervical cancer, DEK oncogene, fertility, gynecological cancers, uterine myoma

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Title of presented paper: DiGeorge syndrome and the limitations of NIPT in detecting atypical microdeletions

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Type of the paper: Case report

Introduction and aim. DiGeorge syndrome results from a 22q11.2 microdeletion and is characterized by variable features such as congenital heart defects, thymic or parathyroid hypoplasia and developmental delay. Large deletions are more easily detected, but smaller, atypical variants often require advanced methods such as SNP (Single Nucleotide Polymorphism) array or MLPA (Multiplex Ligation-dependent Probe Amplification). NIPT (non-invasive prenatal test) is increasingly used in prenatal screening, but its sensitivity for microdeletions under 3 Mb remains limited. The aim of this case is to emphasize the diagnostic challenges when relying solely on non-invasive testing.

Description of the case. We present a prenatal case of DiGeorge syndrome confirmed by SNP array. First-trimester NIPT screening for trisomies and microdeletions, including 22q11.2, was negative. At 14 weeks, ultrasound revealed complex cardiac malformations, later confirmed by fetal echocardiography: ventricular septal defect, truncus arteriosus type II, right aortic arch with aberrant left subclavian artery and suspicion of MAPCAS (major aortopulmonary collateral arteries syndrome). Amniocentesis with QF-PCR (quantitative fluorescent PCR) excluded major aneuploidies and confirmed a female karyotype. SNP array detected a de novo proximal interstitial deletion of 2.2 Mb at 22q11.21, while parental karyotypes were normal. Due to the severity of the findings, the pregnancy was terminated after counseling.

Conclusion. This case underlines the risk of false reassurance from negative NIPT results in the context of atypical microdeletions. Comprehensive molecular analyses remain essential for accurate prenatal diagnosis, especially when ultrasound reveals severe anomalies.

Keywords. 22q11.2 deletion, DiGeorge syndrome, NIPT, prenatal diagnosis

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Title of presented paper: Correlation between lipoprotein (a) and first-trimester preeclampsia screening – a cross-sectional analysis

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Type of the paper: Original paper

Introduction and aim. Lipoprotein(a) [Lp(a)] is a recognized risk factor for atherosclerotic diseases, with levels largely determined by genetics. Recent research suggests that Lp(a) may contribute to preeclampsia (PE) pathogenesis. The aim of our study was to investigate the potential association between Lp(a) levels and the parameters of first-trimester PE screening and calculate individual risk for preeclampsia.
Material and methods. This prospective observational study was conducted at the Medical University of Warsaw. We performed a cross-sectional analysis of data from 50 pregnant women who underwent a first-trimester PE screening, including ultrasound markers and serum levels of B-hCG, PAPP-A, and PlGF, as well as a Lp(a) level measurement.
Results. The study included 23 patients classified as high-risk for preeclampsia (>1:150) and 27 patients with low-risk assessment (<1:150). The mean Lp(a) level was 16.75 mg/dL in the low-risk group and 13.19 mg/dL in the high-risk group. A comparative analysis using the Mann–Whitney U test showed no significant difference between the groups (p=0.984). Pearson's correlation analysis did not find a statistically significant association between Lp(a) levels and any of the screening test components or the final numerical risk scores for PE before 34 weeks (p=0.995) and PE before 37 weeks (P=0.621).
Conclusion. These preliminary results indicate that first-trimester Lp(a) levels do not serve as a predictive marker for PE. An ongoing prospective study will further assess whether longitudinal changes in Lp(A) are associated with PE risk. Lipoprotein(a) may not be a reliable marker for predicting preeclampsia, however, it may reflect disease severity.
Keywords. first trimester, lipoprotein (a), preeclampsia, pregnancy

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Title of presented paper: Two cancers, one gene: Lynch syndrome revealed by a rare breast tumor

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Type of the paper: Case report

Introduction and aim. Lynch syndrome (LS) is an autosomal-dominant cancer-predisposition disorder caused by germline mutations in DNA mismatch-repair (MMR) genes (MLH1, MSH2, MSH6, PMS2, or EPCAM). Loss of MMR function leads to microsatellite instability (MSI) and progressive accumulation of mutations, increasing lifetime risk for colorectal, endometrial, and other types of cancer.
Description of the case. A 53-year-old woman with a history of endometrial adenocarcinoma treated six years earlier was found on routine mammography to have right-breast microcalcifications, which proved to be invasive carcinoma. She underwent a right mastectomy with reconstruction earlier this year. Immunohistochemistry of both tumors revealed high MSI. Germline testing with next-generation sequencing and MLPA (84-gene panel) identified a large deletion of exons 1-6 of MSH2, confirming LS. Recommended surveillance included colonoscopy and upper endoscopy every three years, prophylactic aspirin, and Helicobacter pylori eradication. Notable family history included her father who was diagnosed with colon cancer at age 57. Genetic testing of her 23-year-old daughter was negative; her 46-year-old brother has not been tested yet.
Conclusion. Breast cancer is not traditionally part of the LS tumor spectrum, and MSI-high breast carcinomas occur in less than 1% of breast cancer. This case illustrates an uncommon manifestation of LS with two primary tumors, endometrial and MSI-high breast carcinoma, linked to a germline MSH2 deletion. It highlights the importance of considering LS in patients with multiple primary malignancies, even when one is atypical, and demonstrates the diagnostic value of MSI testing and comprehensive germline analysis for guiding individualized surveillance and family counseling.
Keywords. breast, cancer, endometrial, Lynch syndrome, MSH2

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Title of presented paper: In vitro fertilization in Poland: what people know, feel, and expect from policy

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Type of the paper: Original paper

Introduction. In vitro fertilization (IVF) is a medical treatment enabling conception when natural methods are unsuccessful. The procedure involves fertilizing an egg with sperm outside the body and transferring the embryo into the uterus. In Poland, recent changes to reimbursement policy make public knowledge and perceptions of IVF especially relevant.
Material and methods. A structured survey was conducted among the general Polish population to assess knowledge, awareness, and attitudes toward IVF. The questionnaire contained 48 multiple-choice and open-ended questions covering sociodemographic characteristics, factual knowledge, and ethical considerations. Statistical analyses were performed using Statistica 13.3.
Results. A total of 276 respondents participated: 77.9% women (n=215) and 22.1% men (n=61), with a mean age of 34 years (SD=13.22). The mean time attempting conception was 11 months (SD=21.22). Forty percent knew someone who had undergone IVF, and one in ten mothers had used it. Although 67% considered IVF controversial, 72% supported reimbursement from public funds. Ethical concerns were noted, with 21% viewing disposal of unused embryos as a violation of the right to life. Only 29% rated their knowledge as good or excellent, indicating significant gaps in public understanding.
Conclusion. Knowledge of IVF in Poland remains limited, and ethical controversies persist. Despite this, public support for reimbursement is high, suggesting readiness for policy changes if supported by greater education and awareness initiatives.
Keywords. IVF, Poland, public awareness, reimbursement

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Title of presented paper: Double battle: managing melanoma in pregnancy – a case report

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Type of the paper: Case report

Introduction and aim. Pregnancy-associated melanoma (PAM) is defined as melanoma diagnosed during pregnancy or within one year postpartum. It is the most common malignancy in pregnancy and among the most aggressive, capable of metastasizing to the placenta and fetus. We present a case of PAM to highlight the complexity of diagnosis and treatment in pregnant patients.

Description of the case. A 32-year-old pregnant woman at 21 weeks was referred to a tertiary center following detection of a splenic tumor. MRI showed pathological changes in the spleen, left adrenal gland, and kidney. She also reported subcostal and shoulder pain. Additional imaging revealed breast lesion and lung mass. Suspicion of malignancy was raised. After multidisciplinary consultation, urgent splenectomy was performed due to life-threatening indications, followed by cesarean section at 30 weeks. Histopathology confirmed melanoma metastases in the spleen. The patient has been receiving chemotherapy for 9 months.

Conclusion. Malignancy in pregnancy poses diagnostic and therapeutic challenges requiring collaboration between obstetricians, oncologists, and dermatologists. Any suspicious pigmented lesion during pregnancy warrants biopsy. Patient education on mole monitoring before and during pregnancy is crucial for early detection.

Keywords. malignancy, metastatic melanoma, pregnancy-associated melanoma

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Title of presented paper: Vaginal birth vs. cesarean section – current trends, challenges, and future perspectives

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Type of the paper: Review paper

Introduction and aim. Childbirth remains a crucial event in medicine, reflecting both the achievements of modern healthcare and the challenges still faced in obstetric practice. Vaginal birth is considered the physiological and preferred mode of delivery, while the rising global rates of cesarean sections highlight important medical, social, and ethical questions. The aim of this study is to present current trends, challenges, and perspectives regarding both vaginal and cesarean deliveries.

Material and methods. A review of current literature and available statistical data was conducted, focusing on global and regional trends in childbirth, the most common medical indications for cesarean sections, and the maternal as well as neonatal outcomes associated with both delivery methods.

Results. Analysis indicates that although cesarean sections are sometimes necessary and lifesaving, their increasing frequency often exceeds WHO recommendations. Vaginal birth is linked to faster maternal recovery and positive neonatal health outcomes, while cesarean delivery carries higher risks of surgical complications and long-term consequences for both mother and child.

Conclusion. Both modes of delivery have their place in modern obstetrics. However, the challenge remains to promote evidence-based decision-making, ensure patient-centered care, and prevent unnecessary surgical interventions, while maintaining safety for both mother and infants.

Keywords. cesarean section, maternal health, neonatal outcomes, obstetrics, vaginal birth

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Title of presented paper: Women's knowledge and expectations regarding midwife competences in perinatal care

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Type of the paper: Original paper

Introduction and aim. Practicing the profession of midwife requires certain personality traits and predispositions of the people practicing it. The aim of this study was to determine women's knowledge and expectations regarding midwives' competencies in the field of perinatal care.

Material and methods. Based on our own survey conducted using the diagnostic survey method, 163 women of varying ages and socioeconomic status were examined. The collected data were statistically analyzed, with a significance level of $p < 0.05$.

Results. Most surveyed women (76.1%) were aware that a midwife is an independent medical profession with competences to perform a physical examination and assess the obstetric situation. However, only 9.2% of respondents knew that midwives have the right to issue prescriptions. The assessment of the quality of midwifery care in the hospital setting revealed high patient satisfaction (>4 points on a 5-point scale), particularly with the midwife's mental health ($p=0.043$), emotional support provided to women ($p=0.023$), access to information ($p=0.035$), and communication ($p=0.015$).

Conclusion. Patients largely recognize the role of a midwife as an independent medical profession, but their knowledge of specific competencies (e.g. writing prescriptions) remains limited. The care provided by the midwife in the hospital was assessed very positively – especially in the context of emotional support and access to information, which indicates the crucial importance of the interpersonal relationship between the midwife and the patient in shaping the quality of perinatal care.

Keywords. competences, expectations, knowledge, midwife, perinatal care

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Title of presented paper: Hand hygiene in the professional practice of nurses and midwives – assessment of knowledge and skills

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Type of the paper: Original paper

Introduction and aim. One of the simplest, yet most effective ways to prevent the spread of pathogens is hygienic handwashing. Therefore, the aim of this study was to assess the level of knowledge and skills regarding hygienic handwashing among nurses and midwives.
Material and methods. The study included 92 nurses and midwives employed at a tertiary hospital located in the Małopolska Voivodeship. A proprietary questionnaire and a checklist assessing practical handwashing skills were used to collect data. The collected data were statistically analyzed, with a significance level of $p<0.05$.
Results. Nurses and midwives were shown to have an average level of knowledge (average 4.78±1.118 points out of 7 points) and skills (average 16.04±2.672 points out of 21 points) regarding hygienic handwashing. Analysis of the obtained sum of points regarding the level of knowledge and skills in hygienic handwashing showed statistical significance in both cases (knowledge and skills: $p < 0.001$). However, the analyzed demographic and training variables, such as age of nurses and midwives ($p=0.110$) and their participation in hand hygiene training ($p=0.789$), did not show a significant effect on the level of knowledge and skills.
Conclusion. One of the significant challenges facing modern healthcare remains convincing staff to consistently apply hygienic handwashing procedures and ensure appropriate conditions for compliance. Effective management of this area can significantly contribute to improving the quality of healthcare and, above all, to increasing patient safety.
Keywords. hand washing, knowledge, nurse and midwife, skills

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Title of presented paper: Newly diagnosed brain tumor in the second trimester of twin pregnancy: a case report

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Type of the paper: Case report

Introduction and aim. Neurological complications during pregnancy are unique and extraordinary but may pose significant risks for both the mother and the fetus. The coexistence of a brain tumor and a twin pregnancy present unique diagnostic and management challenges due to limitations in imaging, treatment options and safety of the fetuses. The aim of this case report is to present a case of newly diagnosed intracranial lesion during the second trimester of a dichorionic-diamniotic twin pregnant and to highlight the importance of multidisciplinary approach in such complex cases.
Description of the case. A 32-year-old woman, at 20 weeks of first dichorionic-diamniotic twin pregnancy was admitted to the Department of Gynecology, Obstetrics and Perinatology - Perinatology Subunit, following a fall down the stairs and the occurrence of a seizure for obstetric monitoring. Obstetric ultrasound revealed normal fetal development, however, brain MRI showed a parasagittal lesion in the left frontal region measuring 51x40x40 mm. During hospitalization, the patient was repeatedly consulted by neurology, neurosurgery and psychology teams and all recommendations were implemented. The patient remained in stable condition and was transferred to Department of Obstetrics and Perinatology of National Medical Institute MSWiA in Warsaw. The final histopathological diagnosis is pending. Neurology and neurosurgery specialists suspect a low-grade glioma or, less likely a meningioma. The physicians decided to postpone surgical intervention until after delivery due to the risk–benefit balance associated with the course of this neoplasm. So far the mother and both the fetuses have remained stable and in good condition.
Conclusion. This case emphasizes the need for close cooperation between obstetricians, neurologists and neurosurgeons in the management of neurological and neurosurgical conditions during pregnancy. Multidisciplinary evaluation is crucial for optimizing maternal and fetal outcomes.
Keywords. brain tumor, low-grade glioma, obstetrics and gynecology, pregnancy complications

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Title of presented paper: Uterine torsion at term – an unpredictable and perilous event

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Type of the paper: Case report

Introduction and aim. Uterine torsion is defined as abnormal rotation of the uterus exceeding 45° around its longitudinal axis. This rare condition is frequently associated with multiple uterine fibroids. Most women with fibroids have normal pregnancies, though the obstetrical risk is higher, the most severe complication being placental abruption.

Description of the case. We present the pregnancy evolution of a 31-year-old primigravida. Preconceptual ultrasound (US) revealed several small subserous and intramural fibroids, and she was counseled favorably regarding pregnancy outcome. First-trimester screening indicated low risk for chromosomal abnormalities. All subsequent US scans showed normal fetal anatomy and growth, with gradual increase in fibroid size.

Pregnancy progressed uneventfully until term. At 37 weeks, the patient was admitted with mild prelabor contractions. After 6 hours of monitoring, uterine tonus increased, accompanied by abdominal and back pain, absent cervical changes, and sudden persistent fetal bradycardia. An emergency cesarean section (CS) was performed. Intraoperatively, an 180° uterine torsion was found. A rapid, low posterior transverse incision between the uterosacral ligaments allowed extraction of the compromised fetus. After detorsion and uterine suture, all subserous fibroids were removed, despite controversies surrounding myomectomy during CS. Both mother and child recovered fully and were discharged on day 4.

Conclusion. We present a rare case of complete torsion with details from preconceptual evaluation to long-term follow-up. Preoperative diagnosis is difficult, as clinical and imaging signs are often subtle. Although rare, uterine torsion can have devastating consequences if not promptly recognized and intervened. In this case, timely intervention ensured a favorable outcome.

Keywords. emergency caesarean section, fibroids, uterine torsion

Internal disease session

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Title of presented paper: Through the right chamber: a minimally invasive voyage to the heart's secret canal

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Type of the paper: Case report

Introduction and aim. Partial atrioventricular canal (PAVC) or incomplete atrioventricular canal is a rare congenital cardiac malformation that implies the existence of an atrial septal defect. The purpose of this report is to outline the surgical approach of a PAVC intervention.

Description of the case. A 15-year-old female patient, a high-performance athlete, presents to the clinic with dyspnea on exertion. The clinical and paraclinical examinations (including Blood Tests, EKG and an Echocardiography) allowed the final diagnosis of PAVC with atrial septal defects (ostium primum and ostium secundum), a mitral valve cleft, associated with moderate mitral regurgitation, and a minor right bundle branch block. The surgical intervention was intended for a complete correction of the malformation by suturing the mitral valve cleft, closing ostium primum atrial septal defect with a heterologous pericardial patch (Xenosure) and closing ostium secundum atrial septal defect with direct suture. The surgery was performed via a minimally invasive approach – right minithoracotomy.

Conclusion. The patient successfully underwent surgical correction of PAVC, including mitral valve cleft repair and closure of both atrial septal defects, through a minimally invasive right minithoracotomy approach. The procedure was well tolerated, with no intraoperative or immediate postoperative complications. Given the complete anatomical correction, the patient's young age and athletic background, the prognosis is favourable.

Keywords. cardiac surgery, minithoracotomy, partial atrioventricular canal

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Title of presented paper: The new face of insulin resistance – the role of brown and beige fat in metabolism

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Type of the paper: Review paper

Introduction and aim. Insulin resistance is a major cause of metabolic syndrome, type 2 diabetes, and heart problems. It is usually linked to too much white fat, but brown and beige fat (BAT and BeAT) also help control energy use and blood sugar. This work aims to explain the role of BAT and BeAT and their potential in treatment.

Material and methods. A review of recent studies from PubMed and Scopus was performed, using keywords "brown adipose tissue," "beige adipocytes," and "insulin resistance." Both lab and clinical studies from the last 5 years were included.

Analysis of the literature. BAT has many mitochondria with a protein called UCP1, which helps burn energy as heat. Activating BAT or turning white fat into beige fat improves insulin sensitivity and reduces metabolic risk. Factors that increase BAT activity include cold exposure, exercise, and hormones such as irisin and FGF21. Some new treatments are being studied, like drugs that target BAT and genetic approaches. These strategies may help fight obesity-related insulin resistance.

Conclusion. Brown and beige fat are promising targets for preventing and treating insulin resistance. Activating them could help fight obesity and type 2 diabetes.

Keywords. beige fat, insulin resistance, type 2 dibetes

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Title of presented paper: A rare case of hepatopulmonary syndrome associated with portal hypertension: clinical presentation and diagnostic approach

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Affiliation: Iuliu Hatieganu University of Medicine and Pharmacy Cluj-Napoca, Romania

Type of the paper: Case report

Introduction and aim. Hepatopulmonary syndrome (HPS) is an uncommon but severe complication of chronic liver disease and, less frequently, portal hypertension. The pathogenesis consists of abnormal pulmonary vasodilation that leads intrapulmonary shunting and progressive hypoxemia. The aim of this case report is to illustrate the diagnosis and clinical course of hepatopulmonary syndrome in a patient with portal hypertension, focussing on important issues in detection, evaluation, and therapy.

Description of the case. A 48-year-old male patient reported to the Pneumology department with dyspnoea that began a year ago and had lately worsened; fingernail clubbing; and nonspecific basal pulmonary infiltrations (on CT scan). The patient had a history of idiopathic pulmonary fibrosis, superior digestive haemorrhage, and esophageal varices. Respiratory tests revealed a significant reduction in diffusion through the alveolar-capillary membrane (38% of the normal value). The 6-minute walking test was also completed, with the patient covering only 69% of the normal distance and being classed as BORG IV. The patient was referred to rheumatology clinics to rule out the possibility of scleroderma. Meanwhile, a cardiac echography with microbubble injection was performed, which revealed an intrapulmonary shunt and supported the ultimate diagnosis of HPS.

Conclusion. In conclusion, hepatopulmonary syndrome is a significant and sometimes overlooked consequence of portal hypertension. This case demonstrates the diagnostic problems posed by overlapping lung and hepatic diseases, as well as the significance of a thorough clinical and imaging evaluation. Early detection and comprehensive management are critical.

Keywords. hepatopulmonary syndrome, intrapulmonary shunt, portal hypertension

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Title of presented paper:

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Type of the paper: Review

Introduction and aim. Dumping syndrome (DS) is a common complication after bariatric surgery, resulting from rapid gastric emptying. It includes early dumping with gastrointestinal and vasomotor symptoms and late dumping associated with postprandial hypoglycaemia. The aim of this review was to summarise current evidence on the role of natural products and functional foods in DS management.
Material and methods. A narrative review of preclinical and clinical studies was conducted to evaluate natural products and nutritional compounds influencing gastric emptying, glycaemic control, and gut hormone regulation in DS.
Analysis of the literature. Fibre-rich foods, sugar substitutes, and selected medicinal plants may reduce DS symptoms by delaying gastric emptying, attenuating glucose excursions, and modulating incretin hormones. Phytochemicals, including polyphenols and flavonoids, show particular potential in managing late dumping. Natural compounds appear generally safe and well tolerated, despite limited clinical evidence.
Conclusion. Natural products and functional foods may serve as useful adjuncts in DS management. Further clinical studies are required to confirm their efficacy and define their role in post-bariatric care.
Keywords. dumping syndrome, bariatric surgery, natural products, functional foods, glycaemic control

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Title of presented paper: Incidental diagnosis of primary pleural liposarcoma in a COVID-19-positive patient

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Supervisor: Adil H. Al-Kindi

Affiliation: Sultan Qaboos University Hospital, Muscat, Oman

Type of the paper: Case report

Introduction and aim. Primary pleural liposarcoma (PPL) is exceedingly rare, with myxoid histology being the most common subtype. We report, to our knowledge, the first PPL from Oman, initially suspected to be COVID-19 related effusion, highlighting diagnostic pitfalls and management constraints.

Description of the case. Case report of a 24-year-old male who presented with two weeks of dyspnea and left pleuritic chest pain while COVID-19 positive. Evaluation included chest radiography, contrast-enhanced CT, pleural drainage attempt, and urgent surgery for hemodynamic compromise. Histopathology with lipogenic differentiation established myxoid liposarcoma. Courses, treatments, and outcomes were recorded. Imaging showed a massive left pleural collection with septations, mediastinal shift, compression of the heart and great vessels, and left-lung collapse sparing the upper lobe. Intercostal drain yielded minimal output; cytology was negative. Deterioration with signs of tamponade prompted left posterolateral thoracotomy, revealing a large gelatinous pleural mass encasing mediastinal structure. R2 resection was performed to relieve compression. Pathology confirmed low-grade soft tissue sarcoma with lipogenic differentiation (myxoid liposarcoma). Radiotherapy was not feasible; systemic chemotherapy was initiated. Interval CT demonstrated rapid progression, and the patient died four months after diagnosis.

Conclusion. PPL can masquerade as complicated pleural effusion, including in COVID-19 positive presentations. When vital structures are involved, complete resection may be unattainable and prognosis poor despite decompression and systemic therapy. Early recognition of mass characteristics (low density, septations, poor drainage) should prompt expedited tissue diagnosis and multidisciplinary planning.

Keywords. cardiac tamponade, COVID-19, mediastinal shift, myxoid liposarcoma, primary pleural liposarcoma, thoracotomy

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Title of presented paper: The heart of the matter: tracing the unidentified infection source in a young male with infective endocarditis – a case report

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Type of the paper: Case report

Introduction and aim. Infective endocarditis is a life-threatening infection of the endocardial surface, most frequently affecting the cardiac valves. Its clinical presentation is often nonspecific and atypical, which may hinder timely diagnosis. This case report underscores the rarity of infective endocarditis with acute abdominal pain, complicated by splenic infarction and heart failure.

Description of the case. A 32-year-old male was admitted with acute epigastric pain, fever, pharyngodynia, diarrhea, and general malaise. Laboratory testing demonstrated elevated inflammatory markers, neutrophilic leukocytosis, normocytic anemia and thrombocytopenia. Blood cultures grew Staphylococcus aureus (MSSA). Abdominal imaging revealed ischemic splenic infarction. Echocardiographic examination confirmed large vegetations on the aortic valve. Despite targeted intravenous antibiotic therapy based on susceptibility testing, the patient developed acute decompensated left ventricular failure with pulmonary edema, requiring urgent aortic valve replacement. Postoperatively, he completed a 6-week antibiotic regimen with favorable clinical recovery. In this patient, the most probable infectious focus was odontogenic. However, alternative portals of entry were also considered. The multiplicity of potential sources highlights the diagnostic challenges in identifying the origin of bacteremia leading to infective endocarditis.

Conclusion. This case emphasizes the need to consider infective endocarditis in patients presenting with non-specific symptoms such as abdominal pain. Early recognition, appropriate antimicrobial therapy, and timely surgical intervention remain critical for improving outcomes. A comprehensive literature review is provided to contextualize the diagnostic and therapeutic strategies and to highlight the importance of a thorough search for the primary infectious focus.

Keywords. aortic valve replacement, epigastric pain, infective endocarditis, splenic infarction, *Staphylococcus aureus*

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Title of presented paper: Diagnostic challenges in fever of unknown origin — a case report

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Type of the paper: Case report

Introduction and aim. FUO is a condition in which a patient experiences persistent or recurring high fever above ≥38^0 for more than three weeks and does not resolve spontaneously within the timeframe for self-limiting illnesses. The cause cannot be clearly determined, but it can be infections, malignant tumors, or autoimmune diseases. So, is there any clear way or schedule for physicians to find the reason for FUO as fast as possible?
Description of the case. A 41-year-old patient with a fever lasting four months was admitted to the Internal Medicine Department for diagnostic purposes of FUO. He had a history of rheumatoid arthritis and scoliosis. The patient is a pig farmer and traveler. Inflammatory parameters remained elevated despite broad-spectrum antibiotic therapy. A comprehensive panel of microbiological tests was ordered to exclude infections and tropical diseases, as well as imaging studies and a rheumatology consultation, which ruled out inflammation associated with the underlying disease. A panoramic radiograph of the teeth showed no significant abnormalities, and an otolaryngology consultation revealed adenoid hypertrophy unrelated to the fever. Despite twenty negative blood cultures, the decision was made to expand the diagnostic workup to exclude IE. All bacterial causes were clearly ruled out. A bone marrow biopsy was performed, ultimately leading to the diagnosis of chronic myeloid leukemia, with fever being a symptom of the chronic phase of the disease. The patient was referred for further hematooncological treatment.
Conclusion. Diagnosing FUO is challenging. As the number of hematooncology patients continues to grow, it is worth considering neoplastic diseases, including leukemia, (especially aged 30-40).
Keywords. FUO, immunosuppression, CML, blood cultures

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Title of presented paper: Optimal computation of combined LT4+LT3 replacement therapies for primary hypothyroid patients individualized by sex, height and weight

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Type of the paper: Original paper

Introduction and aim. Primary hypothyroidism is typically treated with single-hormone replacement therapy using levothyroxine (LT4), a fraction of which is converted to thyromimetically active triiodothyronine (LT3). However, this standard practice fails to fully normalize thyroid hormone (TH) levels or alleviate symptoms in approximately 10-20% of patients. In this study, we treat hypothyroidism by developing computational algorithms and very user-friendly clinical software for optimizing combination LT4+LT3 replacement therapy in untreated hypothyroid patients, tailored to a patient's sex, height, weight, and measured hormone values: TSH, FT4, and FT3 or total T3.

Material and methods. The project builds on an updated version of p-THYROSIM, an individualized patient physiological model for simulating TH dynamics. Computational algorithms were devised for optimizing combination dosing in simulated male and female individuals, over a wide range of body weights and heights.

Results. We computed combined dosages in available pill sizes and implemented them in a user-friendly software package, which takes patient sex, height, weight, and serum hormone concentrations provided as input data. Our findings show that weight, height, and sex affect RTF and dosing calculations.

Conclusion. In simulated patients, different height and weight combinations, for both males and females, produced markedly different RTF values. Simulated monotherapy did not normalize FT3 as well as combination therapy, especially for heavier patients.

Keywords. hypothyroidism, levothyroxine, liothyronine

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Title of presented paper: Obstructive hypertrophic cardiomyopathy in a young patient: case presentation

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Supervisior: Bud Ioan Andrei

Affiliation: Iuliu Haţieganu University of Medicine and Pharmacy, Cluj-Napoca, Romania

Type of the paper: Case report

Introduction and aim. Obstructive hypertrophic cardiomyopathy (OHCM) is a primary myocardial disorder defined by asymmetric left ventricular hypertrophy and left ventricular outflow tract obstruction. Though its pathophysiology is well known, phenotypic expression, disease progression, and responses to therapy vary widely. This case demonstrates an uncommon clinical course and therapeutic outcome in OHCM, highlighting diagnostic and management challenges.

Description of the case. A 32-year-old male presented with progressive fatigue and dyspnea on minimal exertion. He had been previously diagnosed with "cardiomegaly" and treated with a beta-blocker, but symptoms persisted. On evaluation, ECG showed Sokolow–Lyon voltage of 40 mm and deep negative T waves (4 mm) in V4–V6, DI, DII, aVL. Echocardiography revealed predominant septal hypertrophy (interventricular septum 2.1 cm), left ventricular ejection fraction 60 %, normal wall motion, a significant left ventricular outflow tract gradient, diastolic dysfunction (grade I), and left atrial enlargement (4.2 cm, 21 cm^2, 69 mL). Doppler studies detected moderate mitral regurgitation from elongation of the mitral valve and systolic anterior motion (SAM), mild tricuspid regurgitation, and secondary pulmonary hypertension (PAPs 44 mmHg). After exclusion of metabolic or neuromuscular etiologies, a diagnosis of genetically mediated OHCM with class III heart failure was made. Therapeutic options included intensified beta-blockade, surgical septal myectomy, or alcohol septal ablation. The latter was chosen. Post-ablation of the first septal artery, the patient developed iatrogenic complete third-degree AV block and basal septal myocardial infarction (likely ischemic or inflammatory). A dual-chamber permanent pacemaker was implanted. Subsequent follow-up showed marked symptomatic improvement, basal septal akinesia, resolution of SAM, and only mild residual mitral regurgitation. Therapeutic advances in obstructive OHCM have been limited over recent decades. While septal reduction methods (myectomy or ablation) offer symptomatic relief, they carry nontrivial risks. There is a pressing need for more refined techniques to reduce complication rates.

Conclusion. Despite inherent risks, untreated OHCM has an adverse natural history. Alcohol septal ablation is a less invasive alternative to myectomy, and selected patients may offer improved quality of life, fewer procedural complications, and favorable outcomes.

Keywords. alcohol septal ablation, hypertrophic cardiomyopathy, obstructive, septal reduction therapy, surgical risk

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Title of presented paper: Low-grade ampulloma presenting as obstructive jaundice: multimodal diagnostic approach

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Type of the paper: Case report

Introduction and aim. Ampullary lesions can cause obstructive jaundice and may clinically and radiologically mimic pancreatic head neoplasms. This case highlights the importance of integrating imaging, endoscopic, and histopathologic findings in the differential diagnosis of mechanical jaundice.

Description of the case. A 71-year-old man with chronic hepatitis C, alcohol-related liver disease and type 2 diabetes, presented with scleral and cutaneous jaundice, dark urine, generalized pruritus, and an 8-kg weight loss over 3 months. Clinical examination confirmed obstructive jaundice and ultrasound demonstrated dilated intra- and extrahepatic bile ducts, without clear visualization of the pancreas. Endoscopic ultrasound (EUS) revealed a 16×15 mm hypoechoic lesion in the pancreatic head, without vascular invasion, and regional lymphadenopathy (T2N1Mx), raising suspicion for a pancreatic neoplasm, although the histopathology was inconclusive. Endoscopic Retrograde Cholangiopancreatography (ERCP) with placement of an uncovered biliary stent was performed for distal common bile duct decompression and the visual findings were indicative of pseudotumoral pancreatitis. On follow-up, a second EUS and a CT suggested paraduodenal chronic pancreatitis with pancreatic pseudocysts, including a new parabulbar walled-off necrosis/hematoma, nevertheless, suspicion for a pancreatic head lesion was maintaned; evaluation was limited by the biliary stent. Subsequent papillary biopsies identified an ampulloma with low-grade dysplasia and no evidence of malignancy, for which periodic surveillance was recommended.

Conclusion. This case underscores the diagnostic challenge of differentiating pancreatic head tumors from pseudotumoral lesions secondary to chronic pancreatitis, emphasizing the value of multimodal investigations and the essential role of regular monitoring in low-grade ampullomas without malignancy.

Keywords. dysplasia, obstructive jaundice, pancreas

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Title of presented paper: Chasing the wrong culprit: cyclic vomiting syndrome hiding as biliary colic

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Type of the paper: Case report

Introduction and aim. Cyclic vomiting syndrome (CVS) is a disorder of recurrent, intense vomiting, thought to result from gut–brain axis dysregulation and influenced by genetic, autonomic, or environmental factors. This case illustrates how CVS can resemble biliary colic, highlighting the challenges a clinician may encounter.
Description of the case. The patient is a 27-year-old female presented with recurrent episodes of nausea, bilious vomiting and epigastric pain during two successive hospitalizations in our department. At the time of her first admission, she reported intense episodes of vomiting accompanied by epigastric discomfort and inability to tolerate oral feeding. Physical examination revealed mild epigastric tenderness without peritoneal signs. Laboratory tests showed hypokalemia and mild leucocytosis, while the abdominal ultrasound identified a markedly distended gall bladder, half-filled with biliary sludge, and minimal intrahepatic bile duct dilatation. Following surgical team consultation and poor response to medical therapy, a laparoscopic cholecystectomy was performed. The intervention was uneventful but provided only transient symptomatic relief. After one week, the patient was readmitted with recurrence of the same symptoms. Laboratory tests revealed mild hepatocitolysis and cholestasis. The early reappearance of these stereotyped vomiting episodes just after an uncomplicated cholecystectomy, along with the paraclinical findings established the diagnosis of cyclical vomiting syndrome (CVS). Low-dose amitriptyline was initiated, resulting in favorable clinical evolution.
Conclusion. CVS should be suspected in young adults with recurrent unexplained vomiting, particularly when imaging reveals non-specific biliary changes. Amitriptyline constitutes a cornerstone in this condition, effectively controlling symptoms and preventing relapse.
Keywords. amitriptyline, CVS, recurrent vomiting

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Title of presented paper: When new lungs are only the beginning: recurrence, rejection and recovery after transplantation

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Type of the paper: Case report

Introduction and aim. Non-specific interstitial pneumonia (NSIP) represents a rare cause of terminal respiratory failure, in extreme cases requiring lung transplantation. Post-transplant patients present unique challenges due to complications such as chronic rejection, infections, and secondary malignancies. This report aims to illustrate the long-term clinical evolution and management complexities of a patient with a history of NSIP undergoing bilateral lung transplantation.

Description of the case. We report the case of a 40-year-old female who underwent bilateral lung transplantation in 2011 for end-stage respiratory failure due to NSIP diagnosed in 2009. Postoperatively, under corticosteroid treatment and chronic immunosuppression, with Prednisone Tacrolimus and Mycophenolate Mofetil, the patient experienced several acute rejection episodes between 2012 and 2017. Since 2021, she has presented recurrent dyspnea and radiological features compatible with hypersensitivity pneumonitis recurrence, managed with corticosteroid tapering. Follow-up assesments revealed stable pulmonary function; nevertheless, long-term complications included cutaneous squamous cell carcinoma in situ, osteoporosis, and infectious risk. At the 2023 annual evaluation, her condition was stable under reduced corticosteroid therapy, with preserved exercise tolerance and no evidence of graft dysfunction.

Conclusion. This case highlights the multifaceted challenges of long-term follow-up after lung transplantation for NSIP, including balancing immunosuppression, preventing recurrence, and addressing secondary complications such as malignancy. A multidisciplinary approach and tailored therapeutic strategies remain crucial for optimizing long-term survival and quality of life.

Keywords. hypersensitivity pneumonitis, immunosuppression, non-specific interstitial pneumonia, lung transplantation

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Title of presented paper: From chemotherapy to immunotherapy: prolonged survival in an elderly patient with urothelial carcinoma

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Type of the paper: Case report

Introduction and aim. Urothelial carcinoma represents a common malignancy of the urinary tract, with papillary variants often diagnosed in elderly men. The disease is typically managed through surgical, chemotherapeutic, and immunotherapeutic approaches. The aim of this report is to present the long-term evolution of a patient with high-risk urothelial carcinoma who achieved extended survival and improved quality of life through multimodal treatment.
Description of the case. An 80-year-old male was diagnosed with high-grade pT1 urothelial carcinoma and subsequent hepatic metastases. Over a four-year therapeutic course, the patient underwent transurethral bladder resection (TURB) followed by six cycles of Carboplatin–Gemcitabine chemotherapy, resulting in partial remission. Regular imaging follow-up and multidisciplinary evaluation guided therapeutic decisions throughout treatment. Maintenance therapy with Avelumab combined with zoledronic acid achieved complete response and functional improvement from ECOG 2 to ECOG 0 within the first year. After 18 months, local tumor recurrence occurred without distant progression, leading to palliative radiotherapy and continuation of immunotherapy. The patient's current status shows stable disease under Avelumab and zoledronic acid maintenance.
Conclusion. This case demonstrates that Avelumab, an anti-PD-L1 agent, can extend survival beyond the expected 20-month median for metastatic urothelial carcinoma, even in patients with multiple comorbidities. Continuous imaging follow-up and the integration of surgical, chemotherapeutic, and immunotherapeutic strategies are essential for improving life expectancy and maintaining quality of life in advanced disease stages.
Keywords. avelumab, chemotherapy, urothelial carcinoma

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Title of presented paper: Rethinking IBS: the clinic impact of diamine oxidase deficiency

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Type of the paper: Case report

Introduction and aim. Histamine intolerance, usually caused by reduced diamine oxidase (DAO) activity, can mimic irritable bowel syndrome (IBS). Because IBS is a diagnosis of exclusion, unrecognized DAO deficiency often leads to prolonged suffering and ineffective treatments. We aim to present a case where targeted evaluation uncovered the true etiology of chronic complaints.

Description of the case. A 54-year-old male with no major comorbidities experienced five years of persistent postprandial bloating, alternating bowel habits, abdominal discomfort, fatigue, and recurrent headaches. Symptoms were frequently triggered by histamine-rich foods such as red wine, aged cheese, processed meats, and chocolate. Despite multiple therapies for IBS, including antispasmodics, probiotics, motility regulators, and low-FODMAP diet, no improvement occurred. Neurological and routine laboratory examinations were normal. Endoscopic evaluation excludes celiac disease, inflammatory bowel disease, and structural abnormalities. Serum DAO activity was markedly decreased (2.8 U/ml, reference>3), confirming histamine intolerance. Management included a strict low-histamine diet, DAO supplementation before meals, and H1-antihistamines for acute relief. After three months, the patient reported normalized bowel function, resolution of fatigue and headaches, and substantial reduction in bloating.

Conclusion. This case highlights DAO deficiency as an underdiagnosed cause of chronic gastrointestinal and systemic complaints frequently mistaken for IBS. Careful history-taking, including dietary correlations, and specific testing for DAO activity are crucial for avoiding misdiagnosis. Early identification allows personalized therapy that can dramatically improve quality of life.

Keywords. diamine oxidase, histamine intolerance, irritable bowel syndrome, misdiagnosis

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Title of presented paper: Retroperitoneal hematoma: a rare complication of NOACs

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Type of the paper: Case raport

Introduction. Anemia in elderly patients is often multifactorial, usually secondary to gastrointestinal bleeding and aggravated by cardiovascular and metabolic comorbidities. In such cases, acute decompensation may become life-threatening, making early recognition and rapid intervention essential for survival.

Description of the case. We present the case of an 83-year-old female admitted for dyspnea and edema. Past medical history included chronic heart failure, atrial fibrillation treated with rivaroxaban, type 2 diabetes mellitus, and chronic gastritis. While being evaluated on the medical ward, the patient presented low values of blood pressure and abdominal pain. A FAST ultrasound showed an inhomogeneous abdominal hematoma and vasopressor support was initiated. A subsequent CT scan confirmed the diagnosis of retroperitoneal hematoma with active bleeding. The patient underwent emergency exploratory laparotomy with adhesiolysis and evacuation of approximately 2100 ml of retroperitoneal blood, followed by hemostasis and drainage. Postoperatively, she required intensive care, blood transfusions, and correction of hydroelectrolytic imbalance. The evolution was favorable, with gradual stabilization of hemodynamic and respiratory function. Long-term management included reinitialization of anticoagulants and gastroprotective treatment.

Conclusion. This case illustrates the complexity of managing severe anemia in elderly patients with multiple comorbidities. Retroperitoneal hemorrhage, although a rare oral anticoagulant treatment, may represent a life-threatening condition, being a complication requiring prompt surgical intervention and multidisciplinary care. Careful adjustment of anticoagulation and continuous follow-up are essential to prevent recurrence.

Keywords. chronic anemia, exploratory laparotomy, liver cirrhosis, retroperitoneal hematoma

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Title of presented paper: A case report about hepatocellular carcinoma

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Type of the paper: Case report

Introduction and aim. Hepatocellular carcinoma is the most common form of liver cancer. It is most common for older adults but also for patients with cirrhosis or infection with hepatitis B or C virus. Most cases are discovered in advanced stages, when cancer is already spreading rather quickly.
Description of the case. The patient, H.T., an 82-year-old male with a known liver pathology, has been under long-term monitoring. His medical history includes type 2 diabetes mellitus with obesity, essential hypertension, chronic gastritis, and chronic kidney disease. He is on chronic medication for diabetes and hypertension. On physical examination, the patient appeared stable, afebrile, with abdominal distension and mild tenderness. Blood tests showed unexplained anemia, elevated liver enzymes (GOT, GPT), hypoproteinemia, and increased levels of alkaline phosphatase and gamma-GT, while bilirubin and prothrombin time were normal. A CT scan revealed a 4 cm tumoral mass involving liver segments IVb and V. Given the clinical and paraclinical findings, the patient underwent classic cholecystectomy with bi-segmentectomy. The surgery was successful, with no bile leakage or hemorrhage. Postoperative recovery was favorable, with resumed intestinal transit on day two. The patient was discharged in good condition, with a healing surgical wound and no signs of infection.
Conclusion. In conclusion, the recurrent check-ups in patients with liver pathology, old age or a genetic background can help increase the number of good outcomes for hepatocellular carcinoma patients.
Keywords. hepatocellular carcinoma, classic cholecystectomy, bi-segmentectomy

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Title of presented paper: Is the heart a concern as the kidneys fail? A case of coronary artery disease in a patient with end-stage kidney disease

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Type of the paper: Case report

Introduction and aim. Cardiovascular disease in end-stage kidney disease (ESKD) remains the leading cause of mortality following kidney transplantation (KTx). Unfortunately, preoperative cardiac assessment still lacks high-quality guidelines.

Description of the case. We present the case of a 51-year-old patient who underwent a second live-donor KTx, after a first failing graft. Medical history mentioned stage II arterial hypertension, type II diabetes, stage 2 obesity, and two urethral strictures surgically corrected. KTx surgery proceeded without any significant complications. The immediate postoperative period was uneventful, with immediate urinary output. Fourteen hours later, the patient developed a sudden cardiac arrhythmia. A 12 lead ECG indicated a large complexes tachyarrhythmia. Arterial blood gases revealed increasing lactate levels, a sign of poor tissue perfusion. Transthoracic echocardiography showed a mildly decreased ejection fraction (40%), anapex of akinesis, and globally reduced contractility. Due to the clinical rapid deterioration, electric cardioversion was performed. The results were limited, with tachyarrhythmia reoccurring after a few hours. Highly sensitive troponin levels were slightly elevated, with a rapid increase after 6 hours. Afterwards, emergency coronarography revealed a chronic occlusion of both the left main and circumflex arteries, with an acute right coronary occlusion. The cardiogenic shock that followed was unresponsive to therapeutic measures and led to multiple organ dysfunctions.

Conclusion. In patients with ESKD, prediction of major cardiovascular events is difficult. Preoperative cardiac assessment, including stress tests, can miss patients with severe coronary artery disease.

Keywords. coronary artery disease, end-stage kidney disease, kidney transplantation, preoperative cardiac assessment

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Title of presented paper: Myopericarditis as an extraglandular manifestation of primary Sjögren's Syndrome: a case report and autoimmune–cardiac correlation

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Type of the paper: Case raport

Introduction and aim. Primary Sjögren's syndrome (pSS) is a systemic autoimmune disorder affecting exocrine glands, with possible extraglandular involvement. Although uncommon, cardiac manifestations may include pericarditis, myocarditis, and conduction disturbances. Specific autoantibodies such as anti-Sjögren's-syndrome-related antigen A (anti-SSA/Ro), anti-Sjögren's-syndrome-related antigen B (anti-SSB/La), and Ro52 are associated with myocardial inflammation and, in women of reproductive age, with congenital heart block (CHB).

Description of the case. We report a 56-year-old female, smoker, with a recent diagnosis of myopericarditis of unclear etiology. The patient presented with xerostomia, xerophthalmia and generalized muscle discomfort. Laboratory tests showed antinuclear antibodies (ANA) 1:2560, anti-SSA/Ro, anti-SSB/La, Ro52 positivity, and rheumatoid factor (RF) positivity. Salivary gland ultrasound and magnetic resonance imaging (MRI) revealed changes consistent with pSS. Cardiac evaluation, including electrocardiogram (ECG) and echocardiography, supported the diagnosis of pericardial involvement. The patient's immunologic profile is linked to extraglandular cardiac involvement and, in women of reproductive age, fetal cardiac risk. Maternal anti-SSA/Ro and anti-SSB/La antibodies can cross the placenta, increasing the risk of CHB. Ro52 co-positivity is associated with conduction disease and myocarditis. In women of childbearing age, these findings warrant multidisciplinary counseling, serial fetal echocardiography between 16-26 weeks of gestation, and consideration of transplacental therapy with fluorinated glucocorticoids in high-risk pregnancies.

Conclusion. Myopericarditis is an uncommon but clinically significant extraglandular manifestation of pSS. Combining cardiac and glandular imaging with immunologic profiling enables early diagnosis. While our patient was postmenopausal, implications for pregnant women include counseling, fetal cardiac monitoring, and possible transplacental dexamethasone treatment.

Keywords. autoantibodies, congenital heart block, myopericarditis

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Title of presented paper: Pancreatic puzzle: the double duct dilemma – a case report

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Type of the paper: Case report

Introduction and aim. Differentiating pancreatic cancer from chronic pseudotumoral pancreatitis is a major challenge and essential for surgical planning.
Description of the case. A 41-year-old male presents with fatigue, abdominal pain, weight loss (body mass index [BMI]=17.77 kg/m^2), steatorrhea, and newly diagnosed insulin-treated diabetes. History revealed chronic alcohol use, two episodes of alcohol-induced acute pancreatitis within five months, and a prior diagnosis of toxic cirrhosis. On examination, the patient describes upper abdominal tenderness; the liver is palpable 2 cm below the costal margin, nodular and firm. Magnetic Resonance Cholangiopancreatography (MRCP) indicates an enlarged pancreatic head, with a hypointense lesion, peripancreatic infiltration and the "double duct" sign – simultaneous dilation of the common bile duct and pancreatic duct – suggestive of pancreatic cancer. Contrast enhanced computed tomography (CECT) findings support chronic pancreatitis, showing an enlarged, heterogeneous pancreas, duodenal compression, and splenic vein thrombosis. The Carbohydrate Antigen 19-9 (CA 19-9) remains normal. Given the risk of malignancy, the surgical team opted for Frey's procedure (latero-lateral Roux-en-Y pancreatojejunostomy, choledochoduodenostomy, cholecystectomy) with intraoperative biopsy. Histology excluded malignancy, demonstrating fibrosis, chronic periductal inflammation, and glandular atrophy, consistent with chronic pancreatitis. Postoperative outcome was favorable. MRCP failed to detect pancreatic calcifications, a hallmark of chronic pancreatitis. In this case, the "double duct" sign was misleading; the final diagnosis was established by biopsy.
Conclusion. This case highlights the importance of integrating multiple diagnostic methods and considering surgical exploration when imaging is inconclusive, especially in young patients where a conservative but decisive approach can be pivotal.
Keywords. biopsy, chronic pancreatitis, pancreatic cancer

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Title of presented paper: Spontaneous coronary artery dissection in an older patient without biomarker elevation: a case report

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Type of the paper: Case report

Introduction and aim. Spontaneous coronary artery dissection (SCAD) is a non-traumatic, non-iatrogenic, and typically non-atherosclerotic cause of acute coronary syndrome (ACS). It results from spontaneous separation of the coronary artery wall, most often due to intramural hematoma (IMH), which compresses the true lumen and reduces myocardial perfusion. This case highlights the diagnosis challenge when cardiac enzymes are normal, as this does not exclude significant myocardial injury or SCAD; therefore, multimodal imaging is essential to confirm the diagnosis, assess myocardial viability, and guide management.

Description of the case. A 67-year-old woman with hypertension and hypercholesterolemia was admitted for recent anterior myocardial infarction and heart failure. Imaging revealed severe left ventricular dysfunction (EF=26%), apical akinesia with aneurysm and thrombus, and non-viable myocardium in the LAD territory. Coronary angiography demonstrated a mid-LAD dissection without significant atherosclerosis. Holter monitoring showed ventricular and supraventricular ectopy with non-sustained ventricular tachycardia. Despite imaging consistent with infarction, serial cardiac enzymes remained normal throughout hospitalization. She was managed conservatively with guideline-directed heart failure therapy, anticoagulation, and antiplatelet medication. ICD implantation was considered due to arrhythmic risk and her course remained stable.

Conclusion. While most SCAD patients present with elevated troponin or CK, biomarker levels can be minimal or normal, particularly in delayed, subacute, or limited infarcts. SCAD often involves intramural hematoma with minimal thrombus, contributing to lower enzymatic release compared to atherosclerotic ACS. Early imaging and high clinical suspicion are critical in establishing the diagnosis when conventional markers are inconclusive.. Management should be tailored based on hemodynamic stability, ventricular function, and the presence of complications such as thrombus or arrhythmia.

Keywords. intramural hematoma, myocardial infarction, spontaneous coronary artery dissection

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Title of presented paper: Post-procedural patient-reported outcomes and quality of life is worse in women than men despite similar post-PCI vFFR and vFFR-derived PPG values

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Type of the paper: Original paper

Introduction and aim. Post-procedural three-dimensional quantitative coronary angiography-based vessel fractional flow reserve (vFFR) has shown a strong correlation with invasive FFR measurements. However, the relationship between post-percutaneous coronary intervention (PCI) vFFR, vFFR-derived pressure pullback gradient (PPG), clinical outcomes, and post-PCI quality of life (QoL) concerning sex differences remains unexplored.

Material and methods. This single-centre retrospective study included patients undergoing PCI for stable or unstable angina, or non–ST-elevation myocardial infarction with two angiographic views suitable for post-PCI vFFR calculation and complete QoL assessment. Post-PCI QoL was assessed using EuroQol 5-Dimension 5-Level (EQ- 5D-5L) questionnaire and Seattle Angina Questionnaire (SAQ). Focal disease was defined as vFFR-derived PPG ≥0.74, diffuse as values <0.74. QoL and clinical outcomes were compared between sexes.

Results. A total of 234 patients (286 vessels) were analyzed, with median follow-up of 4.21 years. The median post-PCI vFFR was 0.92 (IQR 0.90–0.95), and the median vFFR-derived PPG was 0.74 (IQR 0.65–0.84), without significant differences between sexes. Among patients with high post-PCI vFFR (above the median of 0.92), females had significantly lower EQ index score than males. In the middle post-PCI vFFR tertile (vFFR 0.88-0.93), females had significantly lower SAQ Summary scores than males. Females had significantly lower EQ Index and SAQ Summary scores compared to males among patients with both focal and diffuse disease. There were no differences in clinical outcomes between sexes.

Conclusion. vFFR may be associated with post-procedural QoL despite similar post-PCI vFFR and vFFR-derived PPG values.

Keywords. angiography-based fractional flow reserve, coronary artery disease, percutaneous coronary intervention

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Title of presented paper: When eosinophils attack: a diagnostic dilemma between churg-strauss syndrome and hypereosinophilic syndrome

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Type of the paper: Case raport

Introduction and aim. Eosinophilic disorders are rare conditions marked by elevated eosinophil counts and sys-temic involvement. Eosinophilic Granulomatosis with Polyangiitis (EGPA) and Idiopathic Hypereosin-ophilic Syndrome (HES) often share overlapping clinical features such as asthma, eosinophilia, and neu-ropathy, making diagnosis particularly challenging. Differentiating between these entities is essential for guiding effective treatment and improving patient outcomes.

Description of the case. A 22-year-old female presented with persistent cough, nocturnal dyspnea, my-algia, and headaches. Her family history included eosinophilic esophagitis (brother), allergic rhinitis (mother), and bronchial asthma (grandmother). In 2020, she was diagnosed with allergic bronchial asthma and rhinitis (eosinophils: 1,820/mm^3), treated with inhaled corticosteroids. Her condition pro-gressively worsened, with eosinophilia rising to 18,500/mm^3, accompanied by paresthesia, recurrent edema, gastrointestinal symptoms, and severe myalgia. Hematologic evaluation revealed multisystemic involvement, including pericardial effusion and polyneuropathy. Bone marrow aspirate confirmed hy-pereosinophilic syndrome. High-dose corticosteroids were administered, but led to significant side ef-fects including diabetes, osteoporosis, and Cushingoid appearance. Despite treatment, relapses persist-ed. Laboratory tests showed persistent eosinophilia, elevated IgE, and inflammatory markers; ANCA remained consistently negative. Biopsies were inconclusive or contradictory for vasculitis, suggesting "Churg-Strauss-like" features. Spirometry remained normal throughout. Systemic methylprednisolone controlled eosinophilia but caused adverse effects. Due to steroid dependence and persistent symp-toms, Benralizumab was initiated, reducing eosinophils to 0/mm^3, enabling corticosteroid withdrawal and significantly improving asthma control.

Conclusion. This case highlights the diagnostic complexity between EGPA and HES. Despite EGPA-like features, persistently negative ANCA and inconclusive biopsies favored HES. The patient's excel-lent response to Benralizumab underscores the role of IL-5 and the value of biologic therapy in eosino-philic syndromes,

Keywords. hypereosinophilic syndrome, eosinophilic granulomatosis with polyangiitis, interleukin 5, benrlizumab

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Title of presented paper: Beyond inflammation: unmasking primary ileal angiosarcoma, a case report

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Type of the paper: Case report

Introduction and aim. Angiosarcomas are aggressive malignant endothelial tumours. The aim is to emphasise the challenges of diagnosing managing gastrointestinal angiosarcomas, rare entities that are difficult to diagnose due to their late progressive symptoms and nonspecific manifestations.
Description of the Case. We present the case of a 54-year-old female that came in complaining of diffuse abdominal pain, nausea, and constipation. She has a history of cervical cancer, for which she received radiotherapy. Colonoscopy did not reveal anything pathological. The MRI confirmed the presence of stenosis is the distal part of the ileum. The fecal Calprotectin was also high (489 μg/g); thus, the possibility of Crohn Disease was considered. The patient underwent surgery for segmental enterectomy of the ileum. The final diagnosis after histopathological examination was primary ileal angiosarcoma. Chemotherapy was stopped due to the patient's intolerance, who started to experience sepsis and hematological toxicity. Unfortunately, at the 6 months check-up, the patient's status was altered: she presented with serohemorrhagic ascites, tumor recurrence and renal failure which evolved into multiple organ dysfunction syndrome.
Conclusion. In conclusion, primarily ileal angiosarcomas are extremely rare entities, with less then 200 published cases. Histopathological examination is the most accurate method for correct diagnosis. The aetiology of angiosarcomas is unclear, however, a risk factor identified in this case was the radiotherapy received for the cervical cancer. Albeit chemotherapy, which was not tolerated in this case, is the best treatment option, angiosarcomas often present with high metastatic rate and unfavourable outcome.
Keywords. angiosarcoma, chemotherapy, histopathology, radiotherapy

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Title of presented paper: From dysphagia to diagnosis: a case report of hidden mediastinal lymphoma

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Type of the paper: Case report

Introduction and aim. Lymphoma is one of the most common mediastinal malignancies. They are heterogeneous tumors that originate from the clonal proliferation of lymphocytes. The aim of this presentation is to emphasize the importance of early diagnosis and treatment of fast progressive mediastinal lymphoma with esophageal stenosis.
Description of the case. We report the case of a 52-year-old male patient experienced dysphagia for solids, nausea, and significant weight loss, all of which have progressively worsened over the past three months. Biologically, the patient presented with an inflammatory syndrome, mild anemia, and thrombocytosis. The upper gastrointestinal endoscopy revealed a neoplasm of the lower esophagus. The CT scans showed a mediastinal mass centered on the esophagus with locoregional extension and multiple retroperitoneal masses. Mediastinal, intra and retroperitoneal adenopathies were also noted. A suspicion of secondary metastases or lymphoma was raised. The patient began to experience complete dysphagia and given the impossibility of placing an esophageal stent or a gastrostomy tube, a diagnostic laparoscopy and placement of a feeding jejunostomy were performed. A biopsy was done from the level of the pectoralis muscle. The patient was discharged a few days after, hemodynamically and respiratory stable. Following the histopathology results, radiotherapy was initiated.
Conclusion. In conclusion, this report highlights the importance of correct diagnosis and early treatment for patients with mediastinal lymphoma. The particularities of the case include the rapidly progressive condition and the necessity of a multidisciplinary team in order to achieve the optimal outcome.
Keywords. esophageal stenosis, lymphoma, jejunostomy

Neurology

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Title of presented paper: Neuroprotection for acute ischaemic stroke in the EVT era

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Type of the paper: Review paper

Introduction and aim. Acute ischaemic stroke (AIS) remains a leading cause of death and disability. Endovascular thrombectomy (EVT) reopens large-vessel occlusions, yet opening an artery is not rescuing brain tissue. Persistent disability reflects microvascular no-reflow, reperfusion injury, and immune-driven damage. We ask whether neuroprotection still has a place in the EVT era and outline how a procedure-adjacent strategy can convert patency into tissue salvage.

Material and methods. Selective narrative review of EVT-era AIS literature, prioritising peri-reperfusion timing, delivery route (intravenous or intra-arterial), physiological co-interventions, and mechanistic endpoints linked to penumbral perfusion, blood–brain barrier integrity, and immune signatures.

Analysis of the literature. Early programmes focused on neuronal death pathways. Animal successes faltered clinically due to mistimed dosing, narrow targets, and blunt outcomes. Evidence now supports a shift from single agents to protocolised neuroprotection delivered peri-reperfusion. Key elements include route optimisation, control of temperature, blood pressure, and glycaemia, and agents that preserve capillary patency, stabilise the blood–brain barrier, and modulate sterile inflammation, including neutrophil extracellular traps. Contemporary imaging, fluid biomarkers, and adaptive, EVT-embedded trials enable real-time readouts alongside clinical outcomes.

Conclusion. Neuroprotection's future is unlikely to be a pill. A precise, peri-EVT protocol that is time locked to reperfusion, coupled to physiological care, and judged by mechanistic signals as well as recovery offers a path to bridge the gap between reopening arteries and restoring lives.

Keywords. acute ischaemic stroke, endovascular thrombectomy, neuroprotection, microvascular no-reflow, reperfusion injury

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Title of presented paper: The comparative analysis of neuromuscular junction distribution between wild-type and transgenic, RAGE and Diaph1, knockout mice – preliminary study

Authors: Emilia Lemkowska, Jakub Skowron, Hubert, Urszula Mazur, Bernard Kordas, Judyta Juranek
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Type of the paper: Original paper

Introduction and aim. Diaph1, diaphanous1-related protein, is involved in actin structure modification and modulation of microtubulin dynamics. RAGE (receptor for advanced glycation end-products) is a part of immunoglobulin superfamily. Studies have shown that Diaph1-RAGE interaction is necessary for RAGE-ligand-dependent cellular migration, AKT phosphorylation, macrophage inflammatory response and smooth muscle migration. Evidence has shown that peripheral neuronal RAGE contributes to effective axonal regeneration, and it is also crucial to skeletal muscle physiology, playing role in the muscle precursor activity as well as the timing of muscle regeneration after acute injury. Here, we aimed to establish whether Diaph1 or RAGE deletion affects the distribution of neuromuscular junctions (NMJs) critical in neurotransmission between peripheral nerve endings and skeletal muscles.

Material and methods. We used four C57BL6 (wild-type, WT), Diaph1 (DKO) and RAGE knockout (RKO) mice. The study was approved by the Local Ethics Committee (approval no. 57/2019). Gastrocnemicus muscle samples were collected post-mortem, post-fixed in fixative, cryosectioned and stained with fluorescein-conjugated bungarotoxin. For each genotype, 20 sections were studied, five sections per one tissue sample. Statistical analysis revealed significant differences in NMJ distributions between WT and DKO ($p=0.0017$) and WT and RKO ($p=0.0416$) mice, with mean values; WT 1455±16.1 SEM, DKO 1061±35.2 SEM, RKO 1275±23.4 SEM NMJs per region of interest.

Results. Our results indicate that both RAGE and Diaph1 play a significant role in skeletal muscle innervation and their deletion is detrimental, leading to a reduction in NMJ numbers affecting neurotransmission between peripheral nerves and muscles.

Conclusion. We might speculate that the deletion of either Diaph1 or RAGE has physiological consequences, leading to muscle dysfunction, thus increasing the risk of muscular degeneration and contributing to the pathogenesis of skeletal muscle disorders.

Keywords. RAGE, Diaph1, neuromuscular junctions

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Title of presented paper: NanoVisualize brain tumor detection: deep learning-based multiclass MRI classification of brain tumors with semi-autonomous diagnostic reporting

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Type of the paper: Original paper

Introduction and aim. Accurate classification of brain tumors from Magnetic Resonance Imaging is critical for early diagnosis, yet radiologists globally face increasing workloads, leading to longer wait times and potential diagnostic delays. NanoVisualize Brain Tumor Detection, is an image processing software specialized in brain tumor diagnostics. The software features a user-friendly GUI that provides fully autonomous initial predictions, which physicians can adjust and correct if needed.

Material and methods. The software leverages a custom made 16 layer convolutional neural network (CNN) to analyze volumetric T1 and T2-weighted MRI images, classifying them into 14 tumor types and a normal category. Model trained on labeled data from multiple open-source Kaggle datasets. Initial diagnostic predictions are screened by a radiologist before an LLM creates a medical report and supplementary information for patients.

Results. The model achieved 97% testing accuracy with an average prediction time of 190 ms on unseen data. This accuracy rivals current tumor classification models with a significantly larger classification range. The model indicates low bias with uniform distribution of false positives and negatives across categories. The software generates template-based reports with key diagnostic statistics for referring physicians and a version for the patient to understand their diagnosis in simpler terms.

Conclusion. Based on initial feedback from radiologists, future versions will include tumor segmentation and the ability to distinguish between tumors and infections, enhancing diagnostic accuracy and distinguishing time sensitive cases. Additionally, the system will be evaluated in clinical settings to ensure its robustness and generalizability.

Keywords. brain tumor, AI, diagnostics

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Title of presented paper: Pediatric neurofibromatosis type 2: navigating hearing preservation and spinal tumor burden through multimodal care

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Type of the paper: Case report

Introduction and aim. Neurofibromatosis type 2 (NF2) is a rare autosomal dominant disorder characterized by bilateral vestibular schwannomas and multiple spinal and peripheral nerve sheath tumors.
Description of the case. We report the case of a 17-year-old patient presenting with right-sided sensorineural hearing loss, bilateral vestibular and multiple spinal schwannomas at cervical, thoracic and lumbar levels, associated with dorsalgia and lumbosciatica. The early age of onset and progressive symptoms highlight the complex management challenges in pediatric NF2. Historically, surgery has been the mainstay of treatment, but it is associated with significant morbidity, especially regarding hearing preservation and spinal cord function. Recently, bevacizumab, a monoclonal antibody targeting vascular endothelial growth factor (VEGF), has shown promising results in reducing vestibular schwannoma size and improving or stabilizing hearing in NF2 patients, including adolescents. Clinical trials and case series report that bevacizumab therapy may delay the need for surgery and preserve neurological function, although potential risks such as hypertension, proteinuria and impaired wound healing require careful monitoring. Moreover, optimal approach requires a multidisciplinary team including neurosurgeons, neurologists, oncologists and audiologists. Genetic testing and family counseling are also critical for early detection and management planning.
Conclusion. This case underscores the importance of individualized, multidisciplinary strategies in NF2, integrating surgical, pharmacological and supportive approaches to optimising outcomes in young patients. For this adolescent, it remains to be seen how the disease will evolve under treatment and whether the use of bevacizumab can delay surgery and preserve function, maintaining quality of life in the context of this lifelong condition.
Keywords. bevacizumab, neurofibromatosis type 2, vestibular schwannoma

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Title of presented paper: systematic narrative review of Creutzfeldt-Jakob disease (CJD): classification, diagnostic challenges, therapeutic approaches, and emerging research

Authors: Tamil Selvan Ramesh, Zayed Azam, Maja Skimina, Maciej Filip
Supervisor: David Aebisher

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Type of the paper: Review paper

Introduction and aim. Creutzfeldt-Jakob disease (CJD) is classified among transmissible spongiform encephalopathies (TSEs), it has gained global attention due to its devastating impact and diagnostic challenges. Though being rare, causing only about 1-2 cases per million annually, its rapid clinical course demands comprehensive diagnostic and therapeutic strategies. This review aims to consolidate knowledge on CJD's subtypes, symptomatology, diagnostic techniques, clinical management, and ongoing research.

Material and methods. A thorough literature search was conducted using medical databases including PubMed, Scopus, Research Gate, Elsevier. Data was also retrieved from governmental health websites. Inclusion criteria were peer-reviewed articles.

Analysis of the literature. This study revealed that four types of CJD namely sporadic, familial, iatrogenic and variant have been studied and described. The pathological hallmark of CJD is the accumulation of abnormally folded prion proteins (PrP^Sc) in the brain. The process results in the formation of vacuoles in neurons, giving the affected brain tissue its sponge-like appearance. History, symptoms, laboratory tests, MRI, EEG, Spinal Tapping (detection of 14-3-3 proteins), biopsy and post-mortem examination are done to diagnose the disease. RT-QulC is a highly sensitive test used to detect the prion proteins. As there is no cure so far, treatment is mainly focused on palliative care, pain control, use of anti-myoclonus medication, sedatives and antidepressants. Emerging research include use of monoclonal antibodies, astemizole, expressing E200K prion protein mutation in C.elegans for further research on anti-prion compounds.

Conclusion. Ongoing research into prion mechanisms and novel therapeutics offers hope for altering disease progression in the future.

Keywords. monoclonal antibodies, prion proteins, palliative care, RT-QulC

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Title of presented paper: The impact of mild traumatic brain injury on the physical and psycho-emotional state of military personnel

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Affiliation: Lviv State University of Physical Culture, Lviv, Ukraine

Type of the paper: Original study

Introduction and aim. The goal of the work is to assess the impact of mild traumatic brain injury on the physical and psycho-emotional state of military personnel

Material and methods. The following methods were used in the study: analysis and generalization of data from scientific and methodological literature (Pubmed, PedRo), sociological methods (Visual Analogue Scale, Beck Scale, Berg Scale), medical and biological methods (Schulte Table, test "Get Up and Go"), and methods of mathematical statistics. The study was conducted in the TMO 1 of St. Luke's Hospital in Lviv.

Results. The study involved 15 patients after mild traumatic brain injury on the 12th day (±1 day) after transfer to the rehabilitation department. The average age of the patients is 27.3±3.5 years.

Conclusion. Analysis of the study results shows that patients after mild and moderate traumatic brain injury have neurological symptoms that affect the physical and psychoemotional state of the patient.

Keywords. physical therapy, TBI, military trauma, balance

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Title of presented paper: TikTok Tics: the rise of adolescent functional tic-like behaviours after the COVID-19 pandemic

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Type of the paper: Review paper

Introduction and aim. After the COVID-19 pandemic, there was a surge of rapid-onset functional tic-like behaviours (FTLB) reported in adolescents. This phenomenon was frequently linked to previous exposure to tic-related content on social media. Misclassification of FTLBs as Tourette syndrome (TS) risks unnecessary pharmacotherapy and delays effective, nonpharmacological care for functional neurological disorder (FND). This paper aims to synthesise current evidence on epidemiology, differential diagnosis, and management of FTLBs as well as to outline a practical and appropriate line of care for FTLB patients.

Material and methods. In order to create this review, the PubMed database was searched. The following Keywords. "functional tic-like behaviours," "Tourette," "adolescents," "functional neurological disorder," "social media," and "COVID-19" were used. Priority was given to the most recent (2020-2025) publications, guidelines, cohort and case-series data, systematic reviews, and randomised/controlled trials relevant to pediatric FND. Data were extracted on epidemiology, clinical features, rule-in signs, differential diagnosis, treatment strategies, and outcomes.

Analysis of the literature. Multiple centres observed an increase in FTLB presentations in 2020–2022, which predominantly appeared among adolescent females with anxiety/depression. Social media exposure commonly acts as a trigger rather than the sole cause. Compared with TS, FTLBs show an abrupt onset, complex context-dependent movements/vocalisations, reduced suppressibility, and often lack a classic premonitory urge or earlier history of simple tics; positive FND rule-in signs support a positive diagnosis. Management of FTLBs emphasises clear explanation of the diagnosis with demonstration of positive signs, digital hygiene, symptom-focused CBT and physiotherTitle of the apy, family interventions, and treatment of comorbidities; routine antidopaminergic therapy is discouraged. Evidence from pediatric FND (e.g., PNES RCTs) and consensus physiotherapy guidelines supports targeted behavioural rehabilitation, with early recognition associated with functional recovery.

Conclusion. FTLBs in adolescents are best conceptualised as FND distinct from TS. A positive rule-in diagnostic approach, combined with psychoeducation, targeted behavioural rehabilitation, careful management of comorbidities, and attention to social media triggers, reduces unnecessary medication use and significantly improves outcomes.

Keywords. functional tic-like behaviors, functional neurological disorder, Tourette syndrome, adolescents, social media, COVID-19

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Title of presented paper: ADHD and Epilepsy – common neurobiological and genetic backgrounds and pharmacotherapy

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Type of the paper: Review paper

Introduction and aim. This review examines the interaction between Attention Deficit Hyperactivity Disorder and epilepsy in adults putting an accent on the effectiveness of pharmacotherapy and its clinical implications.

Material and methods. Some drug effects and interactions that may exacerbate symptoms of these diseases were evidenced in a comprehensive review. This review included meta-analyses and an overview of ADHD and epilepsy pharmacological treatment.

Analysis of the literature. Evidence indicates that non-stimulant treatments for Attention Deficit Hyperactivity Disorder, such as atomoxetine, result in fewer complications than stimulant ones like methylphenidate. In addition, studies on cannabinoids—mostly CBD—show that using them as medical treatment may improve quality of life for patients with coexisting ADHD and epilepsy.

Conclusion. The findings highlight the necessity for further research into the efficacy and safety of medications in this specific patient group and suggest the potential for precision medicine approaches in treating ADHD and epilepsy. Future research should continue to explore the interactions between these conditions, ensuring that patients receive the most effective and safe care possible.

Keywords. ADHD, atomoxetine, cannabinoids, epilepsy, non-stimulants

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Title of the paper: Deep learning for neural decoding in brain-computer interfaces

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Introduction and aim. Brain-computer interfaces (BCIs) enable direct communication between neural activity and external devices, bypassing traditional neuromuscular pathways. Recent progress in artificial intelligence, particularly deep learning, has significantly improved the ability to decode complex, noisy, and high-dimensional brain signals. The aim of this work is to present current applications of BCIs and to summarize how modern machine-learning techniques address key challenges in neural decoding.

Material and methods. This presentation is based on an analysis of contemporary literature concerning BCI systems, neural signal acquisition methods, and the use of machine-learning (ML) and deep-learning (DL) algorithms in EEG-based neural decoding. Sources include peer-reviewed studies published between 2000 and 2021.

Analysis of the literature. BCIs are increasingly used in neurorehabilitation, communication assistance for paralyzed patients, sensory restoration, neuroprosthetics, and neurofeedback therapy. Neural decoding remains challenging due to noisy, nonlinear, and rapidly changing brain signals. The reviewed evidence indicates that deep learning - especially convolutional and hybrid CNN-LSTM models - outperforms classical ML approaches by automatically extracting spatial-temporal patterns, filtering noise, and modeling complex dependencies. CNNs dominate among DL methods, while SVMs remain competitive for smaller, feature-engineered datasets. Wavelet-based preprocessing remains widely used across studies.

Conclusion. AI-based approaches now form the backbone of modern BCI research. Deep learning enables more accurate, robust, and real-time neural decoding, supporting the development of next-generation assistive and therapeutic neurotechnologies. Future progress depends on improving model interpretability, clinical validation, and ethical integration of AI-driven BCI systems.

Keywords. brain-computer interface, neural decoding, deep learning, EEG, machine learning, neuroprosthetics, neurorehabilitation

Pediatrics session

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Title of presented paper: Kawasaki Disease: the master of unseen cardiac threats in infants

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Type of the paper: Case report

Introduction and aim. Kawasaki Disease (KD) or Mucocutaneous Lymph Node Syndrome (MLNS) is a rare acute vasculitic condition with multisystemic manifestations. It occurs predominantly in male children under 5 years of age. This report aims to portray the clinical picture of this disease and emphasise the importance of a systematic approach in cases of complications.

Description of the case. A male infant, 2 months and 3 weeks old, was hospitalised in the pediatric clinic presenting with fever, agitation and dry cough. On the 11th day of hospitalisation, the patient developed an erythematous rash on the trunk and hyperemic conjunctivae. A cardiological consultation is performed, which revealed Acute Coronary Syndrome of the left coronary artery. The marked inflammatory syndrome, along with the clinical and paraclinical characteristics, supported a diagnosis of Kawasaki disease. Immunoglobulin, antiplatelet treatment with Aspirin, anticoagulant in curative doses, Methylprednisolone for 5 days, symptomatic and acid-base correction, as well as erythrocyte mass were administered. A dilation also appeared at the level of the right coronary artery, as well as a progressive increase in inflammatory markers. Considering the evolutionary nature of the disease, the therapy was intensified with the administration of Infliximab.

Conclusion. The prognosis appears cautiously favourable, with timely therapeutic interventions limiting coronary damage and complications, demanding regular monitoring.

Keywords. coronary artery complications, immunoglobulin therapy, Kawasaki disease

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Tittle of presented paper: Syncope and ventricular ectopy as initial manifestations of Loeys-Dietz syndrome: a clinical case report

Authors: Codruța-Maria Centea [1], Robert-István Pethő [1], George Atănăsoaie [1], Marius-Silviu Henegar [1], Emma Dragomirescu [1]
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Type of the paper: Case report

Introduction and aim. Loeys-Dietz syndrome (LDS) is a rare autosomal dominant connective tissue disorder caused by mutations in genes involved in the TGF-β signaling pathway. It is characterized by vascular abnormalities, skeletal deformities, and craniofacial dysmorphism. This paper presents a clinical case illustrating an atypical cardiac onset of LDS and emphasizes the importance of long-term cardiovascular monitoring in affected patients.
Description of the case. A 17-year-old male, diagnosed at 13 years of age with LDS, presented with recurrent syncopal episodes and ventricular arrhythmia. Clinical examination revealed facial dysmorphism, pectus carinatum, arachnodactyly, and scoliosis. Echocardiography identified aortic root and arch dilation, while ECG recorded frequent monomorphic ventricular extrasystoles. Genetic testing confirmed a heterozygous pathogenic variant in the TGFB2 gene (c.896G>A; p.Arg299Gln). Despite initial beta-blocker therapy, treatment compliance was poor. Follow-up four years later showed persistent aortic dilation and increased ventricular ectopy, which improved after reinitiating beta-blockers.
Conclusion. This case highlights the variability of Loeys-Dietz syndrome presentation, with syncope and arrhythmia as uncommon early manifestations. Continuous cardiac surveillance and genetic testing are essential for accurate diagnosis and prevention of life-threatening complications.
Keywords. aortic dilatation, arrhythmia, connective tissue disorder, Loeys-Dietz syndrome, syncope

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Title of the paper: PLOD2 variants in an infant with osteogenesis imperfecta and arthrogryposis: a case suggestive of Bruck syndrome

Authors: George Atănăsoaie [1], Ana-Maria Hizilnicov [1], Codruța-Maria Centea [1], Man Andrei-George [1]
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Type of the paper: Case report

Introduction and aim. Bruck syndrome is an uncommon variant of osteogenesis imperfecta (OI) that combines skeletal fragility with a propensity for congenital joint contractures.

Description of the case. We describe a 5-month-old male, born by cesarean section at 37 weeks after an uncomplicated pregnancy, who presented with bilateral healed tibial fractures on radiography. There was no family history of bone disease. Targeted next-generation sequencing detected two heterozygous PLOD2 variants: c.1958C>G (p.Pro653Arg) and c.1A>G (p.Met1?), inherited from the parents. Both alterations are currently classified as variants of uncertain significance, though several in-silico predictors suggest deleterious effects on collagen modification, potentially impairing lysine hydroxylation and cross-link formation. Clinically, the phenotype is comparatively mild: dentinogenesis imperfecta and hearing loss are absent. The infant is not yet ambulatory, therefore congenital joint contractures (arthrogryposis) cannot be confirmed at this time. However, given the molecular findings pointing toward Bruck syndrome rather than classical OI, we consider there to be an increased risk for development of joint contractures and will implement close longitudinal monitoring for early signs of arthrogryposis, contracture progression and orthopedic complications. These specific PLOD2 variants have not been previously reported, expanding the mutational spectrum linked to collagen cross-linking defects.

Conclusion. We discuss the interpretative challenges of VUS in rare collagenopathies, emphasize the value of parental segregation and molecular diagnostics, and advocate for functional assays and continued follow-up to establish pathogenicity and refine genotype–phenotype correlations.

Keywords. Bruck syndrome, osteogenesis imperfecta, PLOD2, variant of uncertain significance

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Title of presented paper: Structural chromosomal abnormality presenting phenotypic features overlapping with Prader-Willi syndrome

Author: Irina-Maria Costantea
Supervisor: Mariela Sanda Militaru

Affiliation: "Iuliu Haţieganu" University of Medicine and Pharmacy Cluj-Napoca, Romania

Type of the paper: Case report

Introduction and aim. Prader-Willi syndrome (PWS) is a genetic disorder characterized by severe hypotonia, hyperphagia with progressive obesity, hypogonadism, and delays in motor and language development. Although these features are classically associated with the 15q11.2–q13 deletion, similar phenotypes can occur in individuals with an intact chromosome 15 due to other genetic mechanisms. This report describes a patient presenting with a Prader-Willi-like phenotype caused by an unbalanced translocation between chromosomes 2 and 20, resulting in a MYT1L gene deletion and partial 20p duplication.

Description of the case. A 31-year-old male presented with marked obesity, psychomotor delay, polilalia with articulation difficulties, and spastic tetraparesis. Dysmorphic features included almond-shaped eyes, a triangular face with reduced bitemporal diameter, small hands and feet, and hypogonadism with sparse facial hair. A perimembranous ventricular septal defect (VSD) had been surgically corrected in early childhood. Independent walking was achieved at age five, and articulate speech developed at age six. Behavioral abnormalities and traits consistent with autism spectrum disorder were also observed. Given the clinical resemblance to PWS, a single nucleotide polymorphism (SNP) array was performed. The analysis identified a terminal 2.7 Mb deletion on the short arm of chromosome 2 and a terminal duplication on the short arm of chromosome 20, indicating an unbalanced translocation. The deleted region on chromosome 2 included the MYT1L (myelin transcription factor 1-like) gene, the ACP1 (acid phosphatase soluble 1) gene and the TMEM18 (Transmembrane Protein 18) gene. Karyotype analysis with G-banding was subsequently carried out for the patient's brother, parents, and paternal grandmother. The female relatives exhibited normal karyotypes, while the male relatives displayed a balanced translocation between chromosomes 2 and 20, confirming the hereditary nature of the rearrangement. The MYT1L gene, located at 2p25.3, has been associated with intellectual disability, behavioral disturbances, autism spectrum features, and variable degrees of obesity, reflecting its critical role in neurodevelopment and weight regulation. The ACP1 gene is expressed in adipocytes and its heterozygous loss leads to severe obesity. As far as the TMEM18 gene is concerned, it is expressed in all brain sites, especially in the hypothalamus, and is linked to adult and childhood obesity and type 2 diabetes. In addition, partial trisomy of 20p is associated with speech delay, craniofacial dysmorphism, and cardiac malformations. The combination of these genetic abnormalities accounts for the patient's complex phenotype, making this case exceptionally rare.

Conclusion. This case illustrates a rare Prader-Willi–like phenotype resulting from an unbalanced translocation between chromosomes 2 and 20, leading to MYT1L haploinsufficiency and 20p duplication. It underscores the role of MYT1L in neurodevelopmental delay, behavioral impairment, and obesity, while highlighting the contribution of 20p partial trisomy to additional clinical features such as speech delay, dysmorphism, and cardiac defects. The findings expand the phenotypic spectrum associated with MYT1L mutations and 20p duplications, emphasizing the importance of early genetic evaluation and the need for further research to elucidate the full clinical and molecular implications of these rare chromosomal abnormalities.

Keywords. MYT1L gene, unbalanced translocation, 20p partial trisomy, Prader-Willi-like phenotype

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Title of presented paper: Diagnostic odyssey of patients with Canavan disease – a case series analysis

Authors: Maja Karecka, Sylwia Krzanowska
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Affiliation: Students' Scientific Group at Department of Paediatrics, Jagiellonian University Medical College, Kraków, Poland

Type od the paper: Case report

Introduction and aim. Canavan disease (CD) is a rare leukodystrophy with onset in early infancy, characterized by developmental delay, macrocephaly and muscle tone abnormalities. It is caused by mutations in the ASPA gene, leading to the accumulation of N-acetylaspartic acid (NAA) in the brain, which disrupts myelination and contributes to progressive neurodegeneration. This study aims to evaluate the clinical course and diagnostic process of CD, based on a retrospective analysis of patients' medical records.

Description of the cases. The study included five patients (2 girls, 3 boys) aged 2–16 years admitted to the University Children's Hospital of Kraków between 2010 and 2025. The first symptoms appeared at a mean age of 4 months, including muscle tone abnormalities and developmental delay. The average age at clinical diagnosis was 11 months, and genetic confirmation was 14 months. Three patients had the following ASPA gene variants: two were homozygous for c.[914C>A], and one, presenting a severe course despite normal urinary NAA levels, was compound heterozygous for c.[914C>A];[744+1G>A]. In other patients, biochemical testing showed elevated NAA. Characteristic signs occurred with the following frequencies: 100% – macrocephaly, axial hypotonia with appendicular hypertonia and developmental delay; 80% – failure to thrive; 60% – epilepsy, dysphagia, constipation; 40% – gastroesophageal reflux.

Conclusion. Most children with CD experience significant diagnostic delay. Although no disease-modifying therapy is available, early diagnosis is essential, as patients often require multidisciplinary care. Symptoms such as macrocephaly, developmental delay, and abnormal muscle tone should prompt consideration of CD.

Keywords. Canavan disease, developmental delay, macrocephaly

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Title of presented paper: Metabolic markers in predicting the development of hypoxic-ischemic encephalopathy in newborns

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Supervisor: Yuliia Cherniavska

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Type od the paper: Original paper

Introduction and aim. Hypoxic-ischemic encephalopathy (HIE) in newborns is linked to oxygen deprivation and energy distress. Elevated LDH, ALT, and AST may help predict HIE within 12 hours after birth, while nitric oxide influences vascular changes during hypoxia. To assess LDH, ALT, AST, and urinary nitrate levels as potential markers for predicting HIE.

Material and methods. We studied 124 newborns: 45 (15 term, 30 preterm) born to mothers with metabolic syndrome and with HIE, and 79 (60 term, 19 preterm) without maternal metabolic syndrome or HIE. Medical records were analyzed. Urinary nitrates were measured using the Griss-Ilosvai reaction. Statistics were performed with Stata 14.0.

Results. On day 1, AST and ALT were higher in preterm infants with HIE vs. without (p=0.055; p=0.049). In term infants, no significant differences were observed. On day 6, AST was higher in term infants with HIE (p=0.034). LDH showed no clear pattern. Urinary nitrates were higher in preterm infants with HIE (p=0.036), but not in term infants. Logistic regression identified urinary nitrates (OR 208.2; 95% CI: 1.17–3712.5) and ALT (OR 0.634; 95% CI: 0.38–1.05) as predictive factors.

Conclusion. Urinary nitrates and ALT may serve as metabolic markers for HIE. Early neonatal monitoring in infants of mothers with metabolic syndrome is recommended.

Keywords. newborns, hypoxic-ischemic encephalopathy, urine nitrates, ALT, AST

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Title of presented paper: digital natives in diapers: early social media exposure and child development

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Supervisor: Marta Kopańska

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Type of the paper: Review paper

Introduction and aim. The ubiquity of digital media has transformed early childhood environments, with infants and toddlers increasingly exposed to internet-connected devices and social media content. This review aims to synthesize current evidence on how early screen and social media exposure affect cognitive, emotional, and social development in young children.

Material and methods. A narrative review was conducted using PubMed, Scopus, and Web of Science databases for studies published between 2018 and 2025. Search terms included "early screen exposure," "infants," "social media," "cognitive development," and "emotional development." Eligible studies involved children under five years of age and examined developmental outcomes related to digital media use.

Analysis of the literature. Recent cohort and neuroimaging studies demonstrate associations between excessive screen exposure and delayed cognitive and language development, reduced attention, and altered white matter integrity. Emotional and social effects include weaker empathy, impaired emotion regulation, and diminished parent–child interaction. However, evidence suggests that moderated, educational, and co-viewed digital content can mitigate negative effects. Factors such as parental involvement, content quality, and duration of exposure significantly influence developmental outcomes.

Conclusion. Early and unregulated digital media exposure may pose measurable risks to cognitive and socioemotional development. Pediatric guidance and parental co-viewing are critical in reducing harm. Further longitudinal and neurobiological research is needed to establish causality and inform evidence-based public health guidelines.

Keywords. early childhood, screen time, social media, cognitive development, emotional development, pediatric health

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Title of presented paper: A vanishing lesion: an unexpected outcome of a prenatally diagnosed brain malformation

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The type of the paper: Case report

Introduction and aim. Vein of Galen aneurysmal malformation (VGAM) represents 1% of fetal arteriovenous vascular abnormalities. Diagnosis relies on two-dimensional real-time ultrasound (US), with Doppler confirming its vascular nature. Current treatment options are endovascular transarterial embolization or surgical removal, but mortality remains around 50%.

Description of the case. A 24-year-old woman was referred at 34 and 5 weeks of gestation with suspected fetal cerebral vascular malformation. Clinical data and fetal US were normal, except for a hypoechogenic midline structure in the posterior third ventricle, showing turbulent arterial and venous flow and straight sinus dilatation. Three-dimensional multiplanar imaging localized the anomaly. MRI at 36 weeks confirmed VGAM with no parenchymal abnormalities. Parents were counseled about poor prognosis. At 37 and 3 weeks, a female neonate was delivered by cesarean section, Apgar 9, weight 2720 g. Transfontanellar US confirmed VGAM. Mild cardiac complications and pulmonary hypertension occurred in the immediate neonatal period. At 3 months, MRI showed partial aneurysm closure with normal ventricular system. At 32 months, an angio-MRI revealed a normal intracerebral vascular system. At 5 years, the child is asymptomatic with normal neurodevelopment.

Conclusion. VGAM is caused by multiple arteriovenous shunts between the vein of Galen and choroidal arteries. It occurs more often in males. Consequences include the "vascular steal effect," right heart overload, heart failure, and cerebral damage, leading to a usually poor outcome. In this case, spontaneous remission occurred, and management consisted solely of careful monitoring.

Keywords. complete spontaneous remission, Doppler technique, vein of Galen aneurysmal malformation

Pharmacology session

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Title of presented paper: Comparative biotransformation of atorvastatin and Ezetimibe by *Cunninghamella* spp.: insights into phase I and phase II metabolism

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Supervisors: Paulina Koczurkiewicz-Adamczyk, Karolina Słoczyńska

Affiliation: Student's Scientific Club Cytogenom, Department of Pharmaceutical Biochemistry, Faculty of Pharmacy, Jagiellonian University Medical College, Kraków, Poland

Type of the paper: Original paper

Introduction and aim. High cholesterol is a silent but deadly condition, causing around 3.6 million deaths annually, according to the World Heart Federation. It is a major risk factor for cardiovascular diseases. Concurrently, extensive use of cholesterol-lowering drugs (atorvastatin, ezetimibe) contributes to aquatic pollution. Filamentous fungi such as *Cunninghamella* produce enzymes capable of both phase I and phase II biotransformation, making them valuable models for pharmaceutical metabolism and biodegradation. This study aimed to evaluate the biodegradation potential of atorvastatin and ezetimibe by *Cunninghamella* species and to compare their capacity for phase I and phase II metabolism.
Material and methods. Three strains (*C. echinulata, C. blakesleeana, C. elegans*) were incubated with atorvastatin (phase I metabolism) and ezetimibe (phase II metabolism) for seven days. Biotransformation was monitored using liquid chromatography coupled with tandem mass spectrometry (LC-MS/MS), and metabolites were identified by mass spectral analysis.
Results. Ezetimibe was transformed more efficiently than atorvastatin. Glucuronidation, the main phase II pathway, occurred at 38.6% in *C. echinulata*, 33.3% in *C. blakesleeana*, and 36.9% in C. elegans. By contrast, atorvastatin metabolism was weak, with atorvastatin lactone, hydroxyatorvastatin, and hydroxyatorvastatin lactone detected at <10%.
Conclusion. *Cunninghamella spp.* exhibited stronger phase II metabolism of ezetimibe than phase I metabolism of atorvastatin. The efficiency of biotransformation depended on molecular structure and strain specificity, supporting the use of *Cunninghamella* as a model for drug metabolism and environmental biodegradation.
Keywords. *Cunninghamella*, cholesterol-lowering drugs, biodegradation

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Title of presented paper: Semaglutide: the newest remedy for diabetes and obesity

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Type of the paper: Review

Introduction and aim. Semaglutide, marketed as Ozempic, is one of the newest therapeutic options for type 2 diabetes and obesity. As a GLP-1 receptor agonist, it improves glycemic control and promotes significant weight loss. The aim of this study was to present its mechanism of action, clinical outcomes, and ethical and social aspects of its use, with particular emphasis on its role in metabolic therapy.

Material and methods. A review of the literature was conducted, including clinical trial results and scientific reports on semaglutide's effects on HbA1c reduction, weight management, and safety profile, as well as its potential use in pediatric and adult populations. Comparisons with newer agents such as tirzepatide were also included.

Analysis of the literature. Semaglutide has proven efficacy in lowering HbA1c and reducing body weight (approximately 15% in clinical trials), though slightly less than tirzepatide (20–22%). It is administered via weekly subcutaneous injections, titrated up to 2 mg (or 2.4 mg for obesity treatment). The drug has robust long-term cardiovascular outcome data and is widely available across global markets. Ethical considerations include treatment cost, access disparities, and the off-label use of semaglutide as a weight-loss aid promoted through social media, raising concerns about medical and societal implications. Tirzepatide, marketed as Mounjaro, represents a newer generation of incretin-based therapy. Unlike semaglutide, it is a dual GIP and GLP-1 receptor agonist, which enhances both insulin secretion and satiety pathways. Clinical trials (SURPASS program) have demonstrated greater reductions in HbA1c and more pronounced weight loss (up to 20–22%) compared with semaglutide. Tirzepatide is administered once weekly, starting at 2.5 mg and titrated to 15 mg. Although long-term cardiovascular outcome data are still pending, preliminary findings suggest potential cardiometabolic benefits beyond glucose control. However, the drug remains more expensive and less widely available, which may limit accessibility.

Conclusion. Semaglutide represents a breakthrough in the treatment of type 2 diabetes and obesity, providing an effective and safe therapeutic option. However, its use should remain guided by medical indications, with careful attention to ethical, financial, and accessibility issues. While semaglutide remains a key milestone in diabetes and obesity management, emerging agents like tirzepatide show promise for even greater efficacy, though their long-term safety and accessibility still require evaluation.

Keywords. semaglutide, tirzepatide, Ozempic, Manjaro, GLP-1 receptor agonist, diabetes, obesity

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Title of presented paper: New therapeutic options in pharmacotherapy of dysfunctional tear syndrome

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Type of the paper: Review

Introduction and aim. Dysfunctional tear syndrome (DTS), commonly referred to as dry eye disease, is a multifactorial disorder characterized by tear film instability, ocular surface inflammation, and neurosensory abnormalities. Conventional therapies, including artificial tears and anti-inflammatory agents, frequently provide suboptimal and transient relief. The objective of this review is to summarize emerging pharmacotherapeutic options in DTS and assess their potential clinical applicability.

Material and methods. A review of scientific articles available in the Medline/PubMed and Google Scholar databases as well as published studies at ClinicalTrials.gov was performed, for studies published between 2020 and 2025, using the following keywords: dysfunctional tear syndrome, dry eye disease, keratoconjunctivitis sicca.

Analysis of literature. Recent evidence underscores the clinical utility of novel immunomodulatory agents such as lifitegrast and advanced cyclosporine formulations, which demonstrate improved efficacy and tolerability compared to conventional preparations. Secretagogues, including diquafosol and rebamipide, have shown promise in enhancing mucin and aqueous secretion, thereby stabilizing the tear film. Neurostimulation-based pharmacotherapy and agents targeting oxidative stress pathways represent emerging approaches. Comparative analyses suggest that phenotype-driven combination regimens may achieve superior outcomes relative to monotherapy.

Conclusion. Innovations in pharmacotherapy offer meaningful advances in the management of DTS, with the potential to address both inflammatory mechanisms and tear film deficiencies. Long-term, large-scale clinical trials remain warranted to confirm safety, efficacy, and cost-effectiveness, yet these agents constitute a significant step toward more individualized therapeutic strategies.

Keywords. dysfunctional tear syndrome, dry eye disease, keratoconjunctivitis sicca

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Title of presented paper: Nicotine rebranded: The tobacco industry's shift to e-cigarettes and their cardiovascular health consequences

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Type of the paper: Review

Introduction and aim. In recent years, the tobacco industry has repositioned itself through the promotion of electronic cigarettes (e-cigarettes) as supposedly safer alternatives to traditional tobacco products. This shift has raised significant public health concerns regarding the true cardiovascular risks associated with nicotine in new forms. The aim of this study was to analyze current evidence on the cardiovascular effects of e-cigarette use and to assess whether their health impact differs from that of conventional smoking.

Material and methods. A comprehensive literature review was conducted using PubMed, Scopus, and Google Scholar databases. Recent studies (2018–2025) investigating the cardiovascular outcomes of e-cigarette use were analyzed.

Conclusion. Current evidence suggests that e-cigarettes are not free of cardiovascular risk. While exposure levels differ from traditional smoking, nicotine and aerosol components may still contribute to vascular dysfunction and increased cardiovascular morbidity.

Keywords. e-cigarettes, nicotine, cardiovascular risk, tobacco industry

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Title of presented paper: From metabolism to mood: GLP-1 receptor agonists beyond glycemia control and weight loss

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Type of the paper: Review

Introduction and aim. Depressive disorder (depression) is the most common mental illness, affecting people of all ages, genders, and social backgrounds. It significantly impairs daily functioning and constitutes a major risk factor for suicide, accounting for over 700,00 deaths annually (WHO, 2023). Despite its global impact, the underlying pathomechanisms remain incompletely understood, necessitating sustained research efforts to deepen understanding of its molecular basis and to develop more efficacious therapeutic interventions. Numerous studies have demonstrated a bidirectional relationship between metabolic diseases and depressive disorders, suggesting shared pathophysiological mechanisms and an increased mutual risk. Glucagon-like peptide-1 (GLP-1) is an incretin hormone predominantly secreted by intestinal L-cells, which stimulates insulin secretion from pancreatic β-cells in a glucose-dependent manner following food intake. Beyond its metabolic role, GLP-1 and its receptors are also expressed in the central nervous system, where they contribute to neuroregulatory processes. Emerging evidence indicates that GLP-1 receptor agonists (GLP-1RAs) exert neuroprotective effects, in part by attenuating neuroinflammation through the downregulation of proinflammatory cytokines, which are implicated in the pathophysiology of depression. The aim of this presentation, is to provide an overview of current evidence on GLP-1RAs as potential antidepressant strategies, highlighting their molecular mechanisms, preclinical and clinical data, and future therapeutic prospects in depression.
Material and methods. A literature review was performed, including preclinical studies, randomized controlled trials (RCTs) and systematic reviews from PubMed/MEDLINE published in 2020-2025. The following keywords were used in the search: *Depression *GLP-1 receptor agonists *Metabolic diseases. Analysis of the literature Individuals with type 2 diabetes mellitus (T2DM) are more likely to experience depressive symptoms, often accompanied by elevated glycemic levels. Conversely, depressive disorders may increase the risk of T2DM, potentially through mechanisms related to central adiposity. GLP-1RAs alleviate depressive disorder via enhancing central insulin signaling, restoring monoamine balance and attenuating oxidative stress and neuroinflammation by downregulating the expression of proinflammatory cytokines (e.g. IL-6, TNF-α) among others. Furthermore, they promote hippocampal neurogenesis and synaptic plasticity by activating the BDNF pathways. Moreover, GLP-1RAs decrease plasma adrenocorticotropic hormone (ACTH) and serum corticosterone (CORT) and C-reactive protein (CRP) levels, thereby reducing hypothalamic–pituitary–adrenal (HPA) axis hyperactivity and systemic inflammation.
Conclusion. Growing evidence linking metabolic dysregulation and the pathophysiology of depressive disorder highlights novel therapeutic targets beyond monoaminergic approaches, which often have limited effectiveness. Current preclinical and clinical findings support their role as metabolic modulators with neuropsychiatric benefits.
Keywords. Depression; GLP-1 receptor agonists; Metabolic diseases

Funding statement: This study was supported by grants from the state budget, granted by the Minister of Science under the program 'Student Scientific Societies Create Innovation' (grant number: SKN/SP/603081/2024), as well as the statutory funds of the Medical College of Rzeszów University (Rzeszów, Poland).

Surgery session

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Title of presented paper: Shadow versus blade: minimally invasive vs. open surgery in intradural extramedullary spine tumours

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Affiliation: Faculty of Medicine, Carol Davila University of Medicine and Pharmacy, Bucharest, Romania

Type of the paper: Review

Introduction and aim. Intradural extramedullary (IDEM) tumours, mostly benign meningiomas, schwannomas, and neurofibromas, constitute ~70% of spinal neoplasms. This review compares minimally invasive spinal surgery (MISS) with the open approach for IDEM neoplasms.

Material and methods. PubMed and Scopus were searched for studies published since 2015. Keywords included: "intradural", "spine tumour", "IDEM", and "minimally invasive". Inclusion criteria were for studies comparing MISS to hemilaminectomy and laminectomy reporting operative time, blood loss, postoperative stay, complication rate, and the Oswestry Disability Score (ODI) 12 months postoperatively. Studies on paediatric patients and overlapping reviews were excluded. PRISMA 2020 guidelines were used for data synthesis.

Analysis of the literature. Twelve studies were selected, summing 486 patients (324 MISS, 162 open surgery). Dauleac et al. (2022) reported a shorter operative duration with MISS (2.07±0.66 hours vs 2.56±1.08 hours, p=0.04). Chen et al. (2024) demonstrated that MISS was associated with a lower haemorrhage, shorter postoperative stay, and fewer complications than laminectomy (118.7±72.7 ml vs. 211.9±116.1 ml, p=0.001; 7.6±1.5 days vs. 10.5±2.0 days, p=0.000; respectively, 3.3% vs. 23.8%, p=0.000). Baseline ODI scores were similar; at 12 months, MISS patients improved to 10.0±11.4% versus 18.8±15.1% in the open group (p=0.023).

Conclusion. MISS represents a safe, effective, non-inferior option for IEMD tumours. Further qualitative trials are warranted to corroborate these findings on a larger scale.

Keywords. intradural extramedullary spine tumor; laminectomy; minimally invasive spinal surgery

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Title of presented paper: Investigation of the perceptions, attitudes, and influences towards plastic surgery among medical students in Oman: a questionnaire-based study

Author: Abdullah Al Lawati
Supervisor: Nawaf Al-Muqaimi

Affiliation: Department of Surgery, Sultan Qaboos University Hospital, Muscat, Oman

Type of the paper: Review

Introduction and aim. Plastic surgery spans reconstructive and cosmetic procedures and is often misunderstood by trainees and the public. This study assessed knowledge, attitudes, and perceptions of plastic surgery among medical students at Sultan Qaboos University (SQU), Muscat, Oman – the first such evaluation locally.

Material and methods. We conducted a cross-sectional survey using a previously validated, context-adapted questionnaire distributed via Google Forms to undergraduate SQU medical students (foundation students excluded). Of ~420 invitees, 310 responses were obtained (response rate 74%), exceeding the target sample of 261 (95% CI, 5% margin). Data were analyzed in IBM SPSS v27. Ethical approval: SQU MREC/3262.

Results. Among 310 participants (50% female), 194 (62.9%) recognized cosmetic surgery as a subset of plastic surgery; 65 (21.0%) considered them separate and 32 (10.3%) were unsure. Internet (217; 70.0%) and Instagram (182; 58.7%) were leading information sources. Only 26 (8.4%) selected plastic surgery as a future career; 157 (50.6%) preferred other specialties and 127 (41.0%) were undecided. Age showed a strong positive correlation with decision-making ($r=0.758$; $p<0.001$); educational level showed a weak but significant correlation ($r=0.190$; $p<0.001$). Commonly recognized plastic-surgery conditions included rhinoplasty (224; 72.3%), breast reduction/enhancement (205; 66.1%), and cleft lip/palate (197; 63.5%). Most respondents (224; 72.3%) viewed cosmetic-surgery risk as comparable to other surgeries.

Conclusion. SQU medical students demonstrate moderate awareness of plastic surgery but retain notable misconceptions. Enhanced curricular exposure and clinical rotations may improve understanding, address misinformation, and potentially increase interest in the specialty.

Keywords. attitudes, perceptions, influences, medical students, plastic and reconstructive surgery, Oman, career choice

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Title of presented paper: Anterior surgical approach in management of progressive dysphagia due to diffuse idiopathic skeletal hyperostosis in the cervical spine – a case report

Author: Magdalena Gołuchowska
Supervisors: Borys Kwinta, Roger Krzyżewski

Affiliation: Students' Scientific Group at the Department of Neurosurgery and Neurotraumatology, Jagiellonian University Medical College, Kraków, Poland

Type of the paper: Case report

Introduction and aim. Diffuse idiopathic skeletal hyperostosis (DISH, Forestier disease) is an acquired, noninflammatory musculoskeletal disorder that is characterized by ossification and calcification of both spinal ligaments and peripheral entheses. The precise pathophysiology is yet to unravel. Nonetheless, the association between DISH and systemic disorders, including obesity, dyslipidemia, hypertension, and diabetes mellitus, remains the focus of contemporary research. Cervical DISH poses a significant challenge for clinicians. Once bony excrescences commence to encroach on the neighbouring components, the condition might manifest with plethora of symptoms, such as dysphagia, foreign body sensation, hoarseness, dyspnea, dysphonia and stridor. The proper treatment entails conservative approach and surgery in refractory cases.

Description of the case. A 59-year-old female was admitted electively to the neurosurgery department due to massive osteophytosis of the anterior surface of the cervical spine. The patient suffered from progressive dysphagia. Problems with deglutition triggered anxiety with a fear of death. MRI and CT of cervical spine revealed bony excrescences on the anterior surface of cervical vertebrae from C4 to C7. Cervical spinal canal decompression via an anterior approach was performed, with excision of osteophytes. Postoperatively, the patient reported hoarseness. However, no signs of dysphagia were noted.

Conclusion. Diffuse idiopathic skeletal hyperostosis of the cervical constitutes a significant clinical concern as it is an underestimated cause of dysphagia and airway compromise. Initial treatment comprises conservative methods such as pharmacological therapy or dietary modifications. Anterior approach is an accurate way of management refractory cases of DISH.

Keywords. anterior approach in spinal surgery, diffuse idiopathic skeletal hyperostosis, dysphagia, Forestier disease, osteophytes

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Title of presented paper: Natural Products and biomaterial strategies for preventing post-surgical adhesions: emerging anti-fibrotic agents and mechanistic insights

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Supervisor: Mohammed Al-Abri

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Type of the paper: Review

Introduction and aim. Post-operative adhesions develop in most abdominal and pelvic surgeries and cause pain, bowel obstruction, infertility, and reoperation. Current measures such as Seprafilm® and NSAIDs provide only partial protection and may cause adverse effects. This review evaluates natural products and biomaterial platforms as potential strategies for adhesion prevention.

Material and methods. A structured literature search was performed in PubMed, Scopus, and Google Scholar. Search terms included "post-surgical adhesions," "peritoneal adhesions," "natural products," "curcumin," "resveratrol," "epigallocatechin-3-gallate," "bromelain," "vitamin E," and "biomaterial delivery systems." Priority was given to peer-reviewed original research and meta-analyses published in English between 2021–2025.

Results. Curcumin, resveratrol, epigallocatechin-3-gallate, bromelain, and vitamin E demonstrated antioxidant, anti-inflammatory, and anti-fibrotic actions that interfere with TGF-β, ROS, cytokines, and extracellular matrix deposition. Hydrogels, bioresorbable films, and nanosystems enhanced local release and added barrier effects. Preclinical data are promising, but clinical evidence is scarce, and issues of bioavailability, safety, and standardisation remain.

Conclusion. Natural products combined with biomaterial platforms represent a promising strategy for adhesion prevention, but robust clinical trials are needed to confirm safety and efficacy.

Keywords. adhesions, bromelain, curcumin

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Title of presented paper: Minimally invasive radical surgery with curative intent in advanced multiorgan urothelial cancer

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Type of the paper: Case report

Introduction and aim. Bladder cancer is the ninth most common malignancy worldwide, typically affecting older males, and arises from the urothelium. It is classified into non-muscle-invasive and muscle-invasive forms, requiring distinct therapeutic approaches. This case illustrates a rare progression of initially non-muscle-invasive bladder cancer to upper tract urothelial cancer in a young male with underlying liver cirrhosis, highlighting the importance of surveillance and the potential of modern, minimally invasive approaches.
Description of the case. A 42-year-old male presented in 2012 with painless hematuria and was diagnosed with non-muscle-invasive urothelial bladder cancer. He underwent multiple TUR-BT procedures and intravesical chemotherapy (Farmorubicin) until 2019. The patient missed surveillance from 2021 to 2023. In April 2024, TUR-BT and CT revealed a T4a bladder tumor with prostate invasion, positive lymph nodes, and a high-grade tumor in the renal pelvis. His history of alcoholic cirrhosis complicated management. After neoadjuvant chemotherapy to reduce tumor burden, he underwent a combined laparoscopic radical cystectomy and nephroureterectomy. Postoperative histopathology showed no malignancy in the bladder or lymph nodes, while the left kidney was positive for tumor. Recovery was uneventful, aided by his relatively young age.
Conclusion. This case demonstrates that even advanced urothelial cancer can be managed with minimally invasive techniques. A multidisciplinary approach enables complex surgeries in patients with significant comorbidities. While lapses in surveillance can worsen outcomes, modern surgical expertise and technology can still achieve curative results.
Keywords. bladder cancer, TUR-BT, liver cirrhosis

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Title of presented paper: Colon intussusception in adults – a rare pathology that can be diagnosed by abdominal ultrasonography

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Type of the paper: Case report

Introduction and aim. Intussusception of the colon is a rare pathology, leading to bowel obstruction cases triggered by a rigid segment of the small bowel or the colon. Its clinical presentation is non-specific: bowel obstruction, abdominal pain. The imaging displays the typical aspect: "target sign", CT scan is the most reliable imaging method, but ultrasonography (US) may also play a part. Treatment remains surgical.
Description of the cases. We present 3 cases of colon intussusception, diagnosed by abdominal ultrasonography.
Case 1. 50-year-old male who presented for anemia. Abdominal ultrasonography set a diagnosis of intussusception of the transverse colon, confirmed by CT-scan. The suspicion of an underlying tumor was raised, confirmed by colonoscopy. The forceps biopsies diagnosed a colon adenocarcinoma. The patient was successfully operated.
Case 2. 61-year old female previously treated by chemotherapy and operated for gastric adenocarcinoma, presented for bowel obstruction. Abdominal US showed a "target sign" on the terminal ileum. By the time of the CT the symptoms had partially subsided, without confirming the intussusception (probably spontaneously resolved) and carcinomatosis were found as a potential trigger.
Case 3. 94-year-old male suffering from dementia presented for left hypochondrium pain, with local tenderness. Abdominal US found a "target sign" at the splenic angle of the colon. The patient's family refused any further investigation.
Conclusion. Abdominal US may be a reliable, non-invasive, and non-radiating means of diagnosis for the rare cases of colon intussusception. The triggers of the intussusception are most often represented by tumors and the definitive treatment is surgical.
Keywords. bowel obstruction, colon intussusception, ultrasonography

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Title of presented paper: Life in parallel circulation: prenatal diagnosis of complete transposition of the great arteries

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Type of the paper: Case report

Introduction and aim. Complete transposition of the great arteries (d-TGA) is a congenital heart defect characterized by atrioventricular concordance and ventriculo-arterial discordance, causing life-threatening hypoxemia if untreated. Early prenatal diagnosis is critical to optimize perinatal and postnatal outcomes. This report presents a case of d-TGA diagnosed prenatally, emphasizing prenatal monitoring and planned postnatal management.

Description of the case. A 29-year-old pregnant woman at 22+6 weeks was referred to a prenatal cardiology clinic after ultrasound suggested a congenital heart defect. Fetal echocardiography confirmed complete d-TGA with ventricular septal defect (VSD) and preserved pulmonary circulation, along with adequate atrial communication (FO index 33%). Serial prenatal monitoring showed stable hemodynamics and normal growth. Delivery occurred via cesarean section; the neonate weighed 3700 g with Apgar scores of 5/7/7. At two weeks, the infant underwent an arterial switch operation with coronary reimplantation. Postoperatively, intensive care included mechanical ventilation, catecholamine support, and management of wound infection. Follow-up echocardiography confirmed good myocardial contractility and no pericardial effusion.

Conclusion. Prenatal detection of d-TGA allows for careful planning of delivery and postnatal interventions. Adequate atrial or ventricular communications support neonatal survival until corrective surgery. Multidisciplinary prenatal and postnatal management is essential to optimize outcomes in complex congenital heart defects.

Keywords. congenital heart disease, d-TGA, prenatal diagnosis, arterial switch surgery

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Title of presented paper: Robotic partial nephrectomy in renal cell carcinoma: balancing oncologic control and renal function preservation

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Type of the paper: Case report

Introduction and aim. Renal cell carcinoma (RCC), originating from the renal tubular epithelium, accounts for 90% of kidney cancers and presents with variable clinical features, from incidental imaging findings to symptomatic cases with hematuria, flank pain, or palpable masses. Advances in minimally invasive surgery, particularly robotic techniques, have improved oncological and functional outcomes.
Description of the case. We present a case of a 52-year old male with comorbidities including toxic liver cirrhosis, portal hypertension, thrombocytopenia, and a history of upper digestive tract bleeding, incidentally diagnosed with a right renal mass on imaging. CT scans demonstrated a 2.9 cm exophytic, well-vascularized mass (cT1aN0M0) located at the upper mid-pole of the right kidney, without evidence of metastatic spread (PADUA score of 7 supportive of partial nephrectomy). Considering the tumor's characteristics and the patient's status, a robotic partial nephrectomy (Da Vinci Xi system) was performed, aiming to balance oncological efficacy with maximal renal preservation. The patient underwent a successful robotic partial nephrectomy with minimal blood loss, no intraoperative complications. Histopathological examinations confirmed clear cell RCC, ISUP grade 1, measuring 24/23/20 mm, confined within the tumor capsule, with negative surgical margins. Post-operative evolution was favorable, with preserved renal function and stable hemoglobin levels. The patient was discharged on postoperative day 3 in stable condition.
Conclusion. This case emphasizes the role of nephron-sparing strategies in localized RCC. Robotic-assisted partial nephrectomy offers superior surgical precision, minimizes complications, and supports rapid recovery, making it an efficient and preferred option for selected patients.
Keywords. renal preservation, robotic surgery, renal cell carcinoma

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Title of presented paper: Revisional bariatric surgery: techniques for managing weight regain and surgical complications

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Type of the paper: Review

Introduction and aim. Bariatric surgery has evolved from an experimental intervention to an established practice in obesity management. Despite proven long-term efficacy in weight reduction and comorbidity remission, many patients experience weight recurrence, inadequate loss, or suboptimal resolution. These failures carry clinical and psychological burdens, often necessitating revisional surgery to address relapsing obesity and complications. This review synthesizes indications, techniques, and outcomes of revisional bariatric surgery, addressing gaps in structured management of post-bariatric failure.

Material and methods. A structured literature search was conducted using narrative review methodology. PubMed, Scopus, and Google Scholar were systematically searched. Results. Revisional surgery is required in 20-30% of patients, mainly for weight regain or GERD. SG-to-RYGB yields 48-59% EWL at 1 year and resolves GERD in over 50% of cases. Re-sleeve achieves up to 85.4% EWL but increases leak and GERD risk. RYGB-to-distalization achieves 61.8-73.8% EWL at 1-8 years, with a 16.7% reoperation rate. AGB revisions to RYGB or SG result in 70-87% EWL at 1 year, though RYGB carries higher morbidity. Outcomes vary by revision type, with malabsorptive procedures offering greater weight loss at the cost of nutritional risks. Bariatric surgeries remain central to obesity management. Many patients face complications, inadequate weight loss, or recurrence requiring revisional surgery. Although technically demanding and riskier, revisional procedures play a key role in long-term management of obesity as a chronic, relapsing disease.

Conclusion. Revisional bariatric surgery is vital in managing obesity long-term. Care should be individualized through structured, algorithmic, multidisciplinary approaches to optimize outcomes.

Keywords. bariatric surgery, revisional bariatric procedures, weight regain, obesity relapse, sleeve gastrectomy, Roux-en-Y gastric bypass

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Title of presented paper: 86 mm ascending aortic aneurysm rupture risk: size as a key indicator for surgical management

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Type of the paper: Case report

Introduction and aim. Ascending aortic aneurysm (AAA) is a life-threatening condition with high risk of dissection and rupture, often requiring complex surgery. Risk increases with aneurysm growth, hypertension, and atherosclerosis. This case highlights the particularly high rupture risk of large AAAs (>80 mm), which exceed 30% annual rupture risk, making elective surgery vital. Despite these risks, patients with severe but asymptomatic aneurysms often perceive the condition as harmless and may delay surgery, as seen here. Surgical management required weighing rupture risk against perioperative mortality: while emergency repair carries around 50% mortality, elective surgery offers far better outcomes. Guidelines recommend intervention for asymptomatic AAA≥5.5 cm or for symptomatic/rapidly expanding aneurysms, with smaller aneurysms monitored closely, as most eventually require surgery.
Description of the case. A 68-year-old female with a history of AAA diagnosed four years prior, presented with anterior chest pain. Imaging examinations confirmed an 86/85mm AAA, without dissection, but with moderate coronary atherosclerosis. Surgical intervention was performed to replace the ascending aorta and aortic arch with two segments of tubular graft. The brachiocephalic arteries were reimplanted, and the graft's distal anastomosis was completed with a stable postoperative course. On the 10th postoperative day, she developed complete thrombosis of the left subclavian and internal jugular veins. Anticoagulation with heparin and vitamin K antagonists was started, leading to partial vein recanalization on follow-ups.
Conclusion. Management of ascending aortic aneurysm extends beyond surgical repair, encompassing patient education on rupture risk, timely elective intervention, and careful postoperative care. Balancing individual risk factors with guideline-based thresholds is essential to achieve optimal outcomes.
Keywords. ascendent aortic aneurysm, risk factors, rupture

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Title of presented paper: Laser trabeculoplasty: A potential alternative to medication in glaucoma treatment – a review

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Type of the paper: Review

Introduction and aim. Glaucoma is a leading cause of global blindness. Treatment primarily aims to reduce intraocular pressure (IOP) to preserve the visual field. Selective laser trabeculoplasty (SLT) is a non-invasive procedure that enhances aqueous humor drainage. This review assesses the effectiveness and cost-efficiency of SLT compared to medication.
Material and methods. This systematic review used PubMed to identify studies comparing SLT and medication in glaucoma treatment. The search was limited to articles published within the last 10 years to ensure clinical relevance. The keywords used were "laser trabeculoplasty," "medication," and "comparison." Included studies were primarily randomized clinical trials, alongside one cross-sectional and one retrospective study. Therapeutic success was defined by IOP reduction, medication avoidance, need for trabeculectomy, or improved quality of life. Studies comparing different laser types were excluded. Bias risk was not assessed.

Results. Thirteen studies met the inclusion criteria, with a total of 1,435 patients analyzed. Gazzard et al. (2023) reported lower disease progression in the SLT group (19.6%) compared to the medication group (26.8%, p=0.006), and fewer trabeculectomies (13 vs. 32 eyes, p<0.001). SLT also saved patients approximately £500 over three years. Lee et al. (2014) found SLT significantly reduced IOP and medication use. Ang et al. (2020) noted improved social well-being with SLT. However, Narayanaswamy et al. (2015) found prostaglandin analogs had a higher complete success rate (84% vs. 60%, p=0.008), with fewer patients needing additional medications (8% vs. 22%, p=0.05).
Conclusion. SLT appears to offer therapeutic and financial advantages over medication in many cases, though inconsistencies in defining success make comparisons difficult. More standardized research is needed to establish SLT's role as a first-line therapy.
Keywords. laser trabeculoplasty, glaucoma, medication, intraocular pressure

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Title of presented paper: A diagnostic twist: sporadic gastric neurofibroma masquerading as GIST

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Type of the paper: Case report

Introduction and aim. Gastric neurofibromas are considerably rare benign tumors of the stomach that originate from the nerve sheath cells of the peripheral nervous system such as endoneurial fibroblasts, Schwann cells or perineural-like cells. These may develop as part of Recklinghausen's disease (neurofibromatosis type 1) or as sporadic gastric neurofibromas. Their diagnosis is often challenging and requires multiple complementary investigations.

Description of the case. A clinical description is provided for a 48-year-old woman, who has been suffering from epigastric pain and dyspepsia for the preceding several months, particularly occurring before meals. During the physical examination, tenderness was noted in the upper abdomen upon palpation, with no additional findings. Gastroscopy revealed a gastric mass with central depression and ulceration. Biopsy suggested moderate chronic active gastritis and the endoscopic ultrasonography illustrated a soft, hyperechogenic, homogeneous lesion. A barium meal indicated an extrinsic mass in the gastric antrum, measuring approximately 5 cm in diameter and a computed tomography performed later confirmed the presence of a gastric tumor of similar size and characteristics. The patient underwent laparoscopic wedge resection of the mass and her postoperative course was uneventful. Histopathological analysis revealed a mesenchymal proliferation composed of fusiform cells developing in the submucosa. Immunohistochemistry highlighted positivity for S100 protein, NSE and calretinin (in isolated tumor cells), with negativity for CD117. Follow-up examination at 6,12 and 18 months demonstrated no recurrence. Endoscopically, the sporadic gastric neurofibromas mimicked a gastrointestinal stromal tumor (GIST). Immunohistochemical staining for calretin helped distinguish schwannomas from neurofibromas, while S100 positivity differentiate neurofibromas from intramuscular myxomas.

Conclusion. Sporadic gastric neurofibromas are rare neoplasms, often discovered incidentally and frequently misinterpreted radiologically as GIST. Complete surgical excision remains the treatment of choice and laparoscopic resection offers a safe and effective option for solitary gastric neurofibromas.

Keywords. gastric neurofibroma, submucosal lesion, laparoscopic resection