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Axillary Vein Midline Catheter Insertion with Pseudotunneling in a Patient with Critically Limited Venous Access: a Clinical Vignette

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Background

Achieving reliable intravenous access in patients with critically limited peripheral veins and relative contraindications to central venous catheterization remains a significant clinical challenge. Midline catheters are increasingly used as an alternative; however, their placement may be difficult when standard insertion sites are unavailable

Case Report

A 50-year-old male patient with a history of liver transplantation followed by retransplantation, receiving immunosuppressive therapy, was referred to the Vascular Access Team due to the inability to obtain standard peripheral venous access. The patient presented with thrombocytopenia (platelet count 61 × 10^3/μL) and a history of multiple invasive procedures, including venous bypasses in both axillary regions. Systematic ultrasound assessment of upper and lower limb veins using RaPeVA and RaFeVA protocols revealed no feasible sites for peripheral or femoral cannulation. Owing to the anticipated duration of intravenous therapy of approximately four weeks and the risk associated with central venous access, implantation of a midline catheter was selected. Due to the unavailability of typical insertion sites, the catheter was inserted via the left axillary vein under real-time ultrasound guidance, using a pseudotunneling technique to increase catheter stability and reduce the risk of local complications. A 4 Fr midline catheter was trimmed to an appropriate length to avoid central vein placement. The procedure was completed without complications, with successful blood aspiration and ultrasound confirmation of correct catheter tip position. The catheter functioned properly throughout therapy and was electively removed after treatment completion, with no early or late complications observed.

Conclusions

Axillary vein midline catheter insertion with pseudotunneling may represent a safe and effective option in patients with extremely limited venous access, particularly those with thrombocytopenia and relative contraindications to central venous catheterization.

Bilateral Silent Lung: A Life-Threatening Diagnostic Challange

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Background

Acute bronchospasm following anesthesia induction is a recognized perioperative complication, most commonly associated with asthma, airway hyperreactivity, or mechanical irritation of the epithelium. Complete bilateral bronchospasm that is characterized by absence of breath sounds, near-zero tidal volume, and absent capnography despite endotracheal tube placement. It is a rare and potentially life-threatening event, often referred to as „bilateral silent lung". It requires rapid differential diagnosis, prompt recognition and decisive management are crucial.

Case Report

A 47 year old female with COPD and active smoking history (ASA II, Mallampati II), was to undergo an elective microlaryngoscopic excision. The patient arrived in the OR fasting, hemodynamically stable(BP 132/67 mmHg, HR 88 bpm). General anesthesia was induced using a standard approach with propofol, rocuronium, and remifentanil. After preoxygenation(SpO 99%), endotracheal intubation was performed with direct laryngoscope. Initial capnography showed EtCO of 15 mmHg, which rapidly dropped to 0. No tidal volume was achieved and breath sounds were bilaterally absent. SpO decreased progressively to 72%, accompanied by hypotension(98/56 mmHg) and tachycardia(124 bpm). Given the high suspicion for esophageal intubation, endotracheal tube placement was reassessed using videolaryngoscopy, confirming correct positioning. With confirmed tube placement and absent ventilation parameters, a diagnosis of "silent lung" was suspected. Aggressive systemic pharmacotherapy was initiated: 0,5mg Salbutamol and 8mg dexamethazone were administered via IV, Patient was also started on 2g $MgSO_4$ drip. Following pharmacologic intervention, gradual improvement was observed. Capnography returned progressively(EtCO 0 -> 15 -> 40 mmHg), tidal volumes became measurable, and wheezing breath sounds appeared, consistent with resolving bronchospasm. Subsequently, ventilation normalized and the procedure was completed without further complications.

Conclusions

Bilateral silent lung after anesthesia induction is a rare but life-threatening condition. Confirmation of proper endotracheal tube placement is crucial before taking other underlying causes into consideration, most importantly before the decision to extubate the patient is made. This case highlights that „silent lung" should remain a differential diagnosis even in non asthmatic patients with COPD. Fast and correct identification of such state is key in preventing severe complications.

Extensive Subcutaneous Emphysema and Pneumoperitoneum After Percutaneous Gastrostomy and Percutaneous Tracheostomy in a Patient with Amyotrophic Lateral Sclerosis (ALS)

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Background

Percutaneous endoscopic gastrostomy (PEG) and percutaneous tracheostomy are common procedures performed in patients with ALS to manage advanced dysphagia and breathing difficulties, respectively. Despite their safety, both procedures can be associated with complications of which extensive subcutaneous emphysema and pneumoperitoneum being rare and serious.

Case Report

A 77-year-old man with amyotrophic lateral sclerosis (ALS) was admitted to the clinic due to worsening dysphagia, cough, and shortness of breath. This patient was wheelchair bound and exhibited common symptoms associated with ALS such as fasciculations and weakened muscle strength. Due to breathing and swallowing difficulties, PEG tube was placed on Day 1, and tracheostomy was placed on Day 2. In the days following, palpable signs of subcutaneous emphysema were evident across the chest, abdomen, and upper limbs. CT scan revealed pneumoperitoneum and extensive free air reaching the scrotum. It was necessary to identify the cause of the free air due to the time proximity of the PEG and tracheostomy placement. Bronchoscopy was negative for any tracheal injury, and a contrasted CT scan into the PEG did not show any contrast extravasation. Diagnostic Laparoscopy was performed to identify the source, which was the PEG, and suturing the stomach to the peritoneum surrounding the tube was performed as a treatment. Patient condition improved post-operatively, and the dye test was negative. Feeding continued using the inserted PEG tube and the patient was discharged after a few days.

Conclusions

This case highlights the importance of identifying the source of free air, and shows the diagnostic challenge faced in identification of two plausible causes, one that is common and another that is rare, following multiple procedures. As a consequence of time proximity and extent of the emphysema, it was crucial to not exclude tracheal injury as a differential diagnosis. Early recognition and intervention allowed for the preservation of feeding tube function and minimizing invasive procedures.

Fatal Multiple Organ Dysfunction Syndrome After Ammonia Poisoning

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Background

Ammonia is a volatile strong alkali used in industry and cleaners. Inhalation causes airway irritation, edema and possible respiratory failure; ingestion leads to severe caustic injury with risk of ulceration and perforation. As a potent alkali, it causes deep liquefactive necrosis. Severe exposures may result in airway compromise, infection and sepsis.

Case Report

A 75-year-old man with history of multiple strokes accidentally ingested 10 ml of 10% household ammonia. He had throat pain, dysphagia, drooling and dyspnea. Laryngoscopy showed oral burns with pharyngeal and laryngeal edema; endoscopy revealed Zargar IIB esophageal injury, erosive gastropathy and duodenitis. Initial labs showed renal impairment. Chest CT demonstrated ground-glass opacities suggesting chemical pneumonitis. His condition worsened with rising oxygen needs, hypernatremia, progressing kidney injury, increasing inflammatory markers and hypotension. He developed acute hypoxemic respiratory failure, sepsis and septic shock. In ICU, he was intubated and required vasopressors; renal failure progressed to anuria requiring hemodialysis. Despite maximal support, multiorgan failure progressed, culminating in asystole and unsuccessful resuscitation.

Conclusions

Accidental ingestion and inhalation of 10% ammonia caused severe dual alkali injury to the airway and gastrointestinal tract, leading to chemical pneumonitis and aspiration. Aspiration marked a critical turning point, resulting in secondary bacterial pneumonia, sepsis, septic shock, acute kidney injury, hypernatremia and progression to MODS despite intensive care. This case highlights the high lethality of combined inhalational and ingested alkali exposure and underscores the need for early airway protection, aspiration prevention, prompt sepsis recognition and fluid and electrolyte management.

Brasiliensis Sepsis Following Knee Injury in an Immunocompetent Patient

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Background

Nocardia spp. infections are rare, with an estimated incidence of 0.39-0.55 cases/100,000 inhabitants/year according to European data but the true scale is unknown, as nocardiosis is not a reportable disease. This rarity often delays diagnosis and targeted antimicrobial treatment. This can be crucial when the infection progresses to sepsis, as appropriate antimicrobial therapy is associated with lower mortality.

Case Report

A 57-year-old obese, smoking male with a history of asthma and hypertension was admitted to the emergency department with progressive dyspnea, fatigue, sweating and rigors lasting one week after a knee injury and surgery. He presented with respiratory failure requiring supplemental oxygen via face mask. Scattered crusted skin lesions were noted. CRP and procalcitonin were elevated. Blood cultures were obtained and empiric antibiotic therapy with ceftriaxone was initiated. He was admitted to the pneumology department and clarithromycin was added. Chest radiograph and computed tomography revealed pleural effusion and suggested bilateral lower lung lobe abscesses. These findings and initial blood culture results suggested a staphylococcal etiology, prompting vancomycin addition. Respiratory failure progressed rapidly, with persistent hypoxemia despite high-flow nasal oxygen therapy. He was transferred to the intensive care unit with a diagnosis of sepsis secondary to pneumonia. His condition progressed to septic shock, requiring mechanical ventilation, vasopressors and continuous renal replacement therapy. The lack of clinical improvement despite broad-spectrum empiric therapy (piperacillin-tazobactam, vancomycin, clarithromycin, fluconazole) raised suspicion of an unrecognized infectious focus. Given the recent knee injury, cultures were obtained from synovial fluid and empiric meropenem was added. Carbapenem-resistant Nocardia brasiliensis was eventually confirmed in all cultures, including skin lesions. Despite targeted therapy (trimethoprim-sulfamethoxazole, linezolid), the patient experienced respiratory and hemodynamic collapse. The patient died despite resuscitation efforts.

Conclusions

This case highlights the importance of considering alternative foci of infection when patients fail to respond to antimicrobial therapy. Inoculation at the recent knee injury site was the likely cause of primary infection, with subsequent dissemination to the lungs and skin, underscoring the critical role of identifying and controlling the source in sepsis.

Fulminant Otogenic Meningitis Leading to Brain Death Within Days

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Background

Pneumococcal meningitis is a life-threatening infection, frequently requiring critical care support due to sepsis and adverse neurological outcome. In acute otitis media, meningitis and intracranial complications are rare but may be fulminant with rapid progression from local infection to coma and limited response to treatment.

Case Report

A healthy 56-year-old woman developed sore throat followed by right-sided otalgia and otorrhea. Within 24 hours of ear symptoms onset, she was found unresponsive at home. On the arrival around midday, patient was febrile, hypotensive, with a Glasgow Coma Scale (GCS) score of 6 and positive meningeal symptoms. Initial head computed tomography (CT) revealed diffuse cerebral oedema with signs of brain herniation. Blood tests showed elevated inflammatory markers, while lumbar puncture revealed inflammatory cerebrospinal fluid (CSF). Patient was assessed by an otorhinolaryngologist. Otoscopy confirmed acute otitis media with mastoid effusion and paracentesis was performed. Patient was intubated and treatment of ceftriaxone and vancomycin, acyclovir, norepinephrine, hyperosmolar therapy was initiated. At 19:15, patient developed anisocoria and repeated CT showed progression of cerebral oedema and cerebellar herniation through the foramen magnum. For advanced evaluation and management, she was transferred to a tertiary intensive care unit (ICU) at 21:55. Intensive medical and anti-oedema treatment was continued, while neurosurgical interventions were not performed in the absence of a surgically treatable lesion. Follow-up CT scans showed progressive cerebral oedema and effacement of basal cisterns. Previously obtained cultures from CSF and middle-ear fluid grew Streptococcus pneumoniae. After 72 hours, sedation was withdrawn but patient remained with GCS of 3 and absent brainstem reflexes. She met the clinical criteria for brain death and cerebral angiography demonstrated lack of intracranial arterial opacification. Following the confirmation of brain death, the patient was assessed as a potential organ donor and managed according to the donor care protocols.

Conclusions

This case underscores that otogenic meningitis may evolve with fulminant progression, emphasizing the importance of early recognition of acute otitis media and prompt initiation of appropriate treatment. In cases of irreversible neurological injury, timely assessment for potential organ donation should be considered as an important component of high-quality intensive care.

Influence of Lambda Light-chains on Acid-base Disturbances: Multiple Myeloma-induced with Remarkably Increased Anion Gap and Acute Renal Failure

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Background

Background: Multiple myeloma (MM) can cause complex metabolic distortions related to circulating monoclonal proteins. Excessively produced free light chains (FLC) in MM may behave as either cations or anions and thereby alter the serum anion gap (AG). Owing to the high variability in the charge characteristics of FLC and their lower plasma concentration compared to other myeloma types, FLC can either cause an increase or a decrease in the anion gap. Additionally, in 40–50% of cases of renal failure in patients with MM, renal impairment is caused by FLC accumulation leading to obstruction of the distal tubules. Prompt initiation of aggressive treatment to reduce the concentration of FLC in the plasma is crucial for further prognosis and prevention of metabolic distortions such as metabolic acidosis.

Case Report

Case report: A 64-year-old female patient was admitted to the Intensive Care Unit from the Emergency Department due to impaired consciousness, respiratory failure, severe metabolic acidosis most likely secondary to of acute renal failure. AG of 31 mmol/L has been observed. The patient was delivered to the hospital by the emergency medical team on the same day due to dyspnoea with deterioration of general condition for several days. Tests performed on admission revealed: pH 6,985; hemoglobin 6,3 g/dL, HCO3- 4 mmol/dL, lactate 17,0 mmol/L, K+ 6,8 mmol/L, Na+126 mmol/L, Cl- 96 mmol/L, AG 31 mmol/L, creatinine 7,86mg/dL, Ca 2+ 1,1 mmol/L. Peripheral blood examination revealed plasmacytes and a significantly elevated lambda light chain concentration, suggesting MM. The patient was managed with blood transfusions, norepinephrine administration, continuous venovenous hemodialysis and steroid pulse therapy. Given the high levels of FLC, plasmapheresis (TPE) treatment was provided, resulted in >50% reduction of lambda chains (decrease from 4988 mg/l to 1683 mg/l). A subsequent trepanobiopsy confirmed the diagnosis of MM.

Conclusions

This case highlights the complexity of metabolic distortions in a patient with MM with an associated renal failure and severe metabolic acidosis and the role of TPE as an effective intervention for reducing plasma light chain concentrations.

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

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Background

Streptococcus pyogenes is a Gram-positive, beta-hemolytic bacterium responsible for a wide spectrum of human infections, ranging from mild respiratory conditions to life-threatening invasive diseases such as necrotizing fasciitis and septicemia. The pathogen's virulence is mediated by factors like the M protein, streptolysins, and pyrogenic exotoxins, which can trigger a cytokine cascade leading to Streptococcal Toxic Shock Syndrome and multiorgan failure. While penicillin remains the treatment of choice, invasive infections are associated with high morbidity and mortality, estimated at approximately 517,000 deaths annually worldwide. Early recognition is critical, yet the diagnosis is often challenging due to non-specific initial manifestations, which can rapidly progress to refractory shock.

Case Report

A 36-year-old male presented to the Emergency Department with septic shock, scrotal edema, and extensive ecchymosis extending from the groin to the thorax. Initial laboratory findings revealed acidosis, coagulopathy, and markers of multiorgan damage, leading to a suspicion of Fournier's gangrene. Although surgical exploration excluded fascial necrosis, blood cultures confirmed Streptococcus pyogenes infection. The patient required aggressive ICU management, including mechanical ventilation, high-dose catecholamines, and continuous renal replacement therapy for persistent oliguria/anuria. The course was complicated by severe coagulopathy necessitating a massive transfusion of 143 units of blood products and secondary infections. A multidirectional therapeutic approach was implemented, consisting of targeted antimicrobial therapy, surgical debridement, application of advanced wound dressings, vacuum-assisted closure, and hyperbaric oxygen therapy. After 60 days of intensive care, the patient's condition stabilized and he was transfered to the general surgery department.

Conclusions

This case underscores the efficacy of HBOT as a pivotal adjunctive intervention in managing invasive GAS infections. HBOT's multi-mechanistic approach—combining bactericidal properties with tissue repair stimulation—significantly improves clinical outcomes. Evidence indicating a reduction in mortality and a lower incidence of multiple organ dysfunction syndrome supports its role in multidisciplinary treatment protocols. When integrated with aggressive intensive care and surgical management, HBOT offers a viable pathway to recovery for critically ill patients facing extensive necrotizing infections.

Rapidly Progressive Central Nervous System Abscesses of a Fungal Etiology

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Background

Aspergillus fumigatus is an opportunistic mold that is a rare cause of invasive disease in immunocompromised patients with central nervous system (CNS) involvement in 10–20% of cases and can lead to brain abscesses (BAs) with a mortality rate of 75–100%. Symptoms include neurological deficits, headache, fever, seizures, and papilledema. Diagnosis relies on clinical presentation, imaging, and biopsy. Treatment is challenging due to the poor CNS penetration of antifungal agents and rising antifungal resistance.

Case Report

A 35-year-old male with a history of alcohol abuse was admitted to the ICU with altered mental status and a tonic-clonic seizure. Two weeks earlier, he had been treated for alcoholic hepatitis complicated by Klebsiella pneumoniae sepsis. During that hospitalization, he developed left upper limb paresis, but CT scans revealed no CNS abnormalities. Before ICU admission he was treated with methylprednisolone for 2 weeks. On admission, he was hemodynamically stable, afebrile, and mechanically ventilated. MRI performed 7 days after the initial CT scan revealed 21 infratentorial ring-enhancing lesions, which progressively enlarged on serial imaging. Blood tests for HIV, toxoplasmosis, tuberculosis, and blood cultures were negative. A whole-body CT scan ruled out malignancy and other infectious sources. Due to the deep-seated nature of the lesions, neurosurgical biopsy was initially deferred. Empirical antibiotics were initiated for suspected bacterial abscesses, including meropenem, ampicillin, linezolid, colistin. As Aspergillus fumigatus was identified in the tracheal aspirate, treatment with amphotericin B was initiated, with the omission of voriconazole due to its hepatotoxicity and documented resistance patterns in the hospital. Rapid enlargement of a superficial temporal lesion enabled biopsy, revealing an abscess-like structure despite initial negative cultures. Within 48 hours, the patient deteriorated, developing cerebral edema, followed by cardiac arrest. Postmortem cultures from the brain abscess confirmed A. fumigatus sensitive to amphotericin B and voriconazole.

Conclusions

This case highlights the need for heightened vigilance in high-risk patients, as focal neurological signs may be the earliest indicators of CNS infections. In immunocompromised and critically ill individuals, fungal infections should be strongly considered in the differential diagnosis to prevent delays in treatment.

Recurrent CRRT Circuit Clotting in Acute Pancreatitis: A Case of True Heparin Resistance

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Background

Heparin resistance is defined as the inability to achieve adequate anticoagulation despite the appropriate heparin dose. It usually refers to unfractionated heparin (UFH) and implies the need for doses exceeding 35,000 IU/day or >30 IU/kg/h to achieve a therapeutic activated partial thromboplastin time (aPTT). Clinically, it manifests as recurrent thrombosis, despite maintaining target parameters. The etiology of resistance is multifactorial, requiring distinction between two mechanisms. The main cause of true heparin resistance is antithrombin III deficiency (congenital or acquired). In true resistance, heparin is ineffective despite high doses, manifesting as shortened aPTT, low anti-Xa activity, and clinical thrombosis. This must be distinguished from pseudo-resistance, where despite an shortened aPTT, the patient has therapeutic drug concentrations, confirmed by a normal anti-Xa activity. This case highlights the value of rapid diagnosis of heparin resistance and anticoagulant therapy monitored by anti-Xa levels.

Case Report

A 21-year-old male with class III obesity was transported to the ICU with multiple organ failure due to alcohol-induced necrotizing acute pancreatitis. The patient was in critical condition, requiring vasopressors to maintain MAP > 65 mmHg. Anuria necessitated continuous veno-venous hemodialysis (CVVHD) with regional citrate anticoagulation. After the circuit clotted twice on the day 1, UFH was added. Despite high dose, clotting recurred. D-dimers were unmeasurable (above detection limit), and aPTT results were within the normal range. Tests revealed antithrombin III deficiency and low anti-Xa activity. UFH was discontinued, and low-molecular-weight heparin (LMWH) was initiated. LMWH administration under anti-Xa monitoring allowed for a stable anticoagulation. On day 19, the patient was transferred for further treatment in stable condition, hemodynamically stable, conscious, with restored diuresis, and without thrombosis recurrence.

Conclusions

Recurrent clotting of the continuous renal replacement therapy (CRRT) circuit, despite citrate anticoagulation, should be considered a signal suggesting hypercoagulability and possible heparin resistance. It must be noted that in patients with severe inflammation and high inflammatory parameters, aPTT may be an inadequate indicator for monitoring heparin efficacy. Proper management in this patient group requires monitoring anti-Xa levels to avoid therapeutic errors resulting from pseudo-resistance.

Severe Soft Tissue Injury Following Vasopressor Extravasation from a Central Venous Catheter

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Background

Vasopressors are essential for hemodynamic support in critically ill patients and routinely administered via central venous catheters (CVCs). While extravasation is well described with peripheral intravenous access, vasopressor extravasation from CVCs is rarely reported. When it occurs, it may lead to tissue necrosis, secondary infection, and prolonged wound management.

Case Report

We report the case of a 46-year-old male admitted with severe acute necrotizing pancreatitis complicated by acute kidney injury, respiratory failure, abdominal compartment syndrome, and circulatory instability requiring vasopressor support. The patient was transferred to the intensive care unit (ICU), where continuous renal replacement therapy was initiated via a right internal jugular vein catheter. A separate CVC for norepinephrine infusion (0.1–0.28 µg/kg/min) was inserted into the left internal jugular vein (LIJV). Five days after insertion, local complications developed at the catheter site, including a 4×6 cm hematoma with skin maceration and progressive necrosis in the left supraclavicular region, suspected to be due to vasopressor extravasation. Catheter dysfunction with impaired aspiration and infusion was observed, confirmed by Ultrasound and chest X-ray. Consequently, it was removed, and a new CVC was inserted into the right femoral vein on the same day. Despite prompt catheter removal and initiation of local wound care, necrotic changes continued to progress. The patient required prolonged local treatment, multiple antibiotic regimens due to secondary wound infection, and repeated surgical consultations. Ultimately, surgical debridement and vacuum-assisted closure (VAC) therapy were initiated Gradual wound healing with granulation and epithelialization was achieved, and the patient was discharged home 72 days after the initial detection of necrosis, without further complications.

Conclusions

Vasopressor extravasation from a CVC, although rare, can result in severe local complications. This case highlights the importance of meticulous CVC site monitoring, early recognition of catheter dysfunction, prompt removal and reinsertion at an alternative site. Increased awareness of this complication is essential to improve vascular access safety and prevent extensive tissue injury.

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

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Background

Severe hypertriglyceridemia (sHTG), defined as serum triglyceride (TG) levels >1000 mg/dL, is a recognized cause of acute pancreatitis, a serious complication that may lead to multiorgan failure. Therapeutic plasma exchange (TPE) enables rapid TG reduction and is considered in selected cases with <500 mg/dL commonly used as a therapeutic target associated with lower pancreatitis risk. However, evidence for improved clinical outcomes is limited and no ICU-specific guidance clearly defines sHTG management or TPE indications and timing. Data on ICU-acquired hypertriglyceridemia are scarce. We report a case of sHTG in a critically ill patient receiving total parenteral nutrition (TPN), managed with early and repeated TPE.

Case Report

A 42-year-old patient was admitted to the ICU after sigmoid colon perforation complicated by fecal peritonitis and septic shock after endovascular repair of acute aortic dissection. Comorbidities included class III obesity (BMI 40.1 kg/m²), type 2 diabetes and hypertension. The patient required multiple abdominal surgeries, including 30 peritoneal lavages. At ICU admission, serum TG was 226 mg/dL. At the time of rapid TG elevation, the patient required mechanical ventilation via tracheostomy and continuous renal replacement therapy, remaining relatively stable on norepinephrine infusion (0.02–0.04 µg/kg/min). Propofol had not been administered for at least 7 days prior to the observed TG increase. Owing to ongoing perforations and gastro-intestinal dysfunction, TPN was initiated. TG levels increased to 1063 mg/dL prompting transition to lipid-free TPN and later discontinuation, resulting in only a transient reduction (812 mg/dL). Recurrent TG elevation to 1014 mg/dL led to initiation of TPE, resulting in a rapid decrease to 530 mg/dL. Reinitiation of TPN was again associated with TG elevation (675 mg/dL), necessitating 3 additional TPE sessions. As an adjunctive strategy, an omega-3 fatty acid emulsion (10 g daily for 7 days) was administered. Subsequently, TG levels remained elevated but relatively stable around 500 mg/dL.

Conclusions

This case highlights that: (1) sHTG may develop rapidly during critical illness, particularly in the context of TPN, emphasizing the need for close TG monitoring; (2) TPE can achieve rapid biochemical TG reduction, although its effect on clinical outcomes remains uncertain; and (3) modification of TPN strategies, including the use of omega-3-based lipid emulsions, may help stabilize TG levels and improve metabolic tolerance.

eFONA Complicated by Cervical Vascular Injury: Technical Considerations and Rescue Management

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II Klinika Anestezjologii i Intensywnej Terapii WUM

Background

Emergency front-of-neck airway (eFONA) remains the definitive intervention in a “can’t intubate, can’t oxygenate” (CICO) situation according to the 2025 Difficult Airway Society guidelines. Despite its critical role, evidence regarding eFONA outcomes and complications remains limited, due to the rarity of these events and reporting bias. In CICO situations which is already a psychological and technical challenge, human factors play vital role.

Case Report

A 28-year-old patient self-presented to the emergency department with malaise and chest pain. During triage, he experienced sudden cardiac arrest. Resuscitation was initiated, and an anaesthesiologist was called to secure the airway. Upon arrival, the patient presented with pulselessness, apnoea, and trismus, rendering facemask ventilation and supraglottic airway placement impossible. Despite administration of propofol, fentanyl, and suxamethonium, the trismus persisted. Due to ongoing resuscitation and the absence of alternative airway optionst, the decision was made to perform an emergency front-of-neck access (eFONA) via cricothyroidotomy. Following palpation of the anterior neck triangle, the operator did not stabilise the larynx during the scalpel incision. Misidentification of the cricothyroid membrane led to a 10-mm incision injuring the right anterior jugular vein, resulting in significant venous bleeding. Despite direct pressure, haemorrhage persisted. An ICU consultant introduced a 14F Foley catheter through the wound, inflating the balloon to achieve haemostasis, allowing resuscitative efforts to continue. The patient was subsequently intubated using a size 4 Macintosh blade with videolaryngoscopy. Bilateral chest drains were inserted, with 1500 ml of fluid evacuated from the left side. A CT scan later confirmed a thoracic aortic dissection with massive haemorrhage into both pleural spaces. The surgical team deemed intervention unfeasible due to the extent of injuries. Resuscitation was discontinued, and the patient was pronounced deceased.

Conclusions

This case highlights the appropriateness of eFONA in life-threatening CICO scenarios and the importance of avoiding delays in decision-making. Nevertheless, success depends on the meticulous execution of every procedural step. In this case, failure to stabilise the larynx during the incision resulted in significant vascular injury. When such complications occur, a Foley catheter with inflated balloon can serve as an effective rescue tool to achieve temporary haemostasis.

Basic & Preclinical Science Session

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A novel cell-free therapeutic strategy for T2- low airway inflammation based on pre-educated mesenchymal stem cell A Novel Cell-Free Therapeutic Strategy For T2-Low Airway Inflammation Based on Pre-Educated Mesenchymal Stem Cell Sercretome

Authors

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Introduction

Previous research on mesenchymal stem cells (MSC) has demonstrated their anti-inflammatory potential, which can be utilized in treating autoimmune, degenerative, and inflammatory conditions. Nevertheless, despite numerous preclinical trials, no proposed treatments have been registered due to safety concerns related to the use of live cells, including variability in stability and functional consistency of both autologous and allogenic MSC, as well as significant donor-to-donor heterogeneity that complicates standardization procedures. To overcome those limitations, increasing attention has been given to cell free approaches including those using extracellular vesicles (EVs).

Aim of the study

Here, we aimed to investigate EVs isolated from adipose tissue–derived MSCs (ADMSC) as an option for type 2 (T2)-low airway inflammation.

Materials and methods

C57BL/6 mice were challenged with house dust mite (HDM) extract to induce T2-low inflammation. Experimental groups received intranasal administration of whole adipose tissue-derived MSCs, and EVs isolated from both unstimulated and inflammatory mediator preeducated cells. Mice were sacrificed and the lung tissue was collected for histological, flow cytometry and transcriptomic analysis. Proteomic and flow cytometry analysis of both EVs was performed.

Results

First, we confirmed that both MSC and MSC-derived EVs limited the airway inflammation in experimental T2- low airway inflammation model. However, pre-educated EVs showed higher therapeutic potential, resembling that of whole cells. Total RNA transcriptomic profiling revealed a decrease in gene expression encoding arachidonic acid metabolism enzymes. Flow cytometry revealed a heterogeneous extracellular vesicle population, predominantly composed of particles smaller than 500 nanometers. Proteomic profiling showed increase in immunomodulatory molecules, namely IDO1, SERPINB2, SERPIND1, TNFAIP3, and TRAP1 in pre-educated EVs.

Conclusions

To summarize, EVs might constitute a promising alternative to whole cells in the treatment of chronic inflammatory diseases, including airway inflammation. Despite this, further efforts are required to optimize the storage of EVs preparate.

The research was conducted under the project Student Scientific Clubs Create Innovations (SKN/SP/602497/2024).

Does Therapeutic Hypothermia Influence Neutrophil Activity in Diabetic Rats with Heart Ischaemia-Reperfusion Injury?

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Introduction

Acute coronary syndrome is a major health burden, especially among diabetic patients. Reperfusion is a life-saving procedure used in treatment. However, it generates ischaemia-reperfusion injury through inflammation and oxidative stress, aggravating infarct size. Therapeutic hypothermia is thought to alleviate those effects. Nevertheless, its outcomes during acute coronary syndrome in diabetic patients remain unknown. Neutrophils are engaged in heart damage during myocardial infarction, and neutrophil dysfunction is reported among diabetic patients. It is unknown how therapeutic hypothermia influences neutrophil activity in diabetic rats with heart ischaemia-reperfusion injury.

Aim of the study

To evaluate whether therapeutic hypothermia reduces infarct size and neutrophil activity in the streptozotocin-induced diabetes rat model with heart ischaemia-reperfusion injury.

Materials and methods

28 male 8-week-old Sprague-Dawley rats were randomized into diabetic (intraperitoneal streptozotocin in citrate buffer injection, glycemia of >300 mg/dL) and non-diabetic groups (intraperitoneal injection of citrate buffer, n=14/each group). After 4 weeks, all rats underwent 30-minute left anterior descending coronary artery ligation followed by 60-minute reperfusion. Groups were further subdivided to receive either therapeutic hypothermia (33–35°C) or remain normothermic (37–38°C) (n=7/each group) starting 15 minutes into ischemia. Following reperfusion, Evan's blue was injected to show the infarct area. Before euthanasia, plasma was collected for myeloperoxidase (MPO) analysis, which is a marker of neutrophil activity and oxidative stress. A specific ELISA kit was used for the analysis.

Results

Rats with streptozotocin injection presented with significantly increased glycaemia ($p<0.0001$). There was no significant difference in mortality and final infarct size between all groups. MPO level was lower in a hypothermic-diabetic group, but only trending towards significance ($p=0,0586$). There were no significant differences in MPO levels between the remaining groups.

Conclusions

Therapeutic hypothermia did not significantly reduce infarct size in either diabetic or non-diabetic rats. While its use in diabetic rats showed a trend toward reduced neutrophil activity, this did not reach statistical significance under nonparametric analysis. These findings suggest that therapeutic hypothermia might modulate inflammatory and oxidative responses in the diabetic heart by altering neutrophil function; further research is necessary.

This research has been funded by the Medical University of Warsaw, grant number: 1MA/4/M/MG/24

Effect of SO2 on the Development of Oxidative Stress in Rat Periodontal Soft Tissues Under Conditions of General Adaptation Syndrome

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Introduction

Oxidative stress is a universal molecular mechanism that damages periodontal tissues under conditions of general adaptation (stress) syndrome, described by Hans Selye in 1936. Recent studies confirm the antioxidant and anti-inflammatory properties of SO in the context of ischemic heart disease, atherosclerosis, and pulmonary or cutaneous inflammation. However, the influence of SO on periodontal soft tissues during stress syndrome has not yet been sufficiently studied.

Aim of the study

Aim is to determine the effect of an SO donor on the levels of malondialdehyde and oxidatively modified proteins in rat periodontal soft tissues under conditions of stress syndrome.

Materials and methods

Experiments were conducted on 24 mature male Wistar rats (210–295g), which were randomly assigned to 4 groups, 6 per group: Group I — intact rats; Group II — rats receiving daily intraperitoneal injections of the SO2 donor Na2SO3/NaHSO3 (0.54 mmol/kg/0.18 mmol/kg) (Huang X.L., 2013); Group III — rats subjected to stress syndrome modeling via daily supine immobilization for 1 hour over a 5-day period, following the method described by H. Selye; Group IV — rats receiving the SO2 donor 30 minutes prior to the induction of stress syndrome. The experimental period lasted 5 days. The study focused on periodontal soft tissues, where the content of malondialdehyde (MDA) (Gérard-Monnier D, 1998) and oxidatively modified proteins (OMP) (Kaidashev I.P., 2003) was determined. Statistical analysis was performed using the non-parametric Mann-Whitney U test.

Results

The administration of SO2 for 5 days did not lead to statistically significant changes in the MDA and OMP content in rat periodontal soft tissues ($P>0.05$). The MDA content in rat periodontal soft tissues under conditions of stress syndrome modeling increased 1.3 times compared to the control group ($P<0.005$). The OMP content in rat periodontal soft tissues under conditions of stress syndrome modeling increased 1.94 times compared to the control group ($P<0.005$). Administration of an inorganic SO2 donor 30 minutes before modeling stress syndrome reduced MDA content in rat periodontal soft tissues by 1.36 times and OMP content by 1.44 times compared to the stress syndrome group, but the OMP content was increased by 1.34 times compared to the control group ($P<0.005$).

Conclusions

The administration of the SO2 donor Na2SO3/NaHSO3 (0.54 mmol/kg/0.18 mmol/kg) prevents free-radical oxidation of lipids and proteins in the rat periodontal soft tissues under conditions of stress syndrome.

EZH2 Inhibition Abrogates TGF-β-Induced Stemness And Proneural-to-Mesenchymal Transition in Glioblastoma Stem Cells

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Introduction

Proneural-to-mesenchymal transition (PMT) is a phenotypic shift in glioblastoma (GBM) cells, characterized by a loss of proneural molecular features, increased expression of mesenchymal markers, and enhanced cell invasiveness and proliferation, that greatly contributes to GBM's resistance to chemotherapy and radiotherapy. Histone methyltransferase EZH2 was found to increase STAT3 activity – a central master regulator of PMT in GBM. Hence, it is conceivable that EZH2 may influence PMT in GBM cells.

Aim of the study

The present study aimed to elucidate the role of EZH2 in the TGF-β1-induced PMT and GBM stemness in U251 and T98G-derived GBM stem cells (GSCs).

Materials and methods

The study was performed on human GSCs cultured as 3D neurospheres in ultra-low-attachment plates and DMEM:F12 medium supplemented with 2% of B27, 20ng/ml of EGF and 20ng/ml of FGFb. The role of EZH2 inhibition/knockdown was addressed with use of EZH2 inhibitor EPZ6438 (5uM) or its degrader MS1943 (4uM). To induce PMT cells were treated with 10ng/ml of recombinant human TGF-β1 protein. The measurement of relative expression levels of EZH2, as well as stemness markers (CD133 and SOX2), PMT masterregulators (STAT3, NfkB), proneuronal (OLIG2 and PDGFRA), mesenchymal markers (CD44, YKL-40,) was performed by qRT-PCR and Western Blot analysis. Migration and invasiveness were assessed via wound healing and Matrigel invasion assay. Stem-like properties were evaluated by neurosphere formation and maturation assay. Data was substantiated by bioinformatic correlation analysis of transcriptomic TGGA and CGGA databases.

Results

Upon TGF-β1 treatment, there was a significant upregulation of mesenchymal genes (CD44, YKL-40) and PMT masterregulators (STAT3, NFkB), and a downregulation of proneural markers (OLIG2 and PDGFRA). Treatment with EPZ6438 and MS1943 effectively suppressed EZH2 expression and attenuated the TGF-β1-induced PMT process, leading to decreased mesenchymal marker expression and increased expression of proneural markers. Moreover, both EPZ6438 and MS1943 significantly inhibited migration, invasion, self-renewal and neurosphere formation abilities of GSCs.

Conclusions

Both inhibition of EZH2 methyltransferase activity and EZH2 knockdown resulted in suppression of migration, proliferation, stemness and expression of mesenchymal markers in TGF-β1-treated GSCs, providing a potential molecular target to overcome chemoradioresistance in GBM.

The project was funded by grant no. 564/1-000-00/564-20-078, UMED Grants 2024, allocated by Medical University of Lodz

Influence of Cannabidiolic Acid on Total Intracellular Lipid Acucumulation in Four Brain's Regions Of Obese Rats

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Introduction

Compounds found in Cannabis sativa plants, such as phytocannabinoids have become one of the major areas of interest in the medical sector, with the aim of identifying new possibilities for their application in clinical medicine. Cannabidiolic acid (CBDA) is an acidic variant of CBD and one of the primary phytocannabinoid found in Cannabis sativa L. plants, especially fiber-type hemps. Because of its possible antiemetic, anti-steatotic and anti-inflammatory effects, CBDA is studied profoundly for many metabolic and neurodegenerative conditions.

Aim of the study

Aim of this study was to assess the influence of CBDA on accummulation of lipid fractions in rat’s brain regions during lipid-overload state.

Materials and methods

The study was performed on rat frontal and posterior cortex, hippocampus and subcortical nuclei. The rats were divided into two experimental groups: control receiving standard rat chow and HFD fed with high-fat diet to induce obesity. CBDA dissolved in sesame oil was administered using gastric tube to half of animals in each group. Total intracellular lipid content of free fatty acids (FFA), di- (DAG) and tri- (TAG) acylglycerols were measured using Gas Liquid Chromatography (GLC).

Results

In the group of rats fed with HFD and administered with CBDA compared to a group of rats only fed with HFD, the intracellular concentration of DAG was significantly decreased in each part of the encephalon. Moreover, CBDA in HFD group reduced the concentration of TAG in the frontal cortex, posterior cortex and hippocampus compared to the HFD alone group.

Conclusions

The results from this study indicate that cannabidiolic acid assumably has a strong effect on decreasing a total intracellular lipid accumulation in rat’s brain regions during lipid-overload state. These findings are important regarding high prevalence of obesity and its comorbidities worldwide. Since obesity also leads to the neurodegenerative diseases development, reducing intracellular lipid accumulation in the course of obesity could be beneficial.

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Immunotherapy of glioblastoma – therapeutic potential of eliminating tumor-associated Immunotherapy of Glioblastoma - Therapeutic Potential of Eliminating Tumor-Associated Macrophages

Authors

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Introduction

Immunotherapies in the treatment of Glioblastoma (GBM) are an attractive strategy, but they face numerous challenges, e.g. lack of universal tumour-specific antigens, extreme intra-tumour heterogeneity, limited infiltration of CAR-T cells to the tumour and highly immunosuppressive tumour microenvironment (TME). Among the many factors present in the TME tumour-associated macrophages (TAM) play a key role in tumour progression, metastasis and resistance to therapies. Therefore, targeting TAMs appears to be an attractive approach to improve current immunotherapeutic strategies in GBM . In our studies, we have identified a cell surface marker specifically expressed on TAMs, representing a novel potential target for TAMs depletion. We designed CAR-T cell construct directed against the identified protein and evaluated its efficacy in eliminating macrophages in vitro.

Aim of the study

The overall objective of the project is to verify the therapeutic potential of eliminating TAMs in GBM with CAR T cell strategy.

Materials and methods

Macrophages were generated either from the human monocytic cell line THP1 or from primary human monocytes isolated from buffy coats, and differentiated with PMA and M-CSF, respectively. Macrophages were polarized towards TAMs with IL-4, IL-10 or by coculture with GBM cells (U251, U87, DK-MG) in a transwell system or in the presence of conditioned medium collected from GBM cultures. Surface antigens and induction of CAR-T target protein on macrophages were evaluated with flow cytometry and Western blotting.

Results

We have established a research model to study the interaction between GBM, TAMs and immune cells, mimicking the natural TME. In this model we confirmed changes in macrophages towards M2-like phenotype with increased level of CD206 antigen after co-culture with supernatants from U87 cells. We also observed the induction of protein-of-interest recognized by our CAR-T cell on the surface of TAMs polarized with U87 cell line.

Conclusions

We have confirmed induction of our putative CAR T cell target on macrophages conditioned with GBM cell line which is a rationale for testing the CAR-T therapy directed against this antigen. We aim to expand our research model to test patient derived GBM cell lines exhibiting a stem cell phenotype and then evaluate a panel of CAR constructs for their anti-TAM effectiveness. Moreover, we plan to further broaden our approach by developing a dual CAR construct targeting both GBM cells and TAMs.

The research was conducted as part of a grant Opus NCN 2022/45/B/NZ6/02588.

Impact of CD19 Extracellular Domain Mutations on Antibody Recognition and CAR-T Cell Cytotoxicity in Hematologic Malignancies

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Introduction

CD19-directed CAR-T cell therapy is a breakthrough in B-cell malignancies, yet nearly half of patients experience relapse. Previous studies have identified that chronic exposure to this treatment leads to CD19 downregulation or loss, driven by selective pressure dependent on the CAR costimulatory domain. While multiple resistance mechanisms exist, the CD19 gene mutations enable immune escape, specifically by disrupting epitopes required for recognition by CAR-T cells.

Aim of the study

The study aimed to evaluate how CD19 mutations, identified in CAR-T resistant models, affect protein recognition by diagnostic antibodies, and the cytotoxic efficacy of various CAR-T cell constructs.

Materials and methods

Plasmids encoding five CD19 variants: wild-type (WT), a polymorphism (p.L174V), and three mutations generated on the backbone of this polymorphism – a missense mutation (p.R163H) and two truncating deletions (p.S103Lfs and p.L156Cfs) were designed. CD19-negative U937 cells were transduced and selected with puromycin. Surface CD19 expression was validated via flow cytometry using four anti-CD19 antibody clones (FMC63, J3-119, HIB19, and SJ25C1) and a chimeric antibody sharing the same FMC63-derived scFv as clinically approved anti-CD19 CARs. Finally, CAR-T cells were generated by transducing T cells obtained from PBMCs of healthy human donors. Four different CAR constructs were used and evaluated in killing assays against the U937-CD19 variants.

Results

The p.R163H mutation completely abolished CD19 recognition by the FMC63 antibody clone, chimeric antibody and CAR-T cells, but the epitopes for other antibodies were preserved. Unexpectedly, the p.S103Lfs deletion exhibited low yet consistent surface detection by all tested antibodies, despite predictions that it would produce a truncated CD19 lacking membrane anchoring. In killing assays, the p.S103Lfs variant remained susceptible to CAR-T cell killing. Most notably, despite being undetectable by the antibodies, the p.L156Cfs deletion exhibited hinge-dependent sensitivity: it escaped killing by constructs with CD8-derived hinge/transmembrane domains but remained sensitive to those with CD28 domains.

Conclusions

CD19 mutations differentially impact antibody binding and CAR-T cell killing efficacy. The sensitivity of the p.L156Cfs variant to specific CAR designs suggests that structural modifications of the CAR construct can overcome certain forms of mutational resistance, offering a potential strategy to mitigate antigen escape in the clinic.

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Optimization of CD19 CAR-T Cells Production Using Lenti- and Retroviral Transduction

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Introduction

CAR-T cells, a type of immunotherapy used to treat hematological malignancies, has shown remarkable success in treating specific types of leukemia and lymphoma. The use of a well-optimized CAR-T cell manufacturing medium is essential for achieving high yields of functional CAR-T cells for therapeutic applications. RPMI and X-VIVO are two of the most used media for T cell culture and viral transduction when producing chimeric antigen receptor (CAR) T cells in preclinical studies. The medium composition itself, as well as added supplements (e.g. cytokines) and other culture conditions, affect the phenotype and the functional properties of CAR T cells.

Aim of the study

In this study, we present how different culture conditions affect the proliferation and phenotype of CD19 CAR T cells and select the compositions which support the optimal functionality of CAR-T cells in pre-clinical research.

Materials and methods

CD19 CAR T cells were produced by lenti- or retroviral transduction of T cells after activation (with anti-CD3/CD28 antibodies) of peripheral blood mononuclear cells (PBMCs) obtained from buffy coats of healthy donors. Compared media included: complete RPMI 1640 (supplemented with 10% FBS, 50 U/mL penicillin, 50 µg/mL streptomycin) and complete X-VIVO (supplemented with 10% human serum (HS)). Interleukins 7 and 15 were added to both assessed media at the same concentration of 1µg/mL. Additionally, we examined the impact of the Human T activator CD3/CD28 beads added to culture after transduction. Transduction efficiency (G4S linker expression) and CD19 CAR T cells' phenotype (CD4, CD8, CD45RA, CCR7) were checked via flow cytometry staining.

Results

In comparison to RPMI, the X-VIVO medium appeared to be more powerful in supporting the proliferation of CAR-modified T cells, both CD4+ and CD8+ cells. In CD45RA/CCR7 staining, the dominant phenotype was an effector memory or terminally differentiated, with the highest ratio of naïve T cells in X-VIVO media without activator CD3/CD28 beads.

Conclusions

According to our data, culturing T cells after CAR transduction in X-VIVO medium without activator beads provides the most favorable results out of all mentioned in the study. The phenotype profile of CD19 CAR T cells achieved in these conditions suggests the highest therapeutic potential, thereby providing the most optimal conditions for CAR-T manufacturing.

Optimization, Production and Stability of Halophilic Laccase from Virgibacillus salarius

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Introduction

Laccases are multicopper oxidases with broad substrate specificity and significant potential for industrial applications. However, the practical use of most mesophilic laccases is limited by their poor stability under harsh industrial conditions. Halophilic laccases offer a promising alternative due to their intrinsic tolerance to these adverse conditions. In particular, halophilic bacterial laccases have attracted increasing interest as robust biocatalysts capable of maintaining activity in environments previously considered unsuitable for enzymatic processes.

Aim of the study

To optimize laccase production by Virgibacillus salarius and characterize its stability under harsh conditions

Materials and methods

In this study, a statistical experimental design was applied to optimize laccase production by the halophilic bacterium Virgibacillus salarius. A fractional factorial design was used to identify significant variables affecting enzyme production, including pH, temperature, medium-to-air ratio, inoculum size, carbon and nitrogen sources, trace elements, inducers, and salt concentration. Key factors were subsequently optimized using the Box–Behnken design. The stability of the produced laccase was evaluated under varying temperature and pH conditions, in the presence of organic solvents, metal ions, inhibitors, and surfactants, and during repeated freeze–thaw cycles. Long-term storage stability was also assessed.

Results

Optimal laccase production was achieved at pH 7, 35 °C, a medium-to-air ratio of 2:10, an inoculum size of 2%, glucose as the carbon source, peptone as the nitrogen source, copper ions as an inducer, and 2 M NaCl. The enzyme exhibited maximum stability at neutral pH and 25 °C. Polar organic solvents such as methanol and ethanol significantly reduced enzyme activity at low concentrations, whereas nonpolar solvents including hexane and heptane preserved relatively high activity even at elevated concentrations. Increasing surfactant concentrations (1–10 mM) resulted in a progressive loss of enzyme stability. Strong inhibition was observed in the presence of HO, thionyl chloride, and NaNO, while L-cysteine and urea exerted milder inhibitory effects. The enzyme retained more than 50% of its initial activity after 20 days of storage at 4 °C.

Conclusions

The laccase produced by the halophilic bacterium Virgibacillus salarius demonstrates high stability under saline and chemically challenging conditions, making it a strong candidate for application in harsh industrial processes.

Sex-specific Metabolic Benefits of 17α-estradiol Are Dependent on Hepatic ERα

Authors

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Introduction

Aging is one of the major risk factors for most chronic diseases that are often linked to metabolic dysfunction. Over recent years, several compounds have been evaluated for life-extending properties. One of these candidates was 17α-estradiol (17αE2), which extended the median lifespan of male mice when administered in mid- and late-life. Female mice did not respond to 17αE2 treatment. Our previous reports suggest that in male mice, 17αE2 administration leads to reduced calorie intake, lower regional fat accumulation, and improved metabolic parameters. We have also showed that 17αE2 benefits are mediated by Estrogen Receptor α (ERα), with particularly strong effect observed in the liver.

Aim of the study

In this study, we sought to determine if knocking out of ERα solely from the hepatocytes is sufficient to ablate the observed systemic metabolic benefits of 17αE2.

Materials and methods

We generated hepatocytes ERαKO mice of both sexes by crossing mice floxed for the ERα with mice expressing Cre recombinase albumin promoter. Mice were pre-fattened with high fat diet (HFD) for 6 months to induce obesity. After 24-weeks, mice were randomized within genotype into HFD or HFD+17αE2 for a 16-week intervention. Throughout the experiment we measured body mass and composition on a weekly basis. After completion of the study, we assessed hepatic steatosis and performed RNA-seq and proteomics analysis of the liver and full plasma lipidomic evaluation.

Results

Administration of 17αE2 resulted in a substantial reduction in body and fat mass in both male and female wild-type (WT) mice, but not in knockout (KO) mice. Caloric reduction was observed exclusively in WT males, mirroring the decreased fasting glucose, glucose tolerance, and insulin levels. Notably, male mice exhibited more pronounced hepatic benefits compared to females, with a more pronounced reduction in liver weight and hepatic triglyceride content, which was dependent on ERα. Furthermore, 17αE2 significantly impacted the expression of a greater number of genes in males than in females, with the effect being similarly dependent on hepatic ERα. Similarly, more defined effects were observed in proteomic and lipidomic analyses in males than in females.

Conclusions

Our research underscores the sex-dependent nature of the metabolic benefits conferred by 17αE2, with hepatic ERα serving as a crucial mediator.

circMALAT1 as a Molecular Regulator of Brain Metastasis in Breast Cancer

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Introduction

Breast-to-brain metastasis (BTB mets) represents one of the most aggressive and therapeutically refractory manifestations of metastatic breast cancer, underlining the urgent need for new therapeutic approaches. As research on protein-coding genes led to only incremental advances in developing anticancer therapies, the focus increasingly shifted toward non-coding RNAs, particularly the recently discovered circular RNAs (circRNAs). It has been reported that circRNAs enhance metastatic competence by enabling epithelial–mesenchymal transition, promoting invasion, and aiding colonization. Our previous studies focused on investigating the circRNAs profile of metastatic breast cancer established circMALAT1 as one of the circRNAs responsible for the metastatic competence of breast cancer. However, the molecular mechanism of circMALAT1 action remains unknown.

Aim of the study

The aim of the study was to identify pathways and mechanisms by which circMALAT1 mediates its functions in BTB mets.

Materials and methods

circMALAT1 was thus stably silenced using shRNA, and the resulting transcriptional changes were analyzed by next-generation sequencing, and selected protein targets were validated by Western blot assays. Secondary structure of circMALAT1 and potential miRNA interactions were identified using AlphaFold, RNAup, and RNAfold.

Results

Significant downregulation of SQSTM1 and upregulation of CLDN6, both associated with breast cancer patient survival, were observed as the most significant and consistent transcriptomic alterations in BTB mets with circMALAT1 knockdown. We shortlisted miRNAs potentially targeting both circMALAT1 and SQSTM1. Among theses candidates, hsa-miR-27a-3p showed energetically favorable interaction scores with both RNAs. Additionally, miRNA profiling of BTB mets has been established. Interestingly, hsa-miR-27a-3p was downregulated in BTB mets cultured in astrocyte-conditioned medium, suggesting that hsa-miR-27a-3p is an important factor in the adaptation of metastatic breast cells to the brain environment by regulating blood - brain barrier-associated pathways in response to astrocyte-derived cues.

Conclusions

CircMALAT1 is an important regulator of metastatic capacity in BTB mets. Silencing circMALAT1 expression deregulates clinically relevant factors, and the miR-27a-3p/SQSTM1 regulatory axis is proposed as a mechanistic mediator. These findings thus shed light on the putative mechanism of circMALAT1 - a promising therapeutic target in breast cancer brain metastases.

Cardiology & Cardiac Surgery Case Report Poster Session

Session Coordinators:
Wojciech Olszewski
Samuel Reszytyło

Concomitant Transcarotid TAVI and Carotid Endarterectomy in a Patient with Severe Aortic Stenosis and Critical Internal Carotid Artery Stenosis

Authors

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Background

Aortic stenosis (AS) is the most common acquired valvular heart disease. In high-risk patients with severe symptomatic aortic stenosis, transcatheter aortic valve implantation (TAVI) has become a standard treatment option. In patients with high and intermediate surgical risk, TAVI is the treatment of choice.

Case Report

An 80-year-old female patient was electively admitted for TAVI due to aortic valve disease with predominant severe stenosis. She reported recurrent chest pain and exertional dyspnea corresponding NYHA class III. The patient had a burdened medical history, including chronic heart failure with preserved ejection fraction, hypertension, hyperlipidemia, chronic artery disease (CCS class II). She had undergone vascular interventions, including right femoral arteries and right internal carotid endarterectomy, implantation of kissing stents in the iliac arteries, percutaneous angioplasty of both subclavian arteries, the right external iliac artery and the common femoral artery. She also had a prior history of stroke. Pre-procedural echocardiography revealed severe aortic stenosis with a valve area of 0.55 cm2, peak velocity of 4.4 m/s and a mean pressure gradient of 45 mmHg, concentric left ventricular hypertrophy and mild left atrial enlargement. According to the history of advanced atherosclerotic disease and previous angioplasty of the external iliac and common femoral arteries, non-femoral access for TAVI was selected. Doppler ultrasonography demonstrated a 12 mm mixed plaque causing 90–95% stenosis with turbulent flow and peak flow velocity of 4 m/s in the bifurcation and the bulb of left internal carotid artery. The results of the diagnostic pathway influenced the decision to conduct a combined endarterectomy of the left internal carotid artery and ipsilateral transcarotid TAVI. The procedures were successfully performed. Follow-up ultrasonography confirmed normal prosthetic valve function without paravalvular leak, preserved left ventricular systolic function and normal blood flow in the LCCA and LICA. ECG monitoring did not reveal arrhythmias. No neurological complications were observed. At discharge, improvement of heart failure symptoms was observed with relief of anginal pain.

Conclusions

This case highlights the feasibility of transcarotid access for TAVI in patients with extensive atherosclerotic disease. Concomitant carotid endarterectomy and TAVI may represent an alternative to standard management in patients with significant aortic and carotid stenosis.

Conservative Management of Subacute Right Ventricular Perforation by a Cardiac Resynchronization Therapy Defibrillator Lead: A Case Report

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Background

The right ventricular (RV) lead in a cardiac resynchronization therapy defibrillator (CRT-D) system functions identically to a standard implantable cardioverter-defibrillator (ICD) lead. Perforation by these leads is a rare but potentially lethal complication, with a mean incidence of 0.82%. Due to the relative thinness of the myocardial wall in this region, the RV apex is the most frequent site of injury. While most perforations present acutely with device malfunction, pericardial effusion, or tamponade, subacute (24 hours to 1 month) and delayed (>1 month) presentations also occur. Management strategies vary; although lead extraction via transvenous traction or hybrid surgery is safe and effective, a conservative approach leaving the lead in situ remains a viable alternative for select patients.

Case Report

A 64-year-old male with dilated cardiomyopathy and NYHA Class III heart failure was emergently admitted for a suspected subacute RV perforation. The patient had developed acute chest pain and clinically deteriorated shortly after discharge following a recent CRT-D implantation. Fluoroscopy revealed the RV lead had displaced approximately 1.5 cm anteriorly. CRT-D interrogation showed that right atrial and coronary sinus (CS) leads functioned normally, the RV lead exhibited low voltage sensing and ineffective pacing. A CT scan confirmed the distal RV lead had perforated the apex, extending through pericardial space into pleural cavity and resulting in a hemorrhagic effusion. A left-sided thoracentesis was performed to manage the associated hemothorax, yielding 200 ml of sterile serosanguinous fluid. A defibrillation test was performed under propofol sedation. Induced ventricular fibrillation was successfully terminated by the first shock, confirming effective ICD sensing and defibrillation. A multidisciplinary consultation concluded that lead extraction posed prohibitive risks of cardiac tamponade and surgical complications. Consequently, the decision was made to manage the perforation conservatively, leaving the RV lead in situ and maintaining cardiac resynchronization via the CS lead.

Conclusions

Conservative management of subacute CRT-D lead perforation is a viable strategy for selected high risk patients. This case demonstrates that leaving a perforated lead in situ can be a safe alternative to extraction when surgical risks are prohibitive and device defibrillation function remains preserved.

Dietary-Triggered Vasovagal Asystole Unmasked by S-ICD Remote Monitoring: A Case Report

Authors

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Background

S-ICD (Subcutaneous Implantable Cardioverter-Defibrillators) are increasingly used to help prevent sudden cardiac death.The SMART Pass filter,a sensing filter integrated into the device,aims to reduce inappropriate shock by suppressing low-frequency signals.Because of this, an automatic filter deactivation may serve as an important digital biomarker and should be interpreted in the clinical context to avoid unnecessary therapy.

Case Report

In January 2024, a 40-year-old man with a history of Brugada syndrome and cardioinhibitory syncope experienced a syncopal episode during defecation in the setting of acute gastroenteritis after consumption of improperly stored cheese. Subsequent remote transmission revealed automatic deactivation of the SMART Pass sensing filter triggered by a sinus arrest-related asystolic pause lasting approximately 14 seconds, temporally correlating with the syncopal event and followed by sinus bradycardia of 30–35 bpm. The patient had undergone S-ICD implantation seven years earlier for primary prevention of sudden cardiac death due to Brugada syndrome and recurrent syncope and was enrolled in remote monitoring since 2021. Diagnostic hospitalization was planned to perform an atropine challenge, which did not demonstrate an exaggerated chronotropic response characteristic of vasovagal hyperactivity; therefore, the patient was not qualified for cardioneuroablation. Clinical examination, laboratory parameters, and resting electrocardiogram were unremarkable apart from a Brugada type 1 pattern. A diagnosis of situational (defecation-related) vasovagal syncope secondary to a reversible gastrointestinal trigger was established. Conservative management aligned with ESC guidelines on syncope management was implemented, including patient education and trigger avoidance, without indication for invasive therapy.

Conclusions

This case highlights the importance of interpreting SMART PASS filter deactivation as a clinically relevant diagnostic signal rather than a technical alert.Therefore,thorough history taking is crucial as it allows for identifying reversible causes,thus, preventing unnecessary and invasive interventions ,thereby supporting guideline adherent management.Additionally,it illustrates that syncope in patients with a Brugada ECG pattern is not invariably tachyarrhythmic and may result from bradyarrhythmic or reflex mechanisms.

Endocardial Dissection as a Cause of Sudden Hemodynamic Collapse: An Exceptionally Rare Case Report

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Background

Endocardial dissection is one of the rarest forms of cardiac wall injury. Unlike myocardial dissection – more frequently described and typically linked to myocardial infarction or devicerelated trauma – endocardial disruption has been reported only a few times. Its mechanisms and optimal management remain unclear. Here, we present a case of spontaneous endocardial dissection occurring in the absence of identifiable triggers.

Case Report

A 61yearold man with a history of myocardial infarction, dilated cardiomyopathy, and chronic heart failure (HF) was admitted with acute decompensated HF (NYHA IV). Two days earlier he sustained a fall and remained lying in snow for a prolonged period, resulting in IVdegree frostbite and an ankle sprain of the left lower limb. He had been treated with antibiotics for presumed bronchitis for two weeks. On admission, he was in moderate condition with marked swelling and extensive frostbiterelated bullae of the limb, peripheral edema, tense ascites, respiratory distress and oxygen saturation of 92%. In the cardiac intensive care unit he developed worsening hypotension, increasing dyspnea, and anuria with acute kidney injury, requiring hemodialysis. Transthoracic echocardiography (TTE) showed severe left ventricle systolic dysfunction (ejection fraction of 10–15%) and a mobile membranous structure along the anterior cardiac wall forming a hematomafilled cavity. Contrast TTE confirmed the absence of contrast flow into the separated space, consistent with endocardial dissection. Despite vasopressors, antibiotics, and renal replacement therapy, the patient remained in refractory cardiogenic shock and was not a surgical candidate. He developed ventricular fibrillation with return of spontaneous circulation after defibrillation, but subsequently suffered a second cardiac arrest. In the context of irreversible multiorgan failure, resuscitation was not pursued.

Conclusions

Endocardial dissection is extremely rare. In published cases it is associated with devicerelated injury, postischemic weakening, or congenital abnormalities. In our patient, multiple coexisting conditions could have contributed to this state, yet no single precipitating factor can be identified. The case underscores the need to consider rare structural complications when clinical deterioration is disproportionate to the presumed diagnosis and highlights the essential role of advanced imaging – particularly contrast TTE – in rapidly identifying an unexpected mechanical pathology.

Fine-Tuning Cardiac Care: EV-ICD for a Young Violinist with Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC)

Authors

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Background

ARVC in adolescents is often linked to recurrent ventricular tachyarrhythmias and the risk of sudden cardiac death (SCD). While ESC Guidelines recommend standard transvenous ICD implantation, some patients may find it unacceptable due to lifestyle concerns. We report a case of a 17-year-old professional violinist with ARVC and sustained ventricular tachycardia (VT) who refused a traditional transvenous ICD and was not suitable for a subcutaneous ICD (S-ICD). This led to an individualized approach using an extravascular ICD (EV-ICD).

Case Report

The patient experienced pre-syncope due to recurrent sustained wide-QRS tachycardia (fourth episode ever), remained hemodynamically stable and converted to sinus rhythm after intravenous amiodarone. The baseline ECG showed right precordial T-wave inversion. Echocardiography was unremarkable. Holter monitoring initially revealed frequent ventricular ectopy with couplets; exercise testing showed ectopy throughout, worsening during recovery. Cardiac MRI revealed infero-left ventricular subepicardial/mid-myocardial fibrosis, likely representing post-inflammatory scar. Genetic testing identified a pathogenic variant consistent with ARVC. Family history included paternal SCD at age 23 due to cardiomyopathy (autopsy confirmed). According to the ARVC Risk Calculator, the 5-year SCD risk for the patient was estimated at 16%. ICD therapy was recommended. The patient declined a standard pectoral/subclavian system due to professional violin commitments and failed ECG screening for S-ICD. An EV-ICD system was implanted with a lateral generator placement to meet patient needs. Defibrillation testing was challenging – induction required aggressive protocols, and one episode was complicated by ventricular fibrillation undersensing, leading to aborted device therapy, external defibrillation and sensitivity adjustments. Repeated testing remained inconclusive. Later, the patient underwent VT ablation, but ventricular ectopy persisted and antiarrhythmic therapy was continued. Short, self-terminating VTs below the programmed defibrillation threshold continue to occur, with no ICD discharges to date.

Conclusions

This case underscores the need for patientcentered ICD strategies in adolescents with ARVC when conventional systems are unsuitable. EVICD may represent a feasible alternative. However, challenges in defibrillation testing and variable sensing performance suggest that its use should be limited to selected patients and warrants further evaluation.

Heart and Stem Cell Transplantation in Advanced AL Amyloidosis with Cardiac Involvement

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Background

Cardiac involvement in light-chain (AL) amyloidosis is associated with poor prognosis. Besides progressive heart failure, patients are at increased risk of thromboembolic complications due to atrial dysfunction and restrictive cardiomyopathy. In selected cases, effective suppression of the plasma cells may enable advanced therapeutic strategies, including heart transplantation.

Case Report

A 48-year-old woman initially presented with ischemic stroke. During diagnostic workup, reduced left ventricular ejection fraction (approximately 40%) was detected, and she was referred for transesophageal echocardiography (TEE). Three months after the stroke, TEE revealed further deterioration of left ventricular systolic function and a large thrombus in the left atrial appendage. Transthoracic echocardiography demonstrated increased left ventricular wall thickness, severely impaired global longitudinal strain, restrictive filling pattern, and reduced right ventricular function. Laboratory testing showed markedly elevated NT-proBNP and troponin. Hematologic evaluation demonstrated monoclonal IgD lambda protein and markedly elevated free light chains. Bone marrow biopsy revealed 30% plasma cells. The patient was diagnosed with systemic AL amyloidosis with cardiac, renal, and neurologic involvement (Mayo stage IIIb) and concomitant IgD lambda plasma cell myeloma. During hospitalization, she experienced sudden cardiac arrest due to ventricular tachycardia/ventricular fibrillation, requiring successful resuscitation. An implantable cardioverter-defibrillator was implanted because of recurrent interventions. Treatment with lenalidomide and dexamethasone was initiated, followed by daratumumab, resulting in an 86% reduction in FLC λ levels. Despite hematologic response, advanced heart failure persisted. After multidisciplinary evaluation, she underwent orthotopic heart transplantation. Post-transplant follow-up showed further reduction of FLC λ to 7 mg/L and improvement in NT-proBNP (1,650 pg/ml). She was qualified for autologous hematopoietic stem cell transplantation.

Conclusions

This case illustrates that AL amyloidosis may initially present with thromboembolic complications, including ischemic stroke and intracardiac thrombus, before overt diagnosis of systemic disease. In selected patients, rapid plasma cell–directed therapy may allow sequential management with heart transplantation and subsequent auto-HSCT, offering a potential life-saving strategy despite advanced cardiac involvement.

IVUS Says Defer, Physiology Says Treat: A Discordant Left Main Stenosis Case Report

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Background

In angiographically intermediate left main (LM) stenosis, IVUS-derived minimal lumen area (MLA) is commonly used to guide deferral versus revascularization. An MLA ≥6.0 mm² is widely accepted to support deferral, yet anatomy–physiology discordance may occur. When clinical presentation and imaging are discrepant, evaluation for alternative non-ischemic causes is warranted.

Case Report

A 72-year-old man with hypertension was transferred from a cruise ship emergency unit for suspected NSTEMI (May 2025). The day before admission he developed presyncope during treadmill exercise, while subsequently sustaining supraventricular tachycardia terminated with adenosine, followed by profound bradycardia and hypotension responding to adrenaline infusion. On admission he was hemodynamically stable with unremarkable physical examination. Bedside echocardiography showed no regional wall-motion abnormalities, raising concern that the presentation might not be explained solely by coronary disease. Coronary angiography demonstrated an asymmetrical 50% LM lesion. IVUS showed 55% area stenosis with MLA 10.2 mm² (proximal reference 23 mm²), well above the 6.0 mm² deferral cut-off, which alone would not support LM revascularization. Given borderline angiography in a large male and the clinical context, invasive physiology was performed: FFR across LM/LAD was 0.77, confirming functional significance. After HeartTeam discussion and shared decision-making, PCI of LM/LAD with stent implantation achieved TIMI 3 flow with no residual stenosis. To exclude non-coronary causes, Holter ECG revealed sinus bradycardia, first-degree AV block, and infrequent ventricular and supraventricular ectopy. Cardiac MRI showed preserved biventricular function (LVEF 52%) without ischemic scar but with mid-myocardial LGE suggestive of an inflammatory/infiltrative process; HRCT and FDG-PET did not support active sarcoidosis or myocarditis. Owing to a history of hemodynamically unstable tachyarrhythmia and conduction disease with active inflammation excluded, the patient was qualified for dual-chamber ICD implantation for secondary prevention.

Conclusions

Guideline MLA thresholds are decision aids, not substitutes for physiology. Despite an IVUS MLA above the LM deferral cut-off, FFR identified functionally significant disease and directly guided revascularization, underscoring the need to integrate intracoronary imaging, physiology, and clinical context to avoid inappropriate deferral and to support safe, evidence-aligned therapy.

Idiopathic Myocarditis Presenting as Acute Coronary Syndrome and Causing Sudden Cardiac Death: A Case Report

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Background

Idiopathic myocarditis, including the Abramov-Fiedler type, is an uncommon but clinically important cause of sudden cardiac death. Due to overlapping clinical and morphological features, it may present as acute coronary syndrome, leading to diagnostic misinterpretation. Differentiation between inflammatory and ischemic myocardial injury remains a critical challenge in cardiology, particularly in cases of sudden unexpected death.

Case Report

A 40-year-old woman was found deceased at home without documented cardiovascular disease or prior cardiac symptoms. Based on the circumstances and macroscopic findings, acute ischemic myocardial injury with circulatory failure was initially presumed. Post-mortem examination demonstrated histopathological features inconsistent with acute myocardial infarction. Microscopic evaluation of the myocardium revealed diffuse lymphoid inflammatory infiltration, focal fragmentation and disarray of cardiomyocytes, granular degeneration with areas of myolysis, and the absence of coronary thrombosis. Intramural vessels showed moderate sclerosis, vascular spasm, and reduced blood content. Additional findings, including cerebral oedema and pulmonary vascular congestion, were consistent with acute cardiac failure. Based on combined morphological findings, idiopathic myocarditis of the Abramov-Fiedler type was identified as the cause of sudden cardiac death.

Conclusions

Idiopathic myocarditis may clinically masquerade as acute coronary syndrome and represents an under-recognized cause of sudden cardiac death. This case highlights the importance of considering myocarditis in the differential diagnosis of presumed acute ischemic events, particularly in patients without established coronary artery disease. Accurate clinicopathological correlation is essential for the correct interpretation of sudden cardiac death and has direct implications for cardiological practice.

Mavacamten-Induced Reverse Remodeling and the Challenge of ICD Decision-Making in a Patient With Obstructive Hypertrophic

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Background

Obstructive hypertrophic cardiomyopathy (oHCM) presents a unique therapeutic challenge in young patients, given that the risk of sudden cardiac death (SCD) is up to 3.5-fold higher in those under 40 compared to older cohorts. This creates a clinical dilemma: balancing the life-saving potential of an implantable cardioverter-defibrillator (ICD) against the long-term burden of inappropriate shocks (affecting ~27% of patients) and the resulting risk of anxiety-depressive disorders (up to 52%), which can profoundly impair quality of life. While ESC guidelines rely on the HCM Risk-SCD calculator for stratification, the emergence of cardiac myosin inhibitors, such as mavacamten, may disrupt this paradigm by driving favorable remodeling and reducing hemodynamic gradients.

Case Report

A 31-year-old man with oHCM and a family history of SCD (two paternal relatives) presented without prior syncope. ECG showed left ventricular hypertrophy with secondary ST–T changes in leads V4–V6, I, II, and aVL. Holter monitoring revealed no significant arrhythmias. Echocardiography demonstrated a maximal wall thickness of 20 mm, interventricular septal thickness of 19 mm, preserved ejection fraction (83%), and severe left atrial enlargement (42 mm). LVOT gradients were markedly elevated: 80 mmHg at rest, 132 mmHg during Valsalva, and 188 mmHg post-exercise. Cardiac MRI showed <5% late gadolinium enhancement and excluded apical aneurysm. With a baseline HCM Risk-SCD score of 6.99%, the patient was eligible for an ICD and underwent extravascular ICD implantation. Concurrently, mavacamten was initiated. The therapy induced a rapid and sustained reduction in estimated SCD risk: dropping to 4.34% (−38%) at one month, 3.93% (−44%) at two months, and stabilizing at 3.86% (−45%) by month eight.

Conclusions

The use of myosin inhibitors raises questions about reassessing SCD risk after modifying factors in the HCM Risk-SCD calculator. Considering the dynamic change in a patient's SCD risk profile may, in the future, help avoid invasive device therapy.

Multiple Ventricular Tachycardia Morphologies in Repaired Tetralogy of Fallot Treated with RF Ablation and Wearable Cardioverter-Defibrillator-Protected Mid-Term Follow-Up

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Background

Repaired Tetralogy of Fallot (rToF) is a risk factor for scar-related ventricular tachycardia (VT) and sudden cardiac death originating from scar-related macro re-entry within right-ventricular anatomical isthmuses. Yet implantable cardioverter-defibrillator device (ICD) decisions can be difficult when classical rToF sudden cardiac death (SCD) predictors are absent and VT ablation results in non-inducibility.

Case Report

A 42-year-old man with rToF was admitted to the hospital after documented sustained VT (280 bpm during sedentary activity) terminated by electrical cardioversion. Coronary angiography was normal. CARTO bipolar voltage mapping revealed anterior right ventricular outflow tract (RVOT) and interventricular scar. Three VT morphologies were inducible and terminated by burst pacing. VT1 pace mapping localized the exit between the tricuspid annulus and RVOT scar – a linear lesion set connected these barriers. VT2 (RVOT morphology) and a transient VT3 were subsequently inducible. Pace mapping (>95%) suggested an additional critical region between the RVOT scar and the pulmonary trunk, prompting a second linear lesion from scar to pulmonary trunk with consolidation. Post-ablation programmed stimulation from two right ventricle sites (up to three extra stimuli and burst pacing to 250 ms) with isoproterenol did not induce VT or ventricular flutter. Given procedural complexity but lack of major rToF SCD markers (preserved ventricular function, QRS<180 ms, limited substrate), the patient was discharged with a temporary wearable cardioverter-defibrillator device (WCD) protection and planned reassessment rather than immediate ICD implantation. After three months with no therapies WCD was terminated and repeated EPS confirmed non-inducibility using identical aggressive protocol. The decision not to implant an ICD was taken.

Conclusions

This case demonstrates that VT with multiple morphologies in rToF patient may be successfully treated using 3D mapping and catheter ablation, achieving repeated non-inducibility. WCD-supported observation and repeated EPS can be useful for patient-specific ICD decision-making with balancing the residual arrhythmic risk and long-term ICD therapy complications.

One clip to treat them all: A case of simultaneous mitral and tricuspid jet reduction

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Background

In recent years, mitral transcatheter edge-to-edge repair (TEER) has become an important method of mitral regurgitation (MR) treatment. Patients with MR are often diagnosed with secondary tricuspid regurgitation (TR), which leads to the exacerbation of symptoms and is considered a negative prognostic factor. In cases of concomitant MR and TR, the staged procedure starting with MR treatment is usually advised because successful reduction of thefirst may have a beneficial effect on the latter. The presented case exemplifies this phenomenon

Case Report

A 76-year-old woman with a history of heart failure with reduced left ventricular ejection fraction accompanied by at least severe MR and TR was referred to the hospital for the treatment of valvular heart disease. After optimization of pharmacotherapy, including diuretic treatment and atrial fibrillation rate control, the transthoracic echocardiography revealed an ejection fraction of 24%; dilated both mitral and tricuspid valve annuli, severe MR (MR ERO of 0.44 cm^2, MR vol of 57 ml); with visible leaflet restriction and massive TR (TR ERO of 0.65cm^2, TR vol of 65 ml) accompanied by calculated systolic pulmonary artery pressure (SPAP)of approximately 50 mm Hg. In transoesophageal echocardiography (TEE), the patient was found to be a potential candidate for both mitral and tricuspid TEER. Page 3 The mitral procedure was carried out under TEE guidance with the implantation of thesingle PASCAL P10 device (Edwards Lifesciences) in the central region of the mitral valve, which led to the significant reduction of MR. After further pharmacological treatment follow-up transthoracic echocardiography confirmed a good result of mitral TEER with the residual mild MR and reduction of SPAP to approximately 30 mm Hg. Moreover, asignificant reduction of TR was achieved, which eliminated the need for further percutaneous treatment.

Conclusions

Moderate-to-severe tricuspid regurgitation (TR) affects one-third of patients undergoing mitral interventions. Optimal medical therapy and successful mitral TEER can reduce TR to mild/moderate in 51% of cases. The mechanism involves decreased pulmonary pressure and right ventricle afterload reduction, leading to favorable cardiac remodeling. This case demonstrates that combined medical treatment and mitral TEER can eliminate the need for tricuspid intervention, advocating a staged approach in dual-valve insufficiency.

The Cause Does Not Always Need to be Found Directly in the Heart - Cardiogenic Shock Can Be a Symptom of Hypertensive Crisis in an Infant with Critical Renal Artery Stenosis

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Background

A hypertensive crisis is a severe, life-threatening blood pressure increase that can damage organs, including the heart, kidneys, and brain, sometimes leading to cardiogenic shock. We aim to show that rare causes of common diseases should always be considered.

Case Report

A 10-month-old boy with a respiratory tract infection presented with increasing dyspnea and worsening overall condition. Since non-invasive ventilation methods failed, he was intubated and transferred to the intensive care unit. The chest X-ray showed an enlarged cardiac silhouette (heart-lung index of 0.67). ECHO revealed a significantly enlarged left ventricle-left ventricle internal diameter (LVID) of 45 mm, reduced contractility- ejection fraction (EF) of 12-17% - and severe mitral valve regurgitation. Initially, dilated cardiomyopathy (DCM) was diagnosed. Structural heart defects, including the anomalous origin of the left coronary artery, were ruled out based on ECHO and angio-CT. No signs of myocarditis were observed on MRI. The patient was mechanically ventilated for 17 days and received treatment with dopamine, epinephrine, levosimendan, milrinone, and nitroglycerin. Afterwards, he was transferred to the Department of Cardiology, where severe arterial hypertension (mean blood pressure 120/90 mm Hg, periodically 160/100 mmHg) was diagnosed. He required therapy with six antihypertensive medications (captopril, spironolactone, amlodipine, clonidine, carvedilol, and furosemide). Doppler US suggested stenosis of the right renal artery, which was confirmed in an angio-CT scan. Decreased radionuclide uptake by the right kidney was observed on renal scintigraphy, with effective renal plasma flow (eRPF) of 34% versus 66%. After numerous multidisciplinary consultations, due to the technical inability to perform percutaneous transluminal renal angioplasty or surgical revascularisation, the child was qualified for right-sided nephrectomy. After the operation, blood pressure normalised, enabling full withdrawal of antihypertensives. Six months later, the left ventricular diameter was at the upper normal limit with normal EF. Ultrasound showed normal blood flow in the left renal artery, and blood pressure readings were within normal range.

Conclusions

1. Hypertensive crisis in infants can present as cardiogenic shock. 2. Severe arterial hypertension may cause dilated cardiomyopathy in infants. 3. Every pediatric hypertensive crisis requires thorough diagnostics to exclude renal artery stenosis.

When Pre-Excitation Is Not What It Seems: True Accessory Pathway and Pseudo-Pre-Excitation in Aggressive Danon Disease

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Background

Danon disease (DD) is a rare X-linked lysosomal myopathy caused by LAMP2 gene mutations. In patients with Danon disease, ECG findings may consistently mimic pre-excitation, posing difficulties in differential diagnosis and management strategy. Here we present a rare case of childhood-onset DD with coexistence of pseudo-pre-excitation with a true, symptomatic accessory pathway

Case Report

A 14-year-old female was admitted with a 6-month history of palpitations and decreased exercise tolerance. Initial evaluation showed ECG pre-excitation, elevated hs-troponin I (353 ng/l), and NT-proBNP (485 pg/ml). Echocardiography and cardiac magnetic resonance revealed asymmetric septal hypertrophy (13 mm) and a mixed cardiomyopathy phenotype, fulfilling criteria for hypertrophic cardiomyopathy and left ventricle noncompaction. An electrophysiological study (EPS) identified a true right-sided accessory pathway (AP), which was successfully ablated. However, the delta wave recurred. After a second ablation and a third EPS, which confirmed the absence of AP conduction, a diagnosis of pseudo-pre-excitation was made. Genetic testing confirmed a heterozygous deletion in the LAMP2 gene. This persistent ECG pattern was attributed to glycogen-infiltrated myocytes affecting the fibrous atrioventricular annulus. During follow-up, the clinical course was marked by progressive myocardial fibrosis and an increasing arrhythmic burden. At age 17, due to episodes of non-sustained ventricular tachycardia and high risk of sudden cardiac death, a subcutaneous implantable cardioverter-defibrillator (S-ICD) was implanted. Within 24 months, the patient underwent a phenotypic burn-out transition to dilated cardiomyopathy (LVEF from 58% to 30%, left ventricular end-diastolic diameter 60 mm). This stage was complicated by an electrical storm; rapid supraventricular rhythms were misclassified by the S-ICD, resulting in multiple inappropriate shocks. Subsequent hemodynamic deterioration and cardiogenic shock necessitated urgent heart transplantation. Despite early post-transplant multi-organ dysfunction, the patient remains clinically stable with normal graft function.

Conclusions

Although Danon disease in females is generally associated with later onset, it may present with a rapidly progressive, malignant phenotype. Moreover, apparent pre-excitation should not be assumed to be pseudo-pre-excitation alone, as true accessory pathways may coexist, warranting early electrophysiological assessment in symptomatic patients.

When the Dialysis Catheter Reaches the Heart: ECMO-Assisted Thrombectomy of a Right Atrial Catheter-Related Thrombus: A Case Report

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SKN Hemodynamiki GUMed

Background

Catheter-related bloodstream infection in hemodialysis patients may be complicated by large catheter-associated right atrial thrombi (CRAT), creating a therapeutic dilemma when surgical removal is high risk.

Case Report

A 61-year-old woman with end-stage kidney disease on chronic hemodialysis via a tunneled catheter (history of multiple myeloma in remission, hypertension, COPD) was urgently admitted for suspected catheter-related infection and a dysfunctional vascular access. In previous month she was hospitalized for E. coli sepsis complicated by disseminated intravascular coagulation and thrombosis/occlusion of a right-sided tunneled catheter, which was removed and replaced on the left. In the following month she was re-admitted with fever up to 39°C, inflammatory marker elevation and E. coli. in blood culture, while transesophageal echocardiography revealed a mobile 15x18mm mass attached to the catheter tip in the right atrium. On admission to our center, inflammatory markers remained markedly elevated with anemia and thrombocytopenia. Repeat transesophageal echocardiography and cardiac CT confirmed the intracardiac mass. There were no echocardiographic features fulfilling criteria for infective endocarditis and no indirect signs of pulmonary embolism. Cardiac surgery deemed the patient unsuitable for open removal. Broad-spectrum antibiotic therapy and therapeutic anticoagulation were initiated. Due to the size and mobility of the lesion, an endovascular approach was selected. In the cardiac catheterization laboratory, two large organized thrombi were aspirated using the AlphaVac system using extracorporeal membrane oxygenation (ECMO) support, and the infected catheter was removed. Immediate post-procedural TEE showed no residual intracardiac thrombus. The following day, a new tunneled hemodialysis catheter was inserted into the right internal jugular vein without complications, and hemodialysis was resumed. Clinical status improved with a decline in inflammatory markers. Serial peripheral and catheter-drawn blood cultures obtained at our center remained negative. The patient was discharged in good condition to continue care at her usual dialysis unit.

Conclusions

Management of catheter-associated right atrial thrombus requires balancing embolic risk, infection severity, and surgical eligibility. In our patient, ECMO-supported endovascular thrombectomy provided definitive thrombus removal and facilitated prompt catheter replacement, leading to favorable short-term outcomes.

When the Stream Refuses to Flow: Use of Three Paclitaxel-Releasing DCB Balloons for the Treatment of an Occluded RCA in an 81-Year-Old Patient With STEMI

Authors

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Background

STEMI with new neurological deficits demands reperfusion while minimising intracranial bleeding risk. In thrombus-rich ectatic arteries with no-/slow-flow, stenting may increase acute thrombosis risk and prolong dual antiplatelet therapy (DAPT); Drug-coated Balloon (DCB)-only strategy may allow effective reperfusion while avoiding a permanent coronary implant and may permit antiplatelet discontinuation in selected high-bleeding-risk patients.

Case Report

An 81-year-old man with a remote right-hemispheric ischemic stroke, post-stroke epilepsy, and recurrent epistaxis (resulting in discontinuation of chronic antiplatelet therapy) was admitted with inferior-wall STEMI. During the night, he developed resting retrosternal chest pain and self-administered aspirin without relief. In the morning, new neurological symptoms occurred, including dysarthria and mild facial asymmetry. Serial ECGs demonstrated inferior STEMI with junctional bradycardia (~40 bpm). Non-contrast brain CT revealed a chronic right-hemispheric malacic area without haemorrhage; CT angiography showed no large-vessel occlusion; neurology recommended conservative management of a presumed minor ischemic stroke. Coronary angiography revealed diffuse ectasia of the right coronary artery (RCA) with proximal occlusion and minimal distal visualisation. The guidewire initially entered a side branch; IVUS-guided puncture enabled re-entry into the true lumen. Despite aspiration thrombectomy and predilatation, a heavy thrombus with no-/slow-flow persisted; stent implantation was deferred. A DCB-only PCI using a paclitaxel-releasing balloon (4.0/40 mm, 120 s) restored TIMI III flow. Unfractionated heparin infusion and clopidogrel loading were initiated. A planned re-evaluation at 36 hours demonstrated residual distal thrombus, managed with repeat aspiration and two additional DCB inflations (4.0/30 mm and 4.0/40 mm), resulting in improved distal opacification and maintained vessel patency. The patient remained hemodynamically stable without recurrent chest pain; echocardiography showed a left ventricular ejection fraction (EF) of ~50%.

Conclusions

IVUS-guided DCB-only PCI with planned re-assessment can restore flow in thrombus-rich ectatic RCA STEMI while avoiding a permanent implant and preserving flexibility to tailor antithrombotic intensity in patients with concurrent stroke/bleeding risk.

Cardiology & Cardiac Surgery Session I

Session Coordinators:
Mohamed Ghadri
Magdalena Warych

Can patients with heart failure and atrial fibrillation derive clinical benefit from pulmonary vein isolation? A real-world data analysis of efficacy and periprocedural outcomes.

Authors

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Introduction

Multimorbidity among patients with atrial fibrillation (AF) is increasing, with heart failure (HF) being one of the most common comorbidities promoting arrhythmogenesis. According to European Society of Cardiology guidelines, AF prevalence in newly diagnosed HF reaches 57%. AF may exacerbate ventricular function and reduce ejection fraction (EF). Pulmonary vein isolation (PVI) plays a key role in rhythm control in AF; therefore, evaluating catheter ablation (CA) outcomes in patients with AF and HF is clinically relevant.

Aim of the study

The study aimed to assess arrhythmia recurrence after PVI in patients with AF and coexisting HF compared with patients without HF, including periprocedural characteristics.

Materials and methods

The study included 94 patients with AF and HF and 373 patients with AF only who underwent PVI using radiofrequency or pulsed-field energy at a tertiary academic center. In the HF group, 38.9% had preserved EF, 27.8% mildly reduced EF, and 33.3% reduced EF. This retrospective analysis included personal or telephone follow-up at 3 and 6 months post-procedure. The primary endpoint was arrhythmia-free survival at 6 months, defined as the first documented atrial arrhythmia recurrence >30 seconds.

Results

Median age was 64 (55–70) years with no intergroup differences. Women were less frequent in the HF group (25.5% vs. 38.3%, p=0.02). Moreover the analysis revealed that patients in the HF group had higher comorbidity burden; HF patients had significantly higher BMI (30.0±3.77 vs. 28.27 [25.4–31.56]; p=0.002), more persistent AF (52.1% vs. 33.8%; p=0.001), and more coronary or peripheral artery disease (41.5% vs. 13.7%; p<0.001). There were no significant differences in procedural efficacy between groups. Arrhythmia recurrence during the blanking period occurred in 25.5% vs. 22.8% (p=0.59).). The efficacy did not differ at 6-months observation [40.7% vs. 37.1%; p=0.61]. Symptom improvement was reported in 71.4% and 77.8% (p=0.48). Redo ablation rates were similar (12.8% vs. 13.3%; p=1.0). Procedural duration was comparable; however, fluoroscopy time was longer in HF patients (618 vs. 424 s; p=0.0004). Propofol was more commonly used in HF patients, while remifentanil predominated in the non-HF group.

Conclusions

Arrhythmia recurrence rate after PVI in patients with HF and AF was comparable to patients with AF only. Procedures in HF patients may be more technically demanding, reflected by longer fluoroscopy times and different anesthesia approaches.

CardioAtlas: An Evidence-Grounded, Multimodal Agentic AI Co-Pilot for Cardiologists

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Introduction

CardioAtlas is an explainable, multimodal, agentic AI co-pilot for cardiologists who must rapidly synthesize longitudinal EHR data (symptoms, vitals, labs, medications, comorbidities) with heterogeneous cardiac imaging. Because these inputs are fragmented across systems and time, clinicians face high cognitive load, heavier documentation, and increased risk of missed context. Single-model assistants can summarize text but often underperform on multimodal workflows, source-grounded clinical statements, and calibrated uncertainty

Aim of the study

To develop and demonstrate a clinician-facing cardiology co-pilot that integrates patient context and multimodal imaging for structured reasoning and documentation, while generating patient education only from clinician-approved facts and retrieved sources.

Materials and methods

CardioAtlas uses a policy-constrained orchestration layer that treats models as tools and routes tasks through an activation pathway to specialized experts. The pipeline ingests EHR text and cardiac imaging, normalizes inputs into evidence packets (metadata plus representative frames/slices/clips and any available report text), and invokes dedicated vision and text experts for modality-specific interpretation. Guideline and reference claims are grounded via retrieval from a local knowledge library under a cite-or-refuse rule, withholding unsupported assertions. Calculator tools run only when required inputs are present, and schema constraints block medication dosing unless minimum clinical fields (e.g., renal function, age, weight, contraindications) are available. Outputs include explicit uncertainty, supporting evidence, and missing-data checklists, with the option to surface expert disagreement. Clinician signoff is required for any content intended for clinical use.

Results

We report a working prototype and planned retrospective evaluation assessing documentation completeness, citation coverage for guideline claims, clinician-rated usefulness, time-to-note reduction, and concordance of generated differentials/plans with expert review.

Conclusions

A policy-constrained, agentic multi-model architecture can better fit cardiology's multimodal workflow than a single LLM while improving trust through evidence grounding, uncertainty reporting, missing-data gating, and mandatory clinician oversight, enabling practical deployment while limiting unsupported inferences and separating clinical documentation from constrained patient education.

Eleven-Year Single-Center Experience in Surgical Management of Acute Type A Aortic Dissection

Authors

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Introduction

Acute type A aortic dissection is one of the most lethal cardiovascular emergencies, associated with high early mortality if not treated surgically. Despite advances in perioperative management, outcomes remain highly variable and dependent on institutional experience.

Aim of the study

The aim of this study was to evaluate early and long-term outcomes after surgical treatment of acute type A aortic dissection over an eleven-year period in our tertiary center.

Materials and methods

This retrospective single-center cohort study included all consecutive patients who underwent surgery for acute type A aortic dissection between 2014 and 2025. Data was retrieved from electronic medical records. Patient demographics, operative details, and postoperative complications were analyzed. The primary endpoints were early (in hospital) mortality and long-term survival.

Results

A total of 171 patients were included, of whom 111 (65%) were male. Median age at surgery was 60 years (IQR 52-72). The most common procedure was ascending aorta replacement (61%), followed by the Bentall procedure (18%). Median operative time was 7.9 hours (IQR 6.7-9.8). Preoperative and perioperative stroke occurred in 14 patients (8.2%), and renal replacement therapy was required for 30 patients (18%). Five patients (2.9%) required intraoperative extracorporeal membrane oxygenation (ECMO), while an intra-aortic balloon pump was used in two patients (1%). Bleeding-related complications were frequent. Resternotomy for bleeding was needed in 34 (20%) patients. Red blood cell transfusion was required in 153 patients (89%). Early perioperative mortality was 30% (n=52). There was no statistically significant difference in age between survivors and non-survivors (median 58 vs 59 years, p=0.11). Overall ten-year survival was 60%.

Conclusions

In this study, surgical treatment of acute type A aortic dissection was associated with high early mortality but acceptable long-term survival, comparable to contemporary published data.

Electrocardiogram as a Non-Invasive Marker of Clinical and Hemodynamic Improvement in Obstructive Hypertrophic Cardiomyopathy

Authors

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Introduction

Left ventricular hypertrophy (LVH), a hallmark of obstructive hypertrophic cardiomyopathy (oHCM), drives hemodynamic burden and symptoms. Mavacamten, a selective cardiac myosin inhibitor, has demonstrated the ability to reduce left ventricular outflow tract (LVOT) obstruction. Echocardiography is the standard for therapy monitoring, but the timing and significance of electrocardiographic (ECG) remodeling remain unclear. This is the first prospective pilot study evaluating long-term ECG changes during mavacamten therapy.

Aim of the study

To analyze temporal changes in LVH criteria in ECG during mavacamten therapy and their association with hemodynamic and clinical response.

Materials and methods

12 symptomatic oHCM patients (mean age 62.8 years; 50% men) were prospectively followed for 24 weeks. Serial assessments included 12-lead ECG (Sokolow–Lyon, Cornell, and Peguero–Lo Presti criteria), echocardiography (interventricular septal diameter [IVS], LVOT gradient), Kansas City Cardiomyopathy Questionnaire (KCCQ), biomarkers (NT-proBNP, hs-troponin I), and 48-hour Holter monitoring. Temporal changes were analyzed using Friedman's test; ECG–hemodynamic associations were evaluated by linear regression and ROC analysis.

Results

IVS significantly decreased by week 4 ($p = 0.006$), preceding detectable ECG voltage changes. Significant reductions in ECG LVH voltages emerged from week 8 onward (all $p < 0.05$), coinciding with KCCQ improvement ($p = 0.031$). The ECG criteria exhibited distinct temporal patterns. The Sokolow–Lyon criterion showed the strongest association with intermediate hemodynamic and clinical response at week 12, correlating with NT-proBNP reduction ($\rho = 0.552$, $p = 0.033$) and KCCQ improvement ($\rho = -0.727$, $p = 0.015$), and demonstrated the highest accuracy for identifying a ≥50 mmHg reduction in resting LVOT gradient (AUC = 0.771). The Cornell criterion showed minimal temporal change and limited predictive value. In contrast, Peguero–Lo Presti criterion was most sensitive to late effects, with further reduction between weeks 12 and 24 ($p = 0.004$). Its voltage reduction correlated with LVOT gradient decrease, peaking at week 24 ($R^2 = 0.531$, $p = 0.007$); a 1 mV decrease corresponded to a 51 mmHg LVOT reduction.

Conclusions

Septal regression precedes delayed electrical remodeling during mavacamten therapy. Sokolow–Lyon criterion may identify super-responders achieving ≥50 mmHg LVOT gradient reduction, while Peguero–Lo Presti changes reflect LVOT gradient relief, acting as a non-invasive surrogate for treatment efficacy.

Funding was provided by a student mini-grant from the Medical University of Warsaw

Evolution of Repolarization Patterns During Mavacamten Therapy in Obstructive Hypertrophic Cardiomyopathy

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Introduction

In patients with hypertrophic cardiomyopathy (HCM), regional electromechanical abnormalities, exacerbated by left ventricular outflow tract (LVOT) gradients, lead to significant heterogeneity of conduction and repolarization, creating a substrate for ventricular arrhythmias and increasing the risk of sudden cardiac death (SCD) [1]. In this population, conventional QTc measurement is limited as it encompasses both ventricular depolarization and repolarization times; myocardial hypertrophy and conduction delays may secondarily prolong the QTc interval without reflecting actual repolarization abnormalities [2]. In this context, the corrected JT interval (JTc), representing solely the ventricular repolarization phase, emerges as a more specific indicator [3]. Recent reports suggest that mavacamten, the first cardiac myosin inhibitor, may extend beyond hemodynamic effects to normalize electrophysiological abnormalities [4].

Aim of the study

To evaluate changes in the corrected JT interval (JTc) in patients with obstructive HCM (oHCM) treated with mavacamten.

Materials and methods

We analyzed 12 patients with oHCM (mean age 62.9 years; 50% male) treated with mavacamten for 24 weeks. The corrected JT interval (JTc) was measured semi-automatically in leads V4–V6 and defined as the mean of values from three consecutive cardiac cycles. Data were analyzed using JASP software (repeated measures ANOVA, Friedman test; $p < 0.05$).

Results

During treatment, JTc in leads V4–V6 decreased from 358±43.7, 366 (IQR 27.8), and 356±30.3 ms at baseline to 306±31.1, 314 (IQR 50.6), and 310±36.2 ms after 6 months of therapy ($p < 0.05$). The primary reduction occurred by month 3 (JTc values: 324±37.5, 324 (IQR 39.8), and 322±35.3 ms; $p < 0.05$), with no statistically significant further reduction thereafter. Significant correlations of ΔJTc were observed between leads V4 and V5 ($\rho = 0.685$; $p = 0.017$) and V4 and V6 ($\rho = 0.783$; $p = 0.004$), suggesting homogeneous left ventricular remodeling. After 6 months of treatment, significant improvement in hemodynamic parameters was achieved: median resting and Valsalva LVOT gradients decreased by 44.5 mmHg (IQR 56.3) and 75.0 mmHg (IQR 57.5), respectively, and interventricular septal thickness decreased by 2.5 mm (IQR 2.25).

Conclusions

Mavacamten treatment significantly shortened JTc, alongside echocardiographic and clinical improvement. The JTc interval may serve as a promising, easily accessible marker of repolarization stabilization and potential risk of ventricular arrhythmias and SCD.

HALP and mHALP as Effective Tools for 90-Day Mortality Prediction in Heart Failure

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Introduction

Congestive heart failure (CHF) is a chronic syndrome with high mortality rates, necessitating risk stratification tools. Existing models are complex and may not incorporate crucial inflammatory and nutritional biomarkers. The Hemoglobin, Albumin, Lymphocyte, and Platelet (HALP) score and modified HALP (mHALP) score, which reflect nutritional status and systemic inflammation, emerged as potential prognostic tools.

Aim of the study

This study aimed to evaluate the predictive performance of HALP and mHALP scores for 90-day mortality in CHF patients.

Materials and methods

This retrospective study utilized the MIMIC-IV database for 1000 adult CHF patients. HALP was calculated as [Hemoglobin (g/L) * Albumin (g/L) * Lymphocytes (/L)] / Platelets (/L), and mHALP by multiplying these components. The primary outcome was 90-day all-cause mortality. Univariate and multivariate logistic regression analyses were performed, and models were assessed using Receiver Operating Characteristic (ROC) analysis and Youden's Index.

Results

A total of 1000 participants with CHF were enrolled in this study, of which 868 (86.8%) patients survived beyond 90 days, and 132 (13.2%) patients died within 90 days. Non-survivors had significantly lower median HALP (19.69 vs. 27.18) and mHALP (583,920.75 vs. 1,151,898.94) scores compared to survivors. In univariate analysis, HALP had an AUC of 0.63 and an OR of 0.25 for 90-day mortality, while mHALP showed a higher AUC of 0.68 and an OR of 0.22. After confounder adjusting, both log-transformed HALP (OR: 0.44) and mHALP (OR: 0.57) remained significant predictors of mortality. mHALP demonstrated better overall predictive performance.

Conclusions

Both HALP and mHALP scores are significantly associated with 90-day mortality in CHF patients, with mHALP exhibiting superior prediction. Easily calculable scores, derived from routine laboratory tests, offer a cost-effective, early risk stratification in CHF, potentially aiding in tailoring interventions.

Neutrophil-Derived Immune-Inflammatory Biomarkers Associated with Long-Term Mortality in Patients with Acute Heart Failure

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Introduction

Heart failure (HF) represents a major challenge in aging populations. Each acute HF event is associated with worse prognosis highlighting the need for simple risk indicators. HF is connected with inflammation and oxidative stress, therefore neutrophil-derived biomarkers emerge as promising candidates.

Aim of the study

This study aimed to evaluate the predictive value of neutrophil-derived biomarkers for long-term prognosis in HF

Materials and methods

We conducted a retrospective study of patients hospitalized for HF exacerbation, enrolled in the LECRA-HF registry. Admission blood counts were used to calculate the following ratios: NLR = neutrophils/lymphocytes, NMR = neutrophils/monocytes, NPR = neutrophils/platelets, and dNLR = neutrophils/(white blood cells − neutrophils). The primary endpoint was 5-year all-cause mortality.

Results

Among 1140 patients, 600 (53%) died. Non-survivors had higher neutrophil, monocyte, CRP, NLR, dNLR, and NPR values, and lower lymphocyte counts. Mortality increased across quartiles of all biomarkers, peaking in the highest quartile. In multivariable analysis, NLR (OR 1.07; 95% CI 1.02–1.10; p=0.002) and dNLR (OR 1.07; 95% CI 1.03–1.10; p=0.001) were independent predictors of all-cause mortality.

Conclusions

Mortality risk rises with increasing biomarker levels, and NLR and dNLR independently predict long-term mortality. These findings suggest that simple, neutrophil-derived hematologic indices may serve as practical prognostic tools in acute heart failure.

No-Touch Aorta Off-Pump LIMA-Radial Artery Y-Graft CABG Long-Term Follow-Up

Authors

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Introduction

Coronary artery bypass grafting (CABG) can be performed using various techniques tailored to the patient in order to maximize the potential benefits of the procedure. According to the 2018 ESC/EACTS guidelines, off-pump coronary artery bypass grafting (OPCAB) is beneficial in patients with extensive calcification of the ascending aorta. One of the greatest advantages of OPCAB is considered to be a reduced incidence of postoperative stroke. Total arterial revascularization is recommended in patients with a high-grade coronary artery stenosis. The benefits of using the radial artery (RA) as the graft of choice include its length, durability, good long-term outcomes, and the possibility of harvesting it simultaneously with the left internal mammary artery (LIMA). In our center, this revascularization strategy is the method of choice for all patients, regardless of age, coronary artery size, degree of stenosis, or involvement of the left main coronary artery.

Aim of the study

Survival of no-touch aorta, total arterial off-pump CABG (OPCAB) with LIMA - radial artery Y-graft in 2004 - 2021 for all-comers for isolated CABG regardless of preoperative factors.

Materials and methods

All patients with OPCAB no-touch aorta total arterial LIMA- RA Y-graft surgeries performed between 2004 and 2021 without any concomitant interventions were included. OPCAB was performed by a team of experienced surgeons. For 5 year survival times, Kaplan-Meier test and Cox regression were used. Patients were categorised into 5 age groups (<50 y.o.;50-59;60-69; 70-79; >80 years).

Results

2174 patients were included. Median follow-up time was 3266 days. Mean number of grafts was 3,7 with little variation between age groups ranging from 3.6 to 3.8 (p=0.09), respectively. The 5 year survival probability was 90% (n=1767) and ranged between age groups from 98% to 65% (log rank: p=<0.0001). A Cox regression model observed that sex, age, NYHA class>1, CCS class IV, left ventricular ejection fraction, previous stroke, diabetes, PAD, chronic lung disease, EuroSCORE I (log) were potential predictors for long-term mortality.

Conclusions

This study shows that total arterial no-touch aorta LIMA-RA Y-graft OPCAB as regular practice for all patients, regardless of age, is safe and effective. Our findings underline the strength of experience in a total arterial treatment strategy. Further research should identify risk factors influencing other outcomes after revascularization ensuring optimal outcomes across diverse patient populations.

Relation Between Lipoprotein(a) and Thyroid Diseases

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Introduction

Lipoprotein(a)(Lp (a)) has recently gained increasing attention as a cardiovascular risk factor and is currently recognised as one of the most common contributors to coronary heart disease. Elevated Lp(a) levels are associated with accelerated atherosclerosis, yet factors influencing their concentration remain under investigation. Emerging evidence suggests that physiological and hormonal states, including thyroid hormone status, may influence Lp(a) levels.

Aim of the study

This study aims to evaluate the relationship between Lp(a) levels and thyrotropin (TSH). The difference in concentration of Lp(a) between patients with hypo- and hyperthyroidism and those without thyroid disease was assessed.

Materials and methods

This study was conducted on 986 patients admitted to the Department of Cardiology, Lipidology and Internal Medicine of the Medical University of Bialystok between December 2023 and January 2025. The mean age of the study population was 65.24 years, and 49.96% of patients were female. Serum levels of Lp(a) and thyrotropin were measured using immunochemical assays and were assessed in all patients at hospital admission. The results were analysed using Spearman's rank correlation and Student’s T-test.

Results

The average Lp(a) was 30.46±40.80 mg/dl. The average TSH was 2.71±10.51 mIU/l. There was a weak negative correlation between TSH and Lp (a) (R: -0.067; p=0.041). There was no significant difference in Lp (a) concentration between patients with hypo- and hyperthyroidism and those without thyroid disease. There was no impact of pharmacology therapy.

Conclusions

Our study shows only a mild impact of TSH on Lp(a). Further studies are needed to verify the association between Lp(a) and thyroid disorders.

Relationship Between Kidney Function Parameters and Lipoprotein(a) Concentration

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Introduction

Lipoprotein(a) is an established cardiovascular risk factor, and its concentration may be influenced by renal function. Impaired kidney function has been associated with alterations in lipid metabolism, including changes in Lp(a) levels. However, the relationship between Lp(a), serum creatinine, and estimated glomerular filtration rate (eGFR) remains incompletely understood in large clinical populations.

Aim of the study

The aim of this study was to assess the association between serum creatinine, eGFR, and Lp(a) concentration in a large cohort of adult participants.

Materials and methods

This study population consisted of 986 patients admitted to the Department of Cardiology, Lipidology and Internal Medicine of the Medical University of Bialystok between December 2023 and January 2025. Serum Lp(a), creatinine levels, and eGFR were analysed. Participants were categorised according to eGFR stages (I–V). Correlation analyses between Lp(a) and creatinine, as well as between Lp(a) and eGFR, were performed using Pearson's correlation coefficient. Statistical significance was set at $p < 0.05$.

Results

Mean Lp(a) concentrations across eGFR categories were as follows: Lp(a) = 31.24±43.35mg/dl, stage I (n=333); Lp(a)= 27.64±36.27mg/dl, stage II (n=380); Lp(a)= 32.11±38.98mg/dl, stage IIIA (n=135); Lp(a)= 29.88±42.55mg/dl, stage IIIB (n=66); Lp(a)= 27.69±32.10mg/dl, stage IV (n=25); Lp(a)= 36.68±49.02mg/dl, stage V (n=13). There was no significant difference (p=0.781). No significant correlation was observed between creatinine, eGFR and Lp(a). Subanalysis in subgroups divided by age (≤65 and > 65 years old) and sex showed similar results.

Conclusions

In our cohort, lipoprotein(a) concentrations were not significantly associated with serum creatinine or eGFR. However, variable correlations reported in other publications highlight the need for further research to clarify the relationship between Lp(a), renal function, and cardiovascular risk.

Cardiology & Cardiac Surgery Session II

Session Coordinators:
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Association Between Dental Health and Coronary Artery Disease in Diabetic and Non-diabetic Patients

Authors

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Introduction

Diabetes mellitus (DM) is a chronic metabolic disorder characterized by hyperglycemic episodes resulting from insulin resistance or defects in insulin secretion. Hyperglycemia-induced microvascular impairment affects oral cavity health, leading to periodontal disease and dental caries.

Aim of the study

The objective of the study was to compare oral cavity status and coronary artery disease (CAD) in diabetic and non-diabetic patients. Furthermore, the study aimed to investigate a relationship between coronary angiogram results and oral cavity status in the analyzed population, also with distinction between diabetic and non-diabetic patients.

Materials and methods

The study included 69 patients with a median age of 69, who presented with chronic heart disease. They were enrolled in the prospective study, which included stomatological examination, coronary angiography, and laboratory tests. The collected data were analysed using the Mann-Whitney U test and the chi-squared test in the JASP statistics program. Moreover, the results of the stomatological examination were compared between four groups of patients, randomized according to the presence or absence of CAD and DM.

Results

Glycated haemoglobin level and fasting glucose level are dependent on DM morbidity ($p < 0.001$). Numbers of missing teeth and DMFT (Decayed, Missing, Filled Teeth) are also dependent on DM morbidity ($p = 0.017$ and $p = 0.026$ respectively). Mean values of DMFT and missing teeth were lower in non-diabetic patients with a normal angiogram than in non-diabetic patients with CAD. However, mean values of DMFT and missing teeth were higher in diabetic patients with normal angiogram than in diabetic patients with CAD.

Conclusions

Oral cavity status of patients with DM is worse than the status of non-diabetic patients as they have a higher number of missing teeth and DMFT, while having a lower number of natural teeth. There is no visible association between dental health and the presence of CAD when results are compared between diabetic and non-diabetic patients.

Heart Failure as a Frequent Bystander in Sarcoidosis - Characterization of Sarcoidosis Patients with and Without Heart Failure

Authors

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Introduction

Myocardial involvement(MI) in sarcoidosis is a serious complication with an established prevalence and studied group characteristics. However, the prevalence of heart failure might be higher in sarcoidosis patients compared to the general population, independently from MI. We hypothesize that systemic inflammation, pulmonary involvement, and multiple pulses of glucocorticosteroids may predispose this group to heart failure (HF).

Aim of the study

This study's purpose was to establish the prevalence of HF in patients with sarcoidosis with any biopsy-proven organ involvement and characterize this group.

Materials and methods

Using the database of a Tertiary Centre, we retrospectively identified patients with sarcoidosis referred for cardiac magnetic resonance(CMR) from the hospital department in the years 2014-2024. The presence of HF was established by the coexistence of symptoms in the documentation, elevated NT-proBNP, and either reduced ejection fraction(EF) or sign of elevated left ventricular filling pressures assessed by CMR (elevated left atrial size, left ventricular hypertrophy). No echocardiography parameters were assessed due to the impossibility of calculating them according to a homogenous standard. Disease activity was defined as sarcoidosis of any organ being in a relapse or chronically active.

Results

The prevalence of HF in the studied group (n=72) was 14%, of which 12.5% had preserved EF and 1.4% had reduced EF. 30% of patients with HF had cardiac sarcoidosis. The patients with HF did not differ significantly from the patients without HF in the frequency of MI (30% vs 14.5%), disease activity (90% vs 79%), present (20% vs 32.3%) or past (40% vs 27.4%) immunosuppressive treatment.

Conclusions

To date, the only studies assessing HF prevalence in sarcoidosis patients rely on diagnoses according to the ICD and bear the results of 10.9 to 30% compared to 2.4 – 4.3% in Poland's general population. This data needs validation, as many cases of HF may not be detected. We decided to identify the patients who met the criteria for HF, even in the absence of an ICD code for HF. The results suggest that the group of sarcoidosis patients has higher rates of HF compared to the general population independently from MI. This group, being under the care of other specialists, remains an undervalued target for HF therapy. There is still a need for further research, preferably prospective studies providing a guidelines-directed diagnostic process for HF, with echocardiography performed with standardised protocols.

Impact of Mobile Health-detected Airflow Obstruction on periprocedural Symptom Severity and Quality of Life in Patients with Atrial Fibrillation Undergoing First-time Ablation

Authors

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Introduction

Airflow obstruction (AO) is reported to be associated with a higher risk of atrial fibrillation (AF). The presence of both conditions complicates symptom attribution and hampers accurate assessment of the symptom-resolution effectiveness of heart rhythm control interventions.

Aim of the study

To assess the extent to which mobile health-detected AO affects periprocedural symptom severity and quality of life in patients with AF undergoing first-time ablation.

Materials and methods

From January to October 2024, AO screening was performed using the handheld AioCare spirometer (Healthup, Poland) in patients undergoing first-time AF ablation. The best of up to three acceptable results was used to provide forced expiratory volume in 1 second (FEV1), forced vital capacity (FVC) and the FEV1/FVC ratio. AO was defined as FEV1/FVC < 0.70. AF recurrence was assessed using 24h-Holter electrocardiogram (ECG) monitoring and 12-lead ECG 3 months after ablation. Quality of life and symptom severity were assessed using the SF-36, AFSS and AFEQT questionnaires before the ablation and at 3-month follow-up.

Results

Of the 128 prospectively enrolled patients (median age 64; 66% men), nearly one-third (n=38) were found to have AO. Groups were generally comparable at baseline, except for more men in the AO (vs non-AO) group (82% vs 59%, p=0.015). AF recurrence rates at 3-month follow-up were similar (21% vs 30%, p=0.387). SF-36 showed no statistically significant differences between groups in the physical component domain, indicating comparable physical status and physical limitations. Patients with AO had ower mental component summary score (median 55 vs 62, p=0.005), which indicates worse mental and emotional well-being in this group. According to the AF-specific symptom severity and quality-of-life questionnaires (AFSS, AFEQT), patients with AO reported less severe symptoms and better quality of life both at baseline and at follow-up compared with non-AO patients. However, the change in scores between baseline and follow-up was significant only for the activity domain of AFEQT score (median difference 6.5 vs 13, p=0.003), suggesting that non-AO patients experienced a greater improvement in AF-related quality of life after the procedure.

Conclusions

These findings may suggest that in AO patients, AF-caused activity limitations are less responsive to ablation, and the coexistence of AO contributes to a persistent symptom burden, particularly affecting mental well-being. These results support more individualized post-AF ablation follow-up.

Optimizing Left Bundle Branch Area Pacing: Simulating Electrophysiological Lead Placement via CT-based Reconstructions of the Cardiac Conduction System

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Introduction

Left Bundle Branch Area Pacing (LBBAP) is an emerging technique for electrical resynchronization offering better clinical outcomes than conventional pacing approaches. The success of the LBBAP procedure relies on the precise placement of the leads near the left bundle origin. Current fluoroscopic techniques often fail to account for patient-specific anatomical variations, relying on approximated distances that do not compensate for cardiac size or the mechanical barrier presented by the tricuspid valve leaflets.

Aim of the study

To develop a clinically applicable fascicle-targeting framework for LBBAP procedures via computed tomography (CT) imaging and to translate patient-specific anatomy into a standardized fluoroscopic guide for optimizing lead placement proximity to the left bundle origin.

Materials and methods

Coronary CT angiography (CCTA) scans of 27 patients were analyzed using a dedicated 3D segmentation software. The trajectories of lead placements targeting all three fascicles through the interventricular septum were simulated using anatomical landmarks, including the His bundle origin (HB), right ventricular apex (RVA), and tricuspid annulus (TCA). A 20 mm distance was chosen for safe lead placement below the TCA level. A horizontal line between the HB and RVA landmarks served as a reference axis for targeted lead placement. Optimal lead placements, as seen on a fluoroscopic RAO 30 view, were reported as proportional vertical and horizontal coordinates (0 - 100%, from HB to RVA) relative to the reference axis length. The distance on the endocardial surface from the lead tip to the left bundle origin was calculated for each target.

Results

Simulated leads placed 20 mm below the TCA were clustered horizontally at approximately one-third the length of reference axis for superior (32 ± 6%), septal (33 ± 6%), and inferior (30 ± 4%) fascicles. The septal fascicles showed the greatest vertical alignment with the reference axis (-2 ± 11%), while superior fascicles were positioned above (16 ± 7%) and inferior fascicles below (-32 ± 19%) the reference axis. Lead placements targeting the superior fascicles offered the closest distance to the left bundle origin (14 ± 3mm); however, in 6 (22%) patients, the superior fascicle target was unfeasible due to aortic root proximity.

Conclusions

This study introduces a novel method of simulating cardiac conduction system anatomy for targeting individual left bundle branch fascicles enhanced by a spatial safeguard against the potential hindrance of valvular structures.

Pediatric Heart Transplantation in Lithuania: A 25-Year Single-Center Experience

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Introduction

Pediatric heart transplantation is a highly specialized procedure, particularly challenging in countries with small populations and limited donor availability. Lithuania maintains a single national program for pediatric heart transplantation, centralized within one congenital cardiac surgery center.

Aim of the study

We present our experience in maintaining the only pediatric heart transplant program in Lithuania, serving a population of 2.5 million at the country's sole center for congenital cardiac surgery.

Materials and methods

We conducted a retrospective cohort study of all pediatric patients who received a heart transplant in Lithuania between 2001 and 2026. Patient demographics, transplantation indications, use of mechanical circulatory support, and post-transplant survival were analyzed.

Results

A total of 22 children underwent heart transplantation during the study period, including 16 males (72.7%) and 6 females (27.3%). The cohort comprised 5 infants, 11 children aged 1–12 years, and 6 adolescents aged 13–18 years. Median age at transplantation was 2.25 years (range: 1 month–17 years). The median waiting time for a donor heart was 8.1 months (range: 2 days–3.64 years). Five patients (22.7%) required mechanical circulatory support prior to transplantation, while none required such support postoperatively. Transplantation indications included dilated cardiomyopathy (45.5%), uncorrectable congenital heart disease (31.8%), restrictive cardiomyopathy (13.6%), and hypertrophic obstructive cardiomyopathy (9.1%). Early mortality occurred in 22.7% of patients, while late post-transplant mortality accounted for an additional 13.6%. Median post-transplant survival was 7.3 years (range: 1.8–11.1 years). Overall survival was 63.6%, with actuarial survival rates of 77.3% at 1 year, 59.1% at 5 years, 27.3% at 10 years, and 9.1% at 15 years.

Conclusions

Regardless of age, gender and the need for mechanical assisted circulation, the results of heart transplantation in children are good. More than two-thirds of patients survive early heart transplantation, with the majority living 5 years or more after heart transplantation.

Predictors of In-hospital Clinical Outcomes in Patients with Primary vs Recurrent Myocardial Infarction

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Introduction

Recurrent myocardial infarction (MI) is associated with an increased comorbidity burden and is linked to worse short-term outcomes, including higher in-hospital mortality and complications. Among other predictors, simple inflammatory indices derived from routine blood counts, including the neutrophil- (NLR) and monocyte-to-lymphocyte ratio (MLR), have been suggested to complement clinical assessment in identifying patients at higher risk of in-hospital adverse events and improve management.

Aim of the study

Identifying differences in predictors of in-hospital outcomes in patients with primary versus recurrent MI.

Materials and methods

The data of patients admitted due to AMI in a tertiary care hospital was retrospectively reviewed. Demographic, clinical, laboratory, echocardiographic, and in-hospital outcome data were collected from electronic medical records. Blood morphology parameters were obtained within 72 hours of admission. The primary endpoint was all-cause mortality. The secondary endpoint was MACE, defined as a composite of death, in-hospital recurrent infarction, stroke, cardiogenic shock, life-threatening arrhythmia, and need for mechanical support.

Results

173 patients (29% female) with a median age of 70 were included in the study, out of which 43 (25%) had a history of prior MI. Patients from the prior MI group presented more frequently with NSTEMI (77%), as opposed to STEMI (p=0.006). There were no significant differences in baseline characteristics, except for more elevated CRP levels in the first MI group (p=0.03), and lower potassium on admission in the first MI group (p=0.01). In logistic regression analysis, NLR was a significant predictor of both increased mortality (OR, 1.12; 95%CI, 1.04-1.22) and MACE (OR, 1.08; 95%CI, 1.02-1.16) in the first MI, but not in the prior MI subgroup. MLR was related to higher odds of mortality only in the first MI group (OR, 1.21; 95%CI, 1.00-1.48) and was non-significant for MACE in both groups.

Conclusions

In this cohort, inflammatory indices derived from routine blood counts were associated with worse in-hospital outcomes in patients with first MI, but not in those with prior MI. This suggests that the prognostic value of inflammatory markers may differ between primary and recurrent MI patients.

Serum Proteomic Profiling of Carotid Plaques using Machine Learning Algorithms

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Introduction

The presence of carotid plaques is a major clinical challenge as it constitutes a significant risk factor for stroke. The pathogenesis of carotid plaque formation is complex and involves numerous cellular and molecular changes, including alterations in the serum protein profile. A comprehensive analysis of these changes may lead to the discovery of key biomarkers and therapeutic targets.

Aim of the study

Assessing differences in serum protein profiles between individuals with and without carotid plaques, and evaluation of the predictive value of proteomic data in combination with clinical and echocardiographic parameters using machine learning algorithms.

Materials and methods

This study included 693 participants (mean age 48.8 ± 15.3 years; 56.6% male) from the population-based Białystok PLUS cohort study. All participants underwent clinical assessment, laboratory tests, echocardiography and carotid ultrasound. A targeted panel of 368 plasma proteins was measured using the Olink Proteomics platform, based on the proximity extension assay (PEA) technology. The Boruta random forest algorithm was employed for feature selection and statistical analysis, with protein importance assessed using a standardized Z-score.

Results

Carotid plaques were detected in 320 individuals (46.2%). The model integrating proteomic data, cardiovascular risk factors (e.g., age, sex, smoking, hypertension, diabetes), and echocardiographic parameters demonstrated the highest predictive performance (AUC = 0.89). In comparison, the model based solely on age achieved an AUC of 0.87, while the proteomic-only model yielded an AUC of 0.82. The most significant proteins consistently identified across all models included: GDF15, CDCP1, CHIT1, SOST, FLT3LG, CDH2, CRTAC1, TNFRSF11B, CXCL9, and NPPB. Within the best-performing combined model assessed using Z-score, GDF15 exhibited the highest importance (22.8), followed by CDCP1 (18.4) and CHIT1 (15.1).

Conclusions

Machine learning-based analysis of serum proteomic data enabled effective identification of biomarkers associated with carotid plaques and its key risk factors. The identified proteins, particularly GDF15, CDCP1, and CHIT1, implicate inflammatory pathways, cellular stress responses, and tissue remodeling in disease pathogenesis. These findings provide new insights into potential targets for early detection and preventive therapy. However, further validation studies in independent cohorts are warranted.

Three-dimensional Micro-CT Analysis of the MyocardialExtensions of the Pulmonary Valve: Microanatomical Insights Relevant to Supravalvular Catheter-Based Procedures

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Introduction

The pulmonary root, connecting the right ventricular outflow tract to the pulmonary artery and comprising the pulmonary valve and adjacent sinuses, remains insufficiently characterized compared to the aortic valve due to the rarity of acquired pulmonary valve disease. Recently, it has gained clinical relevance as a source of idiopathic ventricular arrhythmias from myocardial extensions. While previous studies relied on histology, which may alter tissue dimensions, this study uses micro-CT for non-destructive, high-resolution 3D visualization and analysis

Aim of the study

To characterize myocardial extensions of the pulmonary valve and provide their detailed morphometric analysis extensions using micro-CT to guide interventional procedures in this region

Materials and methods

Pulmonary root specimens from 25 adult donors, obtained during routine forensic autopsies, were processed using a contrast-enhanced protocol. Specimens with cardiovascular pathology, prior cardiac surgery, trauma, or macroscopic signs of decomposition were excluded. Micro-CT scans were converted to DICOM and analyzed using dedicated segmentation software. The pulmonary root was divided into 12 longitudinal cross-sections using specific landmarks on the commissural plane (CP) with sinus centers at half their border length, three points at commissure midpoints and right- and left-half sinus positions at one-quarter and three-quarter border lengths. Measurements were standardized relative to the basal ring (BR), with sections oriented orthogonally to the sinus wall and commissural plane, generating “sliced cake” projections for detailed morphometric analysis

Results

ME were consistently present between the BR and CP in all specimens. Myocardial tissue occupied approximately 25 to 50% of sinus or commissural height and its coverage was greater at commissures ($p < 0.001$). ME thickness varied across commissural cross-sections ($p<0.001$), being greatest at the posterior-left and lowest at the posterior-right commissure, whereas sinus center thickness was similar across sites ($p=0.12$) and significantly smaller than at the commissures ($p=0.01$)

Conclusions

Myocardial extensions are commonly present in the pulmonary root and display a characteristic crown-shaped distribution, with maximal size at commissures and minimal dimensions in mid-sinus regions. These findings provide a detailed morphometric framework of the pulmonary root relevant for understanding arrhythmogenic substrates and guiding interventional procedures.

TTicagrelor/prasugrel Versus Clopidogrel in Patients with High Ischemic Risk and Low Bleeding Risk After Percutaneous Coronary Intervention for Chronic Coronary Syndromes: a Retrospective Cohort Ctudy

Authors

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Introduction

Dual antiplatelet therapy (DAPT) constitutes a cornerstone of treatment in patients after percutaneous coronary intervention (PCI) for chronic coronary syndromes (CCS), aiming to prevent recurrent ischaemic complications. Although acetylsalicylic acid (ASA) in combination with clopidogrel is the standard therapy, we already know that tailoring the treatment according the patient's individual ischaemic and bleeding risk factors improve the outcomes. Nevertheless, the optimal antiplatelet therapy for patients with high ischaemic and low bleeding risk still remains uncertain, with preliminary data suggesting that potent P2Y12 inhibitors may be more efficient among this patient group compered to clopidogrel.

Aim of the study

We compared the efficacy and safety of ticagrelor- or prasugrel- versus clopidogrel-based DAPT in high ischaemic and low bleeding risk patients after PCI for CCS.

Materials and methods

This retrospective cohort study included patients undergoing PCI for CCS at a tertiary centre between January 2023 and October 2024 who fulfilled ESC criteria for high ischaemic and low bleeding risk. Patients were retrospectivaly assigned to two groups based on the post-PCI DAPT pattern. The choice of the therapy was operator's decision. The first group was administered ASA (75 mg daily) and ticagrelor (180 mg daily) or prasugrel (60 mg daily) and the second group was treated with ASA (75 mg daily) and clopidogrel (75 mg daily). The primary endpoint was a composite of any thrombotic or bleeding events within 6 months after PCI. Secondary endpoints included the individual components of the primary endpoint including death from any cause, myocardial infarction, ischaemic stroke, in-stent thrombosis, target lesion revascularization and major bleeding events.

Results

There were 100 patients included in the analysis. ASA+ticagrelor/prasugrel group included 29 patients (29%) and ASA+clopidogrel group consisted of 71 patients (71%). The primary composite endpoint occurred in none of the patients in ASA+ticagrelor/prasugrel group (0%) versus 10 of patients in ASA+clopidogrel group (14%) (p=0.033). The groups did not differ significantly in secondary endpoints. Further subgroup analyses by sex, age, comorbidities and periprocedural factors revealed no associations with endpoint occurrence.

Conclusions

In patients undergoing PCI for CCS that are at high ischaemic and low bleeding risk, ticagrelor/prasugrel may offer improved efficacy and safety comapred to clopidogrel.

Ventricular Tachycardia Ablation in Patients with Non-ischemic and Ischemic Structural Heart Disease: Insights from Single Tertiary Cardiac Care Center Experience.

Authors

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Introduction

Catheter ablation has become an established treatment for ventricular tachycardia (VT) in patients with structural heart disease (SHD). Although international data support expanding indications for VT ablation, access and referral patterns may differ across healthcare systems. In Poland, VT ablation is mainly performed in tertiary centers, and real-world data remain limited.

Aim of the study

To characterize the clinical profile, procedural features, and 12-month outcomes of patients undergoing VT ablation at a single tertiary cardiac center in Poland, and to compare ischemic and non-ischemic SHD populations.

Materials and methods

We retrospectively analyzed consecutive patients with SHD who underwent ≥1 VT ablation between September 2019 and January 2025. Patients with idiopathic VT were excluded. Clinical and procedural data were collected. The primary endpoint was a 12-month composite of VT recurrence or death. Survival was assessed using Kaplan–Meier analysis, and predictors were evaluated with Cox regression modeling.

Results

Sixty patients (70 procedures) were included; 45 (75%) had ischemic and 15 (25%) non-ischemic SHD. Electrical storm or incessant VT was a frequent indication (37%), particularly in ischemic patients. Non-ischemic patients were younger and had higher left ventricular ejection fraction. Epicardial access was used exclusively in non-ischemic cases. Major complications occurred in 10% of procedures. At 12 months, the composite endpoint occurred in 48.3% of patients: 59.1% in ischemic vs 14.3% in non-ischemic SHD (p=0.008). One-year mortality was 13.3%. In multivariable analysis, non-ischemic etiology independently predicted freedom from the composite endpoint (HR 0.16; p=0.04).

Conclusions

VT ablation in Poland is frequently performed in patients with advanced arrhythmic presentation, particularly in ischemic SHD, suggesting delayed referral. Despite greater procedural complexity, selected non-ischemic patients demonstrated favorable 1-year outcomes. These findings support broader consideration of VT ablation in appropriately selected non-ischemic SHD patients.

Case Report Oral Session

Session Coordinators:
Izabela Podniesinska
Kristina Videnova

The Mystery of a Disappearing Lung After Percutaneous Balloon Pulmonary Valvuloplasty - Case Report of a Patient with Noonan Syndrome

Authors

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Background

Noonan syndrome (NS) is a genetic disorder characterised by facial dysmorphia, short stature, and congenital heart defects, most commonly pulmonary valve stenosis (PS). Lymphatic abnormalities occur in nearly 30% of patients, usually as lymphedema. Plastic bronchitis (PB) represents a rare lymphatic abnormality characterised by bronchial cast formation.

Case Report

A 3-month-old boy with NS was admitted due to severe PS and atrial septal defect (ASD). Echocardiography confirmed a hemodynamically insignificant ASD and stenotic dysplastic pulmonary valve (PV) (peak pressure gradient 57mmHg). He was referred for cardiac catheterisation with percutaneous balloon pulmonary valvuloplasty (PBPV). Invasively measured right ventricular pressure (RVp) was 73mmHg (RVp>75% of systemic pressure) with a 53mmHg gradient across the PV, what met the indication criteria for PBPV. The procedure was performed using Tyshak and Armada balloon catheters, which led to RVp decrease to 43mmHg and PV opening dimension increased from 3,5mm to 6,7mm. After the PBPV anesthesiologist reported problems with ventilation, blood occurrence in an endotracheal tube and sudden desaturation to 45%. Fluoroscopy showed atelectasis of the left lung. Due to suspected bleeding, contrast was administered to the pulmonary artery. However, there was no vessel damage. During high-pressure ventilation, the left lung expanded, and the patient stabilised with a saturation of 90%. Ultrasound of the left pleural cavity revealed possible fluid, so a puncture was performed. However, no fluid was obtained. Shortly, significant desaturation was observed due to another left lung atelectasis. A few minutes later, the patient stabilised, and the left lung was fully expanded. Unfortunately, just for a short period of time. Unbelievably, fluoroscopy once again revealed symptomatic left lung atelectasis. Urgent bronchoscopy was performed and led to the diagnosis showing abnormal tissue formation moving throughout breathing and occasionally closing left main bronchus with left lung atelectasis. Next day, flexible bronchoscopy was performed due to persistent ventilatory impairment. Based on the findings, PB was confirmed, and the obstructive masses were removed, causing marked improvement.

Conclusions

This case highlights PB as a rare, however, potentially life-threatening lymphatic manifestation in a patient with NS. Confirmation of the diagnosis of PB during PBPV required exclusion of other possible complications of cardiologic procedures.

A Complicated Course of Ketoacidosis in a Patient with Influenza A and B - Case Report

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Background

Diabetic ketoacidosis (DKA) is a severe and potentially life-threatening complication of diabetes mellitus, most commonly precipitated by infections, particularly viral illnesses. Influenza infection may induce metabolic decompensation by increasing insulin resistance, enhancing ketogenesis, and disrupting glucose homeostasis, thereby increasing the risk of DKA and associated electrolyte disturbances.

Case Report

We report the case of a 10-year-old boy with newly diagnosed diabetes mellitus who was admitted to a tertiary Pediatric Diabetology Department following initial treatment in the Intensive Care Unit for severe DKA (pH 6.996, glucose 371 mg/dL, BE −27.8 mmol/L, HCO3- -8.6 mmol/L). His medical history revealed a six-week period of typical symptoms, including polyuria, polydipsia, and unintentional weight loss. In the week preceding admission, he developed vomiting, dyspnea, tachypnea, and symptoms of an upper respiratory tract infection. Three days prior to hospitalization, influenza A infection was confirmed by a positive rapid antigen test. On admission, the patient presented with impaired consciousness and marked tachypnea, consistent with severe DKA, and a repeat rapid test was positive for influenza B infection. The treatment course was prolonged and complicated by profound electrolyte disturbances, including severe hypokalemia (2.4 mmol/L) and hypophosphatemia (0.9 mg/dL), which posed significant therapeutic challenges. Throughout the entire course of treatment, hypokalemia remained a significant clinical problem despite reduced insulin doses and intensive potassium supplementation. Laboratory evaluation demonstrated preserved endogenous insulin secretion (C-peptide 1.77 ng/mL), HbA1c 10.1% (87 mmol/mol), and the presence of type 1 diabetes–associated autoantibodies, confirming autoimmune etiology of diabetes. Careful management with individualized fluid therapy, insulin infusion, and aggressive electrolyte replacement, along with oral acyclovir, resulted in a favorable clinical outcome.

Conclusions

Given that hypokalemia occurs in only approximately 5–10% of patients with DKA and rarely reaches levels below 2.5 mmol/L, this case highlights the potential role of concomitant influenza A and B infection in precipitating severe metabolic decompensation and electrolyte imbalance, despite preserved endogenous insulin secretory function.

Adult-Onset Leukoencephalopathy with Axonal Spheroids and Pigmented Glia - a Highly Atypical Phenotypic Presentation

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Background

Adult-onset leukoencephalopathy with axonal spheroids and pigmented glia (ALSP), caused by pathogenic variants in the CSF1R gene, is a rare neurodegenerative white matter disorder. The disease typically presents with cognitive decline, behavioral changes, pyramidal signs, and parkinsonism, accompanied by white matter abnormalities on brain MRI. Speech disturbances usually occur as part of an advanced multisystem neurodegenerative process and rarely represent the leading clinical manifestation, which may result in significant diagnostic delay in atypical cases.

Case Report

We present a 70-year-old male patient with a slowly progressive speech disorder evolving over ten years. Dysarthria and impaired speech initiation were the earliest and dominant symptoms and were initially suspected to represent laryngeal dystonia. Neurological examination revealed dysarthria, bradylalia, subtle bulbar signs, mild hyperreflexia, and later parkinsonian features including hypomimia, without response to levodopa. Electromyography repeatedly excluded amyotrophic lateral sclerosis. Serial brain MRI studies performed over several years did not reveal typical extensive white matter lesions; only subtle findings, including iron deposition in the bilateral precentral gyri, were noted and initially interpreted as age-related. Targeted sequencing using a Parkinsonism/Dystonia gene panel identified a heterozygous nonsense variant in the CSF1R gene, previously unreported in public databases and classified as potentially pathogenic, confirming the diagnosis of adult-onset leukoencephalopathy with axonal spheroids and pigmented glia (ALSP), an autosomal dominant disorder.

Conclusions

This case illustrates a highly atypical phenotypic presentation of CSF1R-related ALSP, with long-standing, isolated dysarthria as the leading manifestation and absence of early cognitive or behavioral decline. The lack of characteristic MRI findings further complicated the diagnostic process. This observation expands the clinical spectrum of ALSP and highlights the critical role of genetic testing in patients with unexplained, slowly progressive speech disorders, even in the absence of classical radiological and clinical hallmarks.

Airway Optimization in Bilateral Vocal Fold Paralysis Using Endoscopic Lateropexy: A Safe and Function-Preserving Approach

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Background

Bilateral vocal fold paralysis (BVP) can lead to a life-threatening airway compromise and reduced quality of life due to dyspnea and dysphonia. Traditional glottis-widening procedures often involve tissue resection, risking irreversible damage and impaired voice quality. Minimally invasive lateralization techniques, such as endoscopic arytenoid abduction lateropexy (EAAL), create a patent airway by lateralizing the arytenoid cartilage without tissue removal. This approach preserves laryngeal function and is reversible, making it particularly useful in cases of transient or uncertain nerve recovery. EAAL has demonstrated clinically acceptable respiratory and phonatory outcomes while maintaining swallowing function in patients with bilateral vocal fold palsy.

Case Report

A 71-year-old woman presented with progressive dyspnea and persistent dysphonia afer thyroid surgery and radiotherapy because of thyroid cancer. Flexible laryngoscopy revealed BVP with significant glottic narrowing. No structural lesions were detected. Given the symptomatic airway obstruction and preserved swallowing, endolaryngeal lateropexy was selected to improve airway patency while minimizing loss of function. Under general anesthesia, endoscopic lateralization of the affected vocal fold was performed using a thread-guide instrument (Lichtenberger), stabilizing the fold in a lateral position. The procedure was uncomplicated, resulting in immediate widening of the glottic opening. Postoperatively, the patient reported significant improvement of dyspnea; voice quality remained socially acceptable and no swallowing dysfunction occurred. Follow-up laryngoscopic evaluation confirmed stable laterization and sustained airway patency.

Conclusions

Endolaryngeal lateropexy, including EAAL techniques, represents a safe, reversible and effective surgical option for managing airway compromise resulting from bilateral vocal fold paralysis. It achieves adequate glottic widening and favorable functional outcomes, preserving voice and swallowing, while avoiding the morbidity associated with resective procedures.

Bilateral Lung Transplantation as a Salvage Therapy for Bleomycin-Induced Pneumonitis: a Case Report

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Background

Bleomycin is an antibiotic used as a chemotherapeutic, particularly in the treatment of germ cell tumors. In combination with etoposide and cisplatin (BEP), it is the gold standard for advanced-stage malignancies. However, it is associated with potentially fatal bleomycin-induced pneumonitis (BIP), which occurs in 7% and carries a mortality of 3%. Symptoms are often nonspecific, including dyspnea and cough. Risk factors include age over 40, renal insufficiency, and high cumulative doses. Data on the efficacy of BIP treatments are scarce; corticosteroids remain the mainstay of therapy.

Case Report

A 48-year-old male diagnosed with stage IIIB testicular embryonal carcinoma underwent orchiectomy followed by four cycles of BEP. Seven days after completing chemotherapy, he was admitted with anemia, pneumonia, and respiratory distress. CT revealed pulmonary consolidations with ground-glass opacities. Following the exclusion of infectious etiologies, a diagnosis of BIP was established, and corticosteroids were initiated. Due to rapid respiratory failure progression, the patient was intubated and, five days later, placed on venovenous ECMO (VV-ECMO). Despite medical therapy, clinical deterioration necessitated emergency bilateral lung transplantation (LuTx). The postoperative course was complicated by persistent right pleural hemorrhage requiring four surgeries. The patient developed septic complications (K. pneumoniae NDM, CMV) and critical illness polyneuropathy with quadriplegia, requiring rehabilitation. Three months post-admission, renal function severely deteriorated, necessitating dialysis; renal function recovered after three weeks. Following transplantation, the patient required prolonged mechanical ventilation. Weaning was achieved gradually over three months, transitioning to HFNO before independent breathing. Multidisciplinary care facilitated recovery; the patient is now ambulating with a walker.

Conclusions

BIP is a dangerous and insidious complication. Since pharmacological interventions proved insufficient, LuTx remained the only option. While VV-ECMO shows poor survival and should not be considered definitive treatment, it served as a bridge to transplant. LuTx it is rarely performed for chemotherapy-induced lung injury due to concerns regarding recent systemic oncologic disease. However, one previous report has demonstrated successful outcomes without cancer recurrence. To our knowledge, this is the second reported case of successful bilateral LuTx for BIP.

None

Breaking the Cycle of Recurrent Fetal Loss Using In Vitro Fertilization and Preimplantation Genetic Testing - a Case Report

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Background

Autosomal recessive renal tubular dysgenesis (ARRTD) is a rare, usually lethal fetal condition, commonly caused by mutations in the angiotensin converting enzyme (ACE) gene. It leads to impaired fetal renal function, severe oligohydramnios and other features of Potter sequence. In women with recurrent pregnancy loss or lethal fetal anomalies, identifying a monogenic cause is essential. Preimplantation genetic testing for monogenic disease (PGT-M) with in vitro fertilization (IVF) allows selection of embryos unaffected by known pathogenic variants and may prevent recurrence of fatal outcomes.

Case Report

A 34 y.o. woman was managed during her fifth pregnancy. Family history featured two fetal deaths with congenital abnormalities in her grandmother. The first pregnancy resulted in an intrauterine fetal death at 28 weeks gestation (WG) due to severe uropoietic dysplasia (suspected Potter sequence), followed by miscarriages at 17 and 11 WG. Antiphospholipid syndrome was diagnosed based on elevated anticardiolipin antibodies, all subsequent pregnancies were managed with aspirin and low-molecular-weight heparin (LMWH). After the third loss, genetic counselling revealed a heterozygous MTHFR c.1298A>C variant (low folates, increased risk of fetal dysplasias). The 4th pregnancy was complicated by severe oligohydramnios and terminated at 21 WG due to poor fetal prognosis. Whole exome sequencing after cordocentesis revealed a pathogenic compound heterozygous ACE gene mutation, consistent with ARRTD, both parents were confirmed carriers. Given the recurrent lethal phenotype, IVF was performed using physiologic, hyaluronan-selected intracytoplasmic sperm injection. Blastocyst biopsy enabled PGT-M, one unaffected embryo was transferred. During pregnancy, anticoagulation with LMWH (5000 IU/d) and aspirin (150 mg/d) was administered without complications. The pregnancy progressed normally. At 31+4 WG, preterm premature rupture of membranes occurred, antibiotics with antenatal corticosteroids were administered. Vaginal delivery at 32 WG produced a male neonate weighing 1915 g, Apgar 9-10. Maternal recovery was successful, the neonate required NICU care for hyperbilirubinemia and is now developing normally.

Conclusions

The case demonstrates that targeted genetic diagnosis followed by PGT and IVF can transform recurrent lethal fetal disease into a successful pregnancy. Early identification of monogenic causes enables personalized reproductive planning and may prevent repeated pregnancy loss.

Delayed Diagnosis of Mayer-Rokitansky-Küster-Hauser Syndrome Complicated by Sexual Trauma - a Case Report

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Background

Mayer-Rokitansky-Küster-Hauser (MRKH) syndrome is a rare congenital anomaly involving Müllerian dysgenesis, resulting in the absence or incomplete development of the uterus and upper 2/3rd part of the vagina. This syndrome can either occur as an isolated reproductive system abnormality (Type 1) or as a systemic condition (Type 2). Patients with MRKH are often diagnosed during adolescence due to primary amenorrhea despite normal development of secondary sexual characteristics. However, given that primary amenorrhea doesn't pose a direct risk to one's health, medical consultation is often delayed, particularly in lower socioeconomic cases, until one experiences dyspareunia or urinary incontinence due to intraurethral coitus. In addition to timely diagnosis, follow-up after the interventional procedure also plays a crucial role in avoiding complications such as vaginal stenosis, recurrent fistulas, or, in some cases, malignant transformation of the operation site. This case highlights the complications of delayed diagnosis and the significance of regular follow-up after intervention.

Case Report

A 37-year-old female refugee presented to the department with vaginal bleeding and urinary incontinence. Initially, the patient was suspected of having a vesicovaginal fistula, but further assessment proved otherwise. Physical and clinical evaluation, medical reasoning, and ultrasonography confirmed the diagnosis of MRKH and severe urinary incontinence. The latter was attributed to megalourethra resulting from sexual assault and repetitive intraurethral intercourse. The first step of management involved the Davydov vaginoplasty, which was performed successfully on 27th January 2025. The patient was discharged on post-operative day three and was scheduled for future urological correction. Unfortunately, the patient did not attend follow-up outpatient visits or receive further management.

Conclusions

This case highlights the clinical challenges associated with delayed MRKH diagnosis and improper follow-up. This issue can be tackled by raising awareness about timely medical consultation and by making healthcare more accessible to all socioeconomic groups.

N/A

Diagnostic Nerve Blocks Guiding Interventional Treatment in Post-Whiplash Facial Pain: A Case Report

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Background

Chronic facial pain may arise from overlapping cervicogenic and trigeminal mechanisms, often accompanied by stress-related central sensitization. Whiplash trauma, an acceleration-deceleration cervical injury, can disrupt nerve function without structural abnormalities on imaging. Diagnostic atlantoaxial, occipital nerve and trigeminal ganglion blocks are essential to identify pain, while interventional treatment such as pulsed radiofrequency and cryoneurolysis, focuses on neuromodulation and selective neuroablative techniques.

Case Report

A 51-year-old woman presented with chronic right-sided facial and occipital pain following a whiplash injury eight years ago, with marked exacerbation during the post-COVID-19 period. The pain was described as shooting, burning and stabbing, affected by psychological stress and associated with episodic dysphagia. Herpes zoster infection was excluded. MRI and ENT/maxillofacial evaluations revealed no pathology. HADS indicated a depressive contribution to pain perception. Initial treatment with amitriptyline and carbamazepine provided limited benefit; therefore, multimodal therapy, including pregabalin, followed by titrated intravenous lidocaine and low-dose ketamine infusions, reduced pain intensity from 9 to 7. Clinical examination revealed tenderness in the atlantoaxial region and along the greater occipital nerve. Diagnostic atlantoaxial and occipital nerve blocks relieved occipital pain; however, deep mandibular pain and tension-related dysphagia remained unresolved. A diagnostic trigeminal ganglion block provided temporary improvement, confirming trigeminal involvement and supporting escalation to targeted interventional treatment. Pulsed radiofrequency ablation of the greater occipital nerve and trigeminal ganglion, followed by cryoneurolysis of the mandibular branch, resulted in pain reduction to 3. At follow-up, carbamazepine was discontinued, amitriptyline reduced to a minimal dose, and no NSAIDs were required.

Conclusions

This case suggests that cervical trauma may cause functional nerve impairment rather than classical trigeminal neuralgia. Pain-related dysphagia was considered functional, with stress-related pain amplification. Diagnostic atlantoaxial and occipital nerve blocks confirmed a cervicogenic component; persistent mandibular pain indicated trigeminal involvement, guiding trigeminal ganglion block followed by pulsed radiofrequency ablation and cryoneurolysis, resulting in sustained pain relief.

Life-threatening Course of Stage 4S/MS Neuroblastoma with Massive Liver Involvement: Tumor Lysis Syndrome and Open-abdomen Decompression - a Case Report

Authors

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Background

Neuroblastoma is the most common malignant solid tumor of infancy and shows substantial clinical heterogeneity. International Neuroblastoma Stage System (INSS) stage 4S (corresponding to International Neuroblastoma Risk Group Stage System (INRGSS) - stage MS) occurs in very young children with a characteristic metastatic pattern (typically liver/skin/bone marrow). Despite often favorable outcomes, extensive hepatic involvement and high tumor burden may cause life-threatening complications, including tumor lysis syndrome (TLS) and impaired splanchnic perfusion.

Case Report

The infant (7 weeks old) underwent a routine outpatient abdominal ultrasound, which incidentally revealed multiple hepatic lesions suspicious for malignancy. Abdominal MRI demonstrated marked hepatomegaly with innumerable liver lesions (up to 20 mm, some with diffusion restriction) and a mixed solid–cystic left periadrenal mass measuring ~29 × 24 × 22 mm. After initiating chemotherapy (etoposide + carboplatin - VP/CARBO), the patient developed massive tumor lysis syndrome with cardio-respiratory failure and multiorgan dysfunction requiring ICU admission, ventilatory and circulatory support, and renal replacement therapy. Due to rising intra-abdominal pressure, decompressive surgery with open-abdomen management was performed using a Gore-Tex patch and drainage. After stabilization and suboptimal response to initial therapy, an additional regimen (CADO; cyclophosphamide, doxorubicin, and vincristine) was administered in the ICU without recurrent biochemical TLS, followed by transfer back to the oncology ward for continued treatment. Histopathology of tissue obtained during the initial laparotomy (performed early in the ICU course) confirmed poorly differentiated neuroblastoma with high proliferative activity (Ki-67 up to ~90%) and angio-/perineural invasion (LVI1/PNI1; Joshi grade III).

Conclusions

Stage 4S/MS neuroblastoma may still be life-threatening when massive liver involvement and high tumor burden predominate. Close monitoring and aggressive TLS management - with timely renal replacement therapy when needed - are essential, alongside early evaluation for abdominal compartment syndrome. Prompt decompressive surgery using an open-abdomen strategy can be life-saving and highlights the importance of rapid multidisciplinary care across oncology, ICU, and surgery.

Near-Infrared Spectroscopy Monitoring as a Detector of Cerebral Ischemia During a Transcarotid Cardiac Procedure

Authors

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Background

Transfemoral access is the standard method for transcatheter aortic valve implantation (TAVI), but 10–15% of patients require alternative access due to peripheral arterial disease. TAVI through transcarotid access (TC-TAVI) is a safe alternative when femoral and subclavian arteries are severely affected by atherosclerosis. Using near-infrared spectroscopy (NIRS) for neurological monitoring reveals cerebral ischemia. Variants of the circle of Willis can increase the risk of cerebral hypoperfusion during TC-TAVI.

Case Report

An 82-year-old man with symptomatic severe aortic stenosis was admitted for elective TAVI. His medical history included HFpEF (NYHA III), chronic coronary syndrome, persistent atrial fibrillation, arterial hypertension, chronic kidney disease and chronic lower limb ischemia. Echocardiography showed severe aortic stenosis (vmax 4,0 m/s, gradient max/mean 64/33 mmHg, AVA 0,7 cm2), LV hypertrophy, LVEF 55%. CT angiography revealed severe atherosclerosis of both femoral arteries and tortuous subclavian arteries. The transcarotid access was chosen as the most suitable option. The left common carotid artery was surgically exposed. In the 3-minute cross-clamping test, a rapid, significant decrease in cerebral saturation was observed on the ipsilateral side. Due to the cerebral ischemic risk, the vascular access was switched to the left subclavian artery. After predilatation with a 22 mm balloon, a 27 mm bioprosthetic aortic valve was successfully implanted. Final echocardiography on postoperative day 8 showed good valve function with trace paravalvular leak. Due to the new-onset left bundle branch block, a dual-chamber pacemaker was implanted. No neurological deficits occurred peri- or post-procedurally. Due to intraoperative cerebral desaturation confirmed in NIRS, brain CT angiography was performed and revealed a left fetal-type posterior cerebral artery. It is an anatomical variation in which the proximal segment of the posterior cerebral artery (PCA) is hypoplastic and the artery is predominantly supplied via a posterior communicating artery arising from the internal carotid artery (ICA).

Conclusions

This case highlights that, in patients with advanced peripheral arterial disease, anatomical variations such as a fetal-type PCA can affect cerebral perfusion during TC-TAVI. Prompt recognition of cerebral desaturation and the ability to convert vascular access are essential for patient safety.

Sebaceous Carcinoma of the External Auditory Canal: An Exceptionally Rare and Aggressive Malignancy

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Background

Sebaceous carcinoma (SC) of the outer one-third of the external auditory canal (EAC) is considered extremely rare, with only eight cases reported in the literature to date. Accounting for approximately 0,7% cutaneous malignancies, SC arises from sebaceous glands and is characterized by slow growth combined with aggressive local invasion. Due to its nonspecific otologic presentation, diagnosis is frequently delayed, and patients often present with advanced disease, typically 1–3 years after symptom onset.

Case Report

We present a 63-year-old patient who was admitted to the hospital with a one-year history of otitis, otorrhea and right-sided facial palsy. Initial MRI findings were interpreted as Bell's palsy. Three years later, follow-up MRI revealed a primary tumor originating in the right EAC infiltrating the auricle and causing partial luminal obstruction. The lesion extended toward the middle ear and into the mastoid air cells. Histopathological examination confirmed sebaceous carcinoma. Over several years, imaging demonstrated progressive local tumor growth with infiltration of the temporal bone and skull base structures, as well as involvement of the facial nerve, internal jugular bulb and right sigmoid sinus. Despite multiple surgical resections, maximal-dose radiotherapy, and systemic chemotherapy, complete tumor removal was not achievable due to extensive invasion of highly vascularized and critical anatomical structures. PET-CT demonstrated no distant metastases despite aggressive local disease.

Conclusions

Sebaceous carcinoma of the external auditory canal poses a significant diagnostic challenge due to its rarity and nonspecific clinical presentation. Persistent or atypical otologic symptoms, particularly when associated with facial nerve dysfunction, should raise suspicion for malignancy and prompt early histopathological evaluation. Even in the absence of distant metastases, SC of the EAC may lead to severe morbidity as a result of relentless local progression, emphasizing the necessity of early diagnosis, multidisciplinary management, and long-term follow-up.

Sirolimus and Patient Resilience: A Synergistic Approach to Inclusion Body Myositis

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Background

Sporadic inclusion body myositis (sIBM) represents a significant therapeutic challenge as the most common acquired myopathy in the elderly population, characterized by resistance to standard immunosuppression. The disease manifests with progressive muscle weakness, atrophy, and rimmed vacuoles on biopsy. While no pharmacological standard exists, the mTOR pathway is a potential target to restore autophagy. We present a case where the therapeutic success was built on a dual strategy: off-label sirolimus treatment and the patient’s continuous determination in physiotherapy sustention.

Case Report

A 61-year-old female with an 11-year history of progressive muscle weakness was admitted for re-evaluation after failing numerous therapies. The presentation was atypical for polymyositis, featuring gradual both distal and proximal muscle involvement (marked atrophy of lumbrical muscles) and bulbar symptoms. Diagnosis was confirmed as sIBM according to Grigs criteria (rimmed vacuoles, OMERACT-consistent magnetic resonance, ultrasound) with concomitant interstitial lung disease (ILD). Sirolimus was initiated under a compassionate use scheme. Long-term follow-up demonstrated disease stabilization. The Manual Muscle Testing (MMT)-8 score was maintained at 91/150?, contrasting with the typical natural decline. Crucially, the patient maintains a rigorous rehabilitation regime, which complements the pharmacological intervention.

Conclusions

This case illustrates that stabilizing sIBMs may require a synergistic approach targeting both molecular pathways (mTOR inhibition via sirolimus) and functional capacity (patient resilience to continuous training). The preservation of muscle strength aligns with secondary outcomes of recent trials (e.g., RAPAMI), suggesting that sirolimus supports the patient's struggle with this progressive disease. This case calls for physiotherapy standards for sIBM as routine addition to pharmacological approach in idiopathic inflammatory myositis.

Stent or Stand Down? An Overnight STEMI Where Conservative Care Was the Right Call: A Case Report

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Background

Spontaneous coronary artery dissection (SCAD) is an important cause of acute coronary syndrome, predominantly affecting young and middle-aged women without traditional cardiovascular risk factors. Its variable angiographic presentation may lead to misdiagnosis and inappropriate coronary intervention, which may extend the dissection or intramural hematoma, resulting in iatrogenic vessel injury. In clinically stable patients, conservative management is often preferred, yet decisions frequently have to be made under unfavourable conditions.

Case Report

A 51-year-old woman was admitted with acute onset of typical ischemic chest pain. Electrocardiography revealed evolving anterior ST-segment elevation with concomitant positive high-sensitivity troponin levels. Bedside echocardiography showed anterior and apical regional wall-motion abnormalities with preserved left ventricular systolic function (LVEF~55%). Emergency coronary angiography demonstrated proximal left anterior descending artery narrowing with features suggestive of intramural hematoma or SCAD, with no significant lesions in other vessels. Despite STEMI presentation, the patient remained clinically stable with no signs of impaired global LV function, therefore, conservative management was chosen instead of immediate drug-eluting stent (DES) implantation. Repeat coronary angiography with optical coherence tomography (OCT) the following day confirmed SCAD-related pathology with residual lumen reduction of approximately 60% and inflammatory features, validating the initial non-invasive treatment decision. Cardiac magnetic resonance demonstrated myocardial oedema and subendocardial late gadolinium enhancement consistent with acute ischaemic injury. Accordingly, conservative management, cardiac rehabilitation and further evaluation for systemic vasculopathy was pursued. During long-term follow-up, serial coronary CT angiography showed no residual significant stenosis in the LAD and no features of progressive coronary disease. No recurrent acute coronary syndrome episodes were observed, supporting spontaneous vessel healing after conservative SCAD management.

Conclusions

In hemodynamically stable patients with suspected SCAD and preserved distal coronary flow, immediate PCI should be avoided unless clearly indicated. This case illustrates how an initial conservative approach, supported by next-day OCT and multimodality imaging, may prevent potentially harmful intervention and promote proper vessel healing.

Sudden Hearing Loss Due to Syphilis in a Patient with False-Positive Lyme Serology

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Background

Syphilis is a sexually transmitted disease with potentially irreversible consequences when untreated. In 2022, 2,032 cases of newly diagnosed syphilis were reported in Poland, mainly in men below 40 years of age. One manifestation of syphilis is inner ear damage, with or without signs of neuroinflammation in the CSF or MRI, which may present as sudden hearing loss. Whether Borrelia burgdorferi sensu lato can cause a similar clinical picture is controversial. False-positive serological test results for Lyme disease may occur in syphilis, leading to diagnostic confusion and delay, as well as loss of opportunity for partner tracking and HIV/STI prevention.

Case Report

A 41-year-old man was admitted to the emergency department with bilateral tinnitus, hearing loss, and sound distortion. Audiometry confirmed bilateral high-frequency sensorineural hearing loss. Oral prednisone and hyperbaric oxygen therapy were administered without improvement. Serological tests for Lyme disease showed positive anti-B. burgdorferi IgM on ELISA and Western blot, with negative IgG. The patient received doxycycline 100 mg twice daily for 14 days. Due to lack of improvement, he was admitted to an infectious diseases unit. Physical examination revealed a moth-eaten pattern of alopecia. Syphilis serology was positive (VDRL 1/1024, FTA 1/4000). As previous screening within the past year had been negative, early syphilis was diagnosed. Repeat Lyme serology in another laboratory showed equivocal IgM ELISA, positive IgG ELISA, and negative IgM and IgG Western blots. Lumbar puncture showed no signs of neuroinflammation and negative syphilis serology in CSF. Contrast-enhanced MRI revealed no abnormalities of the VII and VIII cranial nerves or elsewhere in the cranium. The patient was treated with intravenous benzylpenicillin for 14 days, resulting in marked improvement over the following 3 months.

Conclusions

Care should be taken not to confuse syphilis with Lyme disease, given the propensity of the former to cause false-positive serology of the latter. Syphilis should be considered in all patients with sudden hearing loss.

When the Monitor Lies: Unmasking the EMG Trap in the Race for a Liver Transplant

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Background

Acute-on-chronic liver failure involves severe neurological impairment, mainly hepatic encephalopathy (HE). Differentiating deep HE from non-convulsive status epilepticus (NCSE) is a diagnostic challenge in the intensive care unit (ICU). While limited-lead frontal electroencephalography (EEG) provides rapid assessment, it is highly susceptible to electromyographic (EMG) artifacts. Misinterpreting these as seizures may lead to inappropriate treatment and perceived futility, potentially disqualifying patients from liver transplantation (LTx).

Case Report

A 60-year-old female with alcoholic liver cirrhosis was hospitalized for LTx qualification after a 6g paracetamol overdose. Initially stable, she rapidly deteriorated neurologically (GCS 3) after ICU admission. Laboratory tests revealed hyperammonemia (350 µmol/L) and recurrent hypoglycemia. Anti-encephalopathic therapy was initiated, including lactulose, rifaximin, and L-ornithine L-aspartate, which reduced ammonia to 150 µmol/L. Despite metabolic improvement, the patient's neurological state remained disproportionately poor. To rule out intracranial hemorrhage and cerebral edema, neuroimaging was performed. Given the lack of structural brain changes, the history of alcohol abuse and the unexplained depth of the coma, NCSE was suspected. Due to the lack of access to full-montage EEG, 4-lead frontal EEG monitoring (SedLine) was implemented. The recording showed high-amplitude activity suggestive of a seizure-like pattern. Diazepam induced immediate trace suppression, reinforcing NCSE suspicion. To differentiate brain activity from frontal muscle interference, a neuromuscular blockade (NMB) test was performed. Following the NMB administration, the EEG trace quieted identically to the diazepam effect, confirming that the "seizures" were an EMG artifact. Antiepileptic drugs were withheld and anti-encephalopathic therapy was continued. The patient regained consciousness (GCS 15) the following day.

Conclusions

Limited-lead frontal EEG is susceptible to EMG artifacts mimicking NCSE, risking diagnostic misinterpretation. Post-benzodiazepine suppression is not pathognomonic for NCSE in frontal leads, as it may solely reflect the drug's muscle-relaxant properties. Accurate differentiation is crucial during LTx qualification to avoid an erroneous label of treatment futility and unjust patient disqualification. In the absence of full-montage EEG, the NMB test remains a useful bedside tool to unmask EMG artifacts, ensuring appropriate therapy.

Dentistry & Maxillofacial Surgery Session

Session Coordinators:
Sonia Renchen
Zuzanna Wolińska

Honorary patronage

Bruxism in the Awareness of Dental Patients

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Introduction

Bruxism is a repetitive jaw-muscle activity characterized by clenching or grinding of the teeth and/or by bracing or thrusting of the mandible. It can lead to the development of functional disorders of the masticatory system, the symptoms of which include: tenderness of the masticatory muscles, changes in the temporomandibular joints, pathological tooth wear and headaches in the temporal region. Patients are often unaware that they suffer from bruxism and only seek help from a dentist when visible and/or noticeable symptoms appear that interfere with their daily functioning.

Aim of the study

To assess dental patients' awareness of bruxism.

Materials and methods

A total of 339 patients (F=220; M=119) aged 16-45 (23.56 +/- 6.70) from all dental clinics of the University Center for Dentistry and Specialist Medicine in Poznań (patients from the Temporomandibular Disorders Clinic were excluded from the study). The subjects were divided into two age groups: 16-25 years (264 people) and 26-45 years (75 people). In each case, demographic data (age, gender, level of education, place of residence) were collected and a questionnaire containing 13 questions on general knowledge about bruxism was conducted; possible answers to the questionnaire questions: yes/no.

Results

Only 20.65% (n=70) of respondents had ever heard about bruxism from a dentist (residents of large cities) ($p<0.0001$), and only 15.34% (n=52) had their chewing muscle tension and the presence of acoustic symptoms in the temporomandibular joints assessed by a dentist during a routine dental examination ($p<0.00001$). 226 respondents (66.67%) believed that they knew what bruxism was (mainly respondents with higher education - 80.65%), only 61 of them, more often men ($p=0.0026$), regardless of place of residence, education or age ($p>0.05$), correctly indicated that bruxism is not a disease ($p=0.0002$). One quarter of respondents (25.55%; n=90) indicated that the tongue should be between the teeth during swallowing; 34.51% (n=117) were unaware of the existence of a resting gap between the dental arches. Acoustic symptoms in the temporomandibular joints were assessed as physiological by 89 respondents (26.25%).

Conclusions

1. Patients' health awareness of bruxism is still insufficient. 2. There should be more education for patients in dental offices regarding the causes, symptoms, and prevention of bruxism. 3. There is a need to introduce routine examination of the masticatory system into basic dental examinations in order to detect temporomandibular disorders quicker.

Calculating Face and Smile Attractiveness: Evaluation of Algorithmic Bias in AI Image Generation Models

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Introduction

Artificial intelligence (AI) systems often reproduce patterns inherent in their training data. AI-generated facial images are increasingly utilized in marketing and medical communications, shaping perceptions of attractiveness and expectations for aesthetic treatments. DALL·E 3, integrated with ChatGPT, represents one of the most widely used image generation models.

Aim of the study

This study evaluated potential algorithmic bias through aesthetic analysis of en face and profile facial images generated by AI.

Materials and methods

Images of male and female subjects were generated using DALL·E 3 via ChatGPT in response to prompts specifying varying levels of attractiveness. Each subgroup comprised 25 individuals, yielding 100 AI-generated faces total. Analysis encompassed skeletal patterns, facial proportions, vertical and transverse dimensions, profile characteristics, and macroesthetic parameters, measured via anthropometric landmarks. Intergroup differences were assessed using statistical analysis.

Results

Four groups were analyzed: attractive women (n=25), unattractive women (n=25), attractive men (n=25), and unattractive men (n=25). All generated faces without only of Caucasian individuals, without racial diversity, with a consistent tendency toward convex profiles. According to AI, age was the differentiating factor in the degree of attractiveness. Mean assessed age of generated faces differed significantly - attractive women (26.8±2.5 years) and men (31.8±2.2 years) than unattractive women (54.1±4.8 years) and men (50.3±5.6 years). Significant differences emerged in frontal, vertical, transverse, and profile parameters ($p<0.05$) but notably as "unattractive" were generated faces mostly with minor irregularities such as gingival smile, spacing, crowding, missing teeth and caries, not significant skeletal discrepancies. Additionally the statistically significant differences were shown in soft tissues angles - AI-designated attractive faces more closely approximated balanced face proportions.

Conclusions

AI-generated images exhibit measurable esthetic bias and do not present racial diversity. Faces labeled as "attractive" present younger people with normative craniofacial proportions, enhanced symmetry, and fewer dental irregularities, while "unattractive" prompts yield older-appearing faces with slight deviations from esthetic norms. These findings indicate that AI systems may perpetuate age-related and morphologic stereotypes in facial representation.

Comparison of the Accuracy of Extraoral Scans Obtained Using a Professional Face Scanner and a Widely Available Smartphone Application

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Introduction

Facial scanning plays an increasingly important role in diagnostics and orthognathic treatment planning, also enabling the assessment of the impact of dental procedures on soft tissues. Currently, the potential of using 3D scans in the design of extraoral appliances and epitheses is also being highlighted. However, due to the limited availability of facial scanners, the use of mobile alternatives is considered. Given the lack of objective comparative data, it is crucial to verify whether smartphone-based sensors provide sufficient precision for potential clinical use.

Aim of the study

This study compared the accuracy of facial geometry mapping using the EM3D mobile application (TrueDepth IR technology) against the professional Meti Smile 3D scanner, evaluating the clinical viability of low-cost 3D systems relative to professional dental equipment.

Materials and methods

Thirty-two scans were analyzed—16 obtained using the Meti Smile 3D scanner and 16 from the mobile application EM3D. The scans were superimposed in Blender 5.0 using the reference points, sagittal and Camper planes. In CloudCompare, geometric deviations were examined using the Cloud-to-Cloud (C2C) method, quantifying standard deviation, mean deviation, and root mean square error (RMS).

Results

Overlay of 16 scan pairs showed an average deviation of 1.79 mm obtained for the mobile application, with an average RMS error of 3.66 mm. The largest discrepancies were obtained in areas with complex structures positioned laterally, such as hair and auricles. Deviation distribution was approximately normal but exhibited a positive skew, suggesting systematic volume overestimation by the mobile application and decreased measurement stability in regions of complex morphology.

Conclusions

The observed geometric deviations limit the clinical utility of mobile scanning for precision applications. The EM3D application remains valuable for initial diagnostics, patient visualization, and teaching, but its inaccuracies—particularly in lateral facial regions—represent a major constraint for epithesis design and surgical treatment planning.

Dental Attendance in Adults with Intellectual Disabilities: Associations with Caregivers' Factors, and Comparison with the General Population

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Introduction

Adults with intellectual disabilities often rely on caregivers to arrange dental appointments, which are important for preventive oral healthcare. Caregiver dental attendance, sociodemographic factors may influence visiting patterns of care recipients, potentially reflecting caregivers' oral health knowledge and attitudes.

Aim of the study

1) To investigate the association between dental visit frequency in adults with intellectual disabilities and their caregivers' dental attendance, sociodemographic factors; 2) To compare dental attendance between adults with intellectual disabilities and the general population.

Materials and methods

This cross-sectional study was conducted in 2023–2025 following approval from the Bioethics Committee (No. 2019/10-1162-652) and written informed consent from caregivers. Adults with intellectual disabilities treated under general anesthesia at Vilnius University Hospital Santaros Klinikos, Žalgiris Clinic were included. Using the MatchIt in R (v4.2.3), a comparison group from the Lithuanian National Oral Health Study was matched by sex and nearest age. Data of dental visit frequency (patient and caregiver) (≤1 year, 1–5 years, and ≥5 years/never) and sociodemographic data were collected using the validated WHO Oral Health Questionnaire for Adults (2013) in Lithuanian. Statistical analysis was performed using IBM SPSS 26.0 (chi-square, Kruskal-Wallis tests, and Spearman correlation). $p<0,05$ was considered significant.

Results

The study included 60 adults with intellectual disabilities (27 (45%) men, mean age 31.2±7.9 years). Caregivers' dental attendance (≤1 year: 37 (61.7%); 1–5 years: 19 (31.7%); ≥5 years/never: 4 (6.7%)) was positively associated with visit frequency of their care recipients ($\rho=0.37$, $p=0.003$). Among adults with intellectual disabilities, 14 (23.3%) attended dental services within ≤1 year, 27 (45.0%) within 1–5 years, and 19 (31.7%) ≥5 years ago or never. In the general population, the corresponding numbers were 45 (75.0%), 13 (21.7%), and 2 (3.3%) respectively, and differed significantly compared to those with intellectual disability, $p<0.001$.

Conclusions

Dental attendance of adults with intellectual disabilities was positively associated with caregivers' dental visit frequency. This group attended dental services significantly less frequently than the general population. These findings suggest a need to improve access to dental care for adults with intellectual disabilities and to strengthen caregiver support to promote preventive dental attendance.

Evaluation of Knowledge Regarding Pericoronitis Treatment Among Practising Dentists and Dentistry Students: A Pilot Study

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Introduction

Pericoronitis is an inflammatory condition affecting gingiva overlying a partially erupted tooth, commonly a mandibular third molar. Treatment approaches vary among clinicians, and no evidence-based standard of care exists.

Aim of the study

To evaluate pericoronitis management and antibiotic prescribing choices among dentists and dentistry students and to analyze associations with educational and professional factors.

Materials and methods

Ethical approval was obtained from the Ethics Committee for Scientific Research of the Faculty of Medicine, Vilnius University (Protocol No.(1.7E)150000-KT-620). A voluntary cross-sectional questionnaire-based study was conducted among dentists and dentistry students (years III-V) reached through 'Facebook' groups. The questionnaire included demographic questions and a clinical scenario of acute pericoronitis with a panoramic radiograph. Participants were asked how they would manage the case and whether, and which, antibiotics they would prescribe. Data was statistically analyzed using IBM SPSS Statistics version 26.0.0. Shapiro-Wilk, Mann-Whitney U, Kruskal-Wallis H, Chi-Square, and Spearman's correlation tests were chosen. $P<0.05$ was considered statistically significant.

Results

A total of 39 dentists and 39 dentistry students participated. Dentists had a mean professional experience of 9.6±9.9 years, which was significantly associated with higher self-rated knowledge of antibiotic prescribing ($p<0.001$). Their self-rated knowledge score (3.8±0.7) was significantly higher comparing to dentistry students (3.0±0.7), $p<0.001$. The most common management strategy was prescribing antibiotics for the acute phase followed by delayed tooth extraction (34.2% of dentists and 53.8% of students). Immediate extraction with antibiotic prescription was chosen by 15.8% of dentists and 28.2% of students. No significant associations were found between educational or professional factors and treatment choices.

Conclusions

Despite differences in self-rated knowledge, treatment decisions for acute pericoronitis were highly variable and not influenced by educational or professional factors. This lack of consistency highlights the need for an evidence-based standard of care for pericoronitis.

Effect of semaglutide (Ozempic) Therapy on Oral Health: A Clinical Observation

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Introduction

Semaglutide (Ozempic/Wegovy), a glucagon-like peptide-1 (GLP-1) receptor agonist, is increasingly prescribed for type 2 diabetes mellitus and obesity. Alongside its metabolic benefits, emerging clinical observations suggest notable indirect effects on oral health that warrant systematic evaluation.

Aim of the study

This study aimed to clinically investigate oral and dental findings in patients receiving semaglutide therapy and to identify potential implications for preventive dental care.

Materials and methods

A prospective observational clinical assessment was conducted on patients undergoing semaglutide therapy who attended routine dental visits over a defined observation period. Participants underwent comprehensive oral examinations, including visual-tactile caries assessment, periodontal evaluation (gingival inflammation and bleeding on probing), evaluation of enamel integrity and dental wear patterns, and inspection of existing restorations and implant sites. Salivary status was assessed through clinical signs of xerostomia and, taste alterations recorded as patient-reported symptoms, while dietary changes, nausea, vomiting, and weight loss were documented through structured questionnaires. Clinical findings were descriptively analyzed and interpreted in conjunction with current scientific literature.

Results

A consistent pattern of reduced salivary flow and subjective xerostomia was observed among semaglutide users. These findings correlated clinically with increased plaque accumulation, early enamel demineralization, cervical and root caries, and mild to moderate gingival inflammation. Patients experiencing rapid weight loss showed signs suggestive of altered alveolar bone response, increased dental wear, marginal deterioration of restorations, and early peri-implant soft tissue inflammation. No evidence of direct drug-induced damage to dental hard tissues was detected.

Conclusions

Enhanced clinical observation indicates that semaglutide therapy may indirectly compromise oral health through changes in salivary function, nutrition, and metabolic balance. Proactive dental screening, intensified preventive protocols, and interdisciplinary collaboration are essential to minimize oral complications and optimize oral health outcomes in patients receiving semaglutide therapy.

Evaluating the Color Stability of 3D-Printing Resins Against Various Dietary Colorants - an In Vitro Study

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Introduction

With the growing integration of 3D-printed restorations into routine clinical practice, the aesthetic properties of these materials, particularly their color stability, have become increasingly important. Discoloration of restorative materials compromises aesthetic outcomes, frequently leading to patient dissatisfaction and additional costs associated with replacement. Recent evidence indicates that extrinsic, rather than intrinsic, discoloration plays a predominant role in compromising the color stability of composite resins. This highlights the need for continued investigation into the stain resistance of novel resin-based materials, including those developed specifically for 3D-printing applications.

Aim of the study

The aim of this study was to evaluate the effect of commonly consumed staining beverages on the color stability of two 3D-printing resins recommended for aesthetic restorations: Saremco Crowntec and Bego VarseoSmile Crown Plus.

Materials and methods

Twenty-five cone-shaped samples were printed from each material and randomly assigned to five groups: red wine, coffee, tea, orange juice, and distilled water (control) (5 samples per solution per resin). Specimens were continuously immersed, and color measurements were performed at 3, 6, 9, and 12 days using a colorimeter in the CIELAB color space. Color changes (ΔE) were calculated relative to baseline values. Statistical analysis was performed using two-way repeated-measures ANOVA followed by Dunnett's multiple comparisons test (conducted in GraphPad Prism 10).

Results

ΔE values increased significantly with time of exposure in all staining solutions for both resins ($p < 0.05$). Coffee and red wine produced the greatest discoloration, whereas orange juice resulted in the lowest color changes for both materials. A significant difference between the resins was found in the coffee group ($p = 0.0177$), with Saremco Crowntec exhibiting a higher overall mean ΔE compared to Bego VarseoSmile Crown Plus (7.830 vs. 5.646). Additionally, a significant difference in the pattern of discoloration over time between the materials was identified in the tea group ($p = 0.0007$).

Conclusions

Exposure to commonly consumed staining beverages results in progressive discoloration of 3D-printed resin materials. Coffee and red wine exhibit the highest staining potential. Differences in overall color change as well as staining patterns between materials are solution-dependent.

Knowledge of Dental Implants Among Patients in the Polish Public Healthcare System: a Cross-Sectional Survey

Authors

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Introduction

Dental implantology is a fundamental element of modern dentistry, offering reliable functional and aesthetic solutions for tooth replacement. Implants, typically made of titanium or zirconium, provide advantages over conventional prosthetic options, including preservation of bone structure and improved oral function. Despite their proven effectiveness and global acceptance, implant treatment remains underutilized in Poland. Many patients remain unaware of implant longevity, maintenance requirements, and treatment possibilities, particularly within the public healthcare system

Aim of the study

This study aimed to evaluate knowledge and awareness of dental implants among Polish patients in the public healthcare system.

Materials and methods

A cross-sectional questionnaire-based study was conducted among 300 adult patients attending public dental clinics in Poznań, Poland, between 7 and 28 November 2024. An anonymous 15-item questionnaire was used, including two demographic questions and thirteen knowledge-based questions assessing awareness, implant care, procedural knowledge, contraindications, and patient perceptions. Knowledge scores ranged from 0 to 13 points. Statistical analysis was performed using chi-square, Fisher's exact, Mann–Whitney U and Kruskal–Wallis tests.

Results

Overall awareness of dental implants was high. However, lost understanding was observed in detailed clinical knowledge. Gender did not significantly affect overall knowledge, except for motivation, as males more frequently identified convenience as a reason for implant treatment. Age was a significant determinant of knowledge level. Participants aged 41–55 years achieved the highest scores, while the youngest group (18–25 years) demonstrated the lowest understanding of implant longevity, maintenance, contraindications, and post-operative recommendations. Significant age-related differences were observed across several knowledge domains ($p < 0.05$).

Conclusions

Dental implant knowledge among Polish public-sector patients is influenced primarily by age rather than gender. Middle-aged patients demonstrate the highest awareness, whereas younger patients show substantial knowledge gaps. These findings highlight the need for targeted educational strategies within public dental services to improve patient understanding and support informed decision-making regarding implant-based rehabilitation.

Oral Lichen Planus – Clinical Morphology of the Lesions Correlated with the Evaluation of the Patient's Reported Symptoms at the Time of Presentation

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Introduction

Lichen planus is a chronic, non-infectious disease that mainly affects the skin. Less frequently, it also involves the mucous membranes. The form limited exclusively to the oral mucosa (oral lichen planus, OLP) is the least common. Symptoms of OLP most often develop between 30 and 65 years of age and occur slightly more frequently in women than in men. The etiology of the disease remains unknown. The symptoms arise as a result of an immune reaction against an unknown antigen located in the epithelial basement membrane.

Aim of the study

To evaluate the correlation between the clinical presentation and location of OLP lesions and the severity of symptoms reported by patients using the VAS scale.

Materials and methods

Clinical and questionnaire-based analysis of a group of 117 patients. Pain complaints at the time of presentation were assessed using a 10-point Visual Analogue Scale (VAS), and the location of lesions diagnosed as oral lichen planus was recorded.

Results

The mean patient score was 3 on the 10-point VAS scale. The range of reported symptoms varied from 2 to 10. The highest severity of complaints most frequently involved the cheeks and tongue and was associated with pain and burning sensations.

Conclusions

Pain symptoms reported by patients diagnosed with oral lichen planus may lead to significant difficulties in daily functioning and deterioration of overall well-being.

Retrospective Analysis of the Incidence of PurulentComplications Following Extraction of Third Molars Requiring Hospitalization Before and After the Introduction of Polish Antibiotic Prophylaxis Guidelines in January 2019

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Introduction

Surgical extraction of third molars is a common procedure in oral surgery, yet it may lead to postoperative complications, including purulent infections in the extraction site. In 2019, national unified guidelines limiting the use of antibiotic prophylaxis in dentistry were introduced. Their impact on the incidence of infectious complications following third molar removal remains an important clinical issue.

Aim of the study

The aim of this study was to assess whether the introduction of national guidelines on antibiotic prophylaxis influenced the frequency of purulent complications after surgical extraction of third molars by comparing patients treated before and after the publication of the guidelines.

Materials and methods

The study included patients admitted between 2012 and 2024 with purulent complications following surgical removal of third molars. Two groups were distinguished: Group A comprised patients treated before January 30, 2019, and Group B included those treated after that date. The groups were compared in terms of sex and age using the Mann–Whitney U test to evaluate baseline characteristics. The prevalence of systemic diseases associated with impaired immunity was analyzed with the chi-square test. Time from extraction to onset of complications was assessed using Kaplan–Meier survival analysis and the log-rank test. The frequency of purulent complications, length of hospital stay, and month of admission were also evaluated.

Results

Out of 17,110 patients hospitalized during the study period, 203 (82 men and 121 women) developed purulent complications after third molar surgery. 72 cases occurred before, and 131 after, implementation of the guidelines. The total number of treated patients was 7,001 before and 10,109 after January 30, 2019. Statistical analysis showed no significant difference in the incidence of purulent complications between the two periods (chi-square test, $p = 0.08688$). No significant differences were observed in complication-free time (log-rank test, $p = 0.59975$) or in baseline health status between the groups.

Conclusions

The introduction of national recommendations restricting antibiotic prophylaxis in dentistry did not significantly change the rate of purulent complications after third molar extraction. Reduced prophylactic antibiotic use did not negatively affect clinical outcomes and supported more rational antibiotic prescribing, potentially limiting the development of antimicrobial resistance.

Emergency Case Report Poster Session

Session Coordinators:
Julia Szopa
Kamila Kiliańska

Acute Aortic Thrombosis and Multi-Organ Embolization Secondary to Hereditary Thrombophilia. A Case Report

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Background

Aortic mural thrombus (AMT) in a non-aneurysmal, non-atherosclerotic aorta is a rare condition often linked to hereditary or acquired hypercoagulable states. Unlike thrombi associated with vascular degeneration, “floating” AMT carries a high risk of systemic embolization, potentially causing stroke, mesenteric ischemia, or renal infarction. Although the high-flow aortic environment usually prevents clot formation, genetic factors such as MTHFR mutations and elevated Factor VIII can shift hemostasis toward thrombosis. Management remains challenging, requiring careful selection between surgical removal and intensive anticoagulation.

Case Report

A 48-year-old woman presented with a three-day history of severe, progressive epigastric and left-sided abdominal pain unresponsive to analgesics. Her history included recurrent thromboembolic events: two ischemic strokes, pulmonary embolism, deep vein thrombosis, and prior percutaneous closure of a patent foramen ovale. On admission, she was hypertensive (176/108 mmHg) and exhibited marked left upper quadrant tenderness. Laboratory studies revealed leukocytosis and elevated CRP (31.2 mg/L). CT angiography showed a multisegmental 0.4 cm “floating” thrombus in the descending thoracic aorta with distal extension, causing acute occlusion of the distal superior mesenteric artery and resulting intestinal ischemia. Additional findings included left renal infarction and intracardiac thrombi in the left ventricle (~2.1 cm) and left atrium. Due to extreme embolic risk, surgery was deferred and conservative management was chosen. Genetic analysis later confirmed a homozygous MTHFR A1298C mutation and significantly elevated Factor VIII activity. With aggressive anticoagulation (initial IV heparin followed by apixaban), the patient stabilized and symptoms resolved. She was discharged on lifelong antithrombotic therapy.

Conclusions

This case highlights the need to consider underlying thrombophilia in patients with multi-organ arterial embolization. It demonstrates that even large, high-risk “floating” aortic thrombi may be successfully managed nonsurgically through intensive anticoagulation and multidisciplinary evaluation. The findings also support incorporating genetic testing—particularly for MTHFR mutations and Factor VIII elevation—into the long-term management strategy of patients with recurrent thrombotic events.

Iatrogenic Lithium Intoxication and Prolonged Psychiatric Decompensation Following Sequential ARB and ACEI Introduction

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Background

Lithium provides successful treatment for bipolar disorder (BD), while its renal excretion is highly dependent on the renin-angiotensin-aldosterone system. Medications such as Angiotensin Converting Enzyme Inhibitors (ACEI) and Angiotensin II Receptor Blockers (ARB), are known to decrease renal lithium clearance, increasing toxicity risk. This case reports consequences of introducing both drug classes during acute hypertensive management of a stable psychiatric patient.

Case Report

A 67-year-old male with BD, in remission for 18 years, presented to an Emergency Department in a general hospital on May 7, 2025, with a hypertensive crisis (BP 222/167 mmHg). At admission, his maintenance therapy included lithium carbonate, quetiapine, and bisoprolol. At the ED he was administered an ARB (telmisartan), amlodipine, furosemide and magnesium. He was subsequently prescribed a combined ACEI and diuretic (perindopril+indapamide) for home use. Over the following three weeks, the patient developed progressive neurotoxicity, including psychomotor retardation, disorientation, rigidity, urinary incontinence and hypotonia (BP 86/52 mmHg). He was admitted to a general ward at a psychiatric hospital on May 29, 2025. Laboratory analysis revealed a toxic lithium level of 2.11 mEq/l (rapidly rising from 1.34 mEq/l on 16th May), elevated TSH of 4,34 uIU/ml and Acute Kidney Injury with creatinine rising to 1.64 mg/dl. Following discontinuation of lithium and ACEI, as well as fluid administration, lithium levels normalized to 0.62–0.95 mEq/l. However, the event triggered a brief hypomania, managed with olanzapine and valproate, followed by a severe depressive episode refractory to both high-dose valproate and fluoxetine. Progressive cognitive impairment led to a near-catatonic state, which improved only after a 20-day lorazepam treatment. The patient required nearly four months of psychiatric hospitalization until discharge on Sep 11, 2025.

Conclusions

This case underscores that ARBs and ACEIs may impair renal drug excretion, leading to life-threatening toxicity. While ED requires swift decisions, severe drug-drug interactions should always be considered, especially in prolonged-use prescribing. A clinical pharmacist could be of help in similar cases. Other antihypertensives, e.g. calcium channel blockers, would be safer for similar patients. Furthermore, the patient's prolonged recovery shows that biochemical resolution of lithium levels does not equate to clinical or psychiatric recovery.

Renal Infarction in a Professional Athlete - a Rare Case of a 38-Year-Old Patient

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Background

Renal infarction is a rare but clinically significant acute renal ischemia, most commonly associated with embolic or thrombotic mechanisms such as cardiogenic embolization, hypercoagulable states, and renal arterial injury. It is typically diagnosed in patients with cardiovascular disease or other risk factors for thrombosis, while in a middle-aged individual without comorbidities this diagnosis is considered atypical.

Case Report

A 38 year old male, a professional athlete, presented to the emergency department with severe left iliac region pain and febrile fever. He denied a history of cardiovascular comorbidities or other chronic diseases. On examination, there were no signs of hemodynamic instability, but arterial blood pressure was recorded up to 174/104 mmHg; the electrocardiogram showed sinus rhythm. Laboratory tests revealed leukocytosis (WBC 13.22×10/L) and elevated C-reactive protein (CRP 27.8 mg/L), with renal function within normal limits (creatinine 93 µmol/L). Urinalysis showed no pathological findings, and urine culture yielded no bacterial growth. Abdominal and pelvic CT without and with intravenous contrast demonstrated kidneys of normal size and normal parenchymal thickness; a wide hypodense area was identified in the dorsal parenchyma of the mid and lower thirds of the left kidney, with mild infiltration of the perirenal fat. The left common iliac vein was asymmetrically slightly wider, and a free fluid layer of approximately 0.9 cm was noted in the pelvis. Based on the clinical data, laboratory findings, and contrast-enhanced CT findings, localized renal infarction was confirmed. Inpatient treatment included infusion therapy (0.9% NaCl), analgesia with ketoprofen, prophylactic low molecular weight heparin (Fraxiparine 0.2 mL once daily), and empiric antibacterial therapy with ciprofloxacin 500 mg twice daily, administered in the presence of leukocytosis and elevated CRP. During treatment, inflammatory activity decreased (CRP 20.3 mg/L) and renal function remained stable (creatinine 92 µmol/L).

Conclusions

This case highlights that renal infarction may occur in a middle-aged patient without cardiovascular comorbidities, with stable renal function and no pathological findings on urinalysis. Contrast enhanced CT was decisive, as it confirmed the diagnosis of renal infarction. Further management should focus on determining the etiology and implementing individualized secondary prevention to reduce the risk of recurrence and long term renal damage.

Varicella Zoster Virus Encephalitis Presenting as Severe Headache Mimicking Acute Cerebrovascular Event. A Case Report

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Background

Acute, severe headache in the absence of focal neurological deficits presents a broad differential diagnostic challenge, including acute cerebrovascular events, infectious diseases of the central nervous system and sinusitis. While cerebrovascular pathology must be excluded, infectious causes should also be considered. Importantly, VZV encephalitis may present with nonspecific symptoms and minimal radiological changes, making early diagnosis challenging. This case report describes an atypical presentation of VZV encephalitis and emphasizes the diagnostic value of cerebrospinal fluid analysis when imaging and laboratory tests do not explain persistent symptoms.

Case Report

A 40 year old patient was admitted with a five day history of progressively worsening, severe bilateral headache refractory to multiple analgesics. The headache was described as stabbing, reaching 9 out of 10 in intensity. Moreover it was not associated with aura, fever or focal neurological symptoms. As well as that, neurological examination was normal, with preserved consciousness, orientation and no meningeal signs. Besides that, initial laboratory tests showed no significant inflammatory response. Brain CT and CT angiography revealed no signs of acute ischemia, hemorrhage or arterial pathology. Nevertheless, due to persistent symptoms, lumbar puncture was performed. Cerebrospinal fluid analysis demonstrated marked pleocystosis, elevated protein and increased lactate, consistent with viral encephalitis. On physical examination, a vesicular rash, following a dermatomal distribution on the chest was noted. It was suggestive for herpes zoster infection. The overall clinical, laboratory and dermatological findings supported the diagnosis of VZV encephalitis. In addition, the patient was referred for further inpatient management under infectious disease specialists.

Conclusions

This case highlights that VZV infection may present primarily as a severe headache without focal neurological deficits or acute abnormalities on neuroimaging. Even subtle or localized cutaneous manifestations in conjunction with inflammatory CSF findings, can provide critical diagnostic clues. This case also underscores the importance of considering viral encephalitis in the differential diagnosis of patients admitted with suspected acute stroke.

Endocrinology, Diabetes & Dermatology Session

Session Coordinators:
Maria Szmigielska
Arkadiusz Piechowiak

Does the Absence of Symptoms Mean the Absence of a Problem? Diabetic Peripheral Neuropathy in Individuals with Diabetes Mellitus

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Introduction

Diabetic peripheral neuropathy (DPN) is a common complication of Diabetes Mellitus (DM) and may increase the risk of injuries and the development of diabetic foot syndrome. However, many people with DM do not report clear subjective symptoms despite abnormalities detected during physical examination. The Michigan Neuropathy Screening Instrument (MNSI) is a simple screening tool combining patient-reported symptoms with a foot examination.

Aim of the study

To evaluate the frequency of DPN detected using the MNSI in individuals with DM.

Materials and methods

Two hunded and fifty people with DM inhabiting Silesia Region were enrolled into the study. Assessment was performed using the MNSI, consisting of a questionnaire addressing subjective symptoms and a physical examination of the feet. An abnormal result was defined as a score of ≥4 points in the questionnaire part and ≥2 points in the physical examination part. Based on the results, patients were classified into groups with or without DPN

Results

Abnormal questionnaire MNSI scores were observed in 38 individuals (15.2%), while abnormalities detected during the physical examination were present in 88 people (35%). Criteria for abnormal results in both parts of the MNSI were met in 27 cases (10.8%). A substantial proportion of patients with abnormal clinical findings did not report subjective symptoms in the questionnaire

Conclusions

DPN is common in people with DM and may occur despite the absence of self-reported symptoms. Use of the MNSI enables identification of people requiring increased clinical attention, including early stages of DPN. Regular assessment of sensory function may play an important role in the prevention of diabetic foot complications.

Diagnostic Value of Biopsy with Parathormone Washout Measurement in the Preoperative Localization of Parathyroid Adenomas in Primary Hyperparathyroidism

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Introduction

Primary hyperparathyroidism (PHPT) is one of the most common endocrine disorders in adult population. In about 85% cases, the cause is parathyroid adenoma, less frequently, it results from multiglandular hyperplasia, and only rarely from parathyroid carcinoma. As the surgery is the only curative treatment, it is essential to localize hyperfunctioning gland. The most common method is neck ultrasonography and 99mTcMIBI SPECT/CT. However, their diagnostic performance may be limited. In selected cases, fine-needle aspiration biopsy (FNAB) with PTH assay in needle washout may serve as an adjunctive tool to improve localization accuracy.

Aim of the study

The objective of this study was to assess the value of FNAB in improving preoperative localization of hyperfunctioning parathyroid glands in patients with PHPT.

Materials and methods

The retrospective study included 56 patients with confirmed PHPT who were hospitalized in the Department of Internal Medicine and Endocrinology at the Medical University of Warsaw in 2023-2024. All patients underwent ultrasonography and FNAB, and 49 of them underwent 99mTcMIBI SPECT/CT. Results of individual diagnostic modalities were summarized as categorical outcomes and compared using McNemar's test for paired data.

Results

When analyzed separately as single modalities, FNAB and SPECT/CT showed comparable diagnostic yields for lesion localization (53% vs. 59%, respectively). However, the two methods identified largely different subsets of patients. The combined diagnostic approach significantly improved localization rates compared with the single-modality approach (84% vs. 59%, $p<0.001$). Notably, in 24.5% of patients, FNAB enabled localization despite negative scintigraphy. In the surgically treated subgroup (n=14), preoperative localization was confirmed intraoperatively in 13 cases, supporting the clinical relevance of the combined diagnostic approach.

Conclusions

FNAB could add a significant amount of information about the localization of the parathyroid adenoma, and it would be a good addition to routine diagnostics, increasing the detection rate and enabling more precise, targeted surgery.

Effects of Radioiodine Therapy in Patients with Non-Toxic Goitre

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Introduction

Non-toxic goitre is one of the most common thyroid diseases, affecting women more frequently. Despite advances in medicine, there is still no consensus on the optimal treatment for non-toxic goitre. However, many randomized studies indicate the ineffectiveness of levothyroxine and describe radioiodine therapy as more effective in reducing and treating this condition.

Aim of the study

The aim of this study was to evaluate the effectiveness of radioiodine therapy in reducing thyroid volume in patients with non-toxic nodular goitre and assess the risk of hypothyroidism.

Materials and methods

During the last 7 years, exactly 150 patients were treated in our clinic. The patients were in the age range between 22 and 76. Most of them were woman (88%). Initial RAIU (Radioactive Iodine Uptake) after 24h was ranged between 22 and 44% while thyroid volume ranged between 44 and 170ml. All of the patients were qualified based on normal levels of fT3, fT4 and TSH, and the characteristic image of the thyroid on scans and ultrasound. 65 patients complained of compressive symptoms. Malignant thyroid lesions were excluded after fine-needle biopsy. Marinelli's formula was used to calculate the therapeutic radioactivity and it was ranged between 400 and 800 MBq. The absorbed dose (ranged between 180 and 300) was proportional to thyroid volume. Follow up control was carried out regularly every 12 weeks.

Results

After a year of radioiodine therapy, the average thyroid volume in all patients decreased by 46%, euthyroidism persists in 93% of patients and hypothyroidism develop in 7% of them. All patients were highly content, the exercise tolerance improved significantly and the compressive symptoms alleviated.

Conclusions

Radioiodine is safe and non-invasive method of therapy for reduction of goitre. Moreover, this method is highly effective and should be the treatment of choice for patients with non-toxic goitre.

Growth Hormone Therapy in Children Born Small for Gestational Age: Long-Term Effectiveness of Growth Promotion and Metabolic Safety

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Introduction

A child born small for gestational age (SGA) is defined by birth weight or length below -2 SDS, without hormonal deficiencies. As 10% of SGA children do not show spontaneous catch-up growth, recombinant human growth hormone (rhGH) therapy became an established treatment that allows this group to achieve the height of their peers. This treatment program has been active in our country since 2015.

Aim of the study

The objective of the study was to evaluate the final height in SGA patients who completed treatment in accordance with therapeutic program criteria, considering realisation of patients expectations and metabolic consequences of therapy.

Materials and methods

A retrospective analysis included 44 SGA patients who completed rhGH therapy according to criteria of the therapeutic program. The data were collected at the start, after one year and at treatment completion. Anthropometric measurements were performed by the same examiner. For each patient, height SDS and expected target height SDS values were calculated. The treatment effect was evaluated by comparison of baseline and final height SDS with expected values. Growth velocity, BMI changes and side effects were assessed: glucose tolerance and lipid profile. The Shapiro-Wilk test confirmed normal data distribution ($p = 0.050$); the data were described using mean values and SD.

Results

Initially the cohort consisted of 44 patients, of whom 22 were ineligible for the study design. Two patients (9.1%) terminated therapy prematurely, due to side effects, while 20 completed the full treatment (11 females and 9 males). The mean duration of rhGH therapy was 5 years. Mean height SDS improved significantly after treatment (-2.54 ± 0.43 vs -1.39 ± 0.79). A paired t-test demonstrated a statistically significant difference between pre- and post-treatment height SDS ($t(28) = -9.58$; $p < 0.001$). Every patient reduced height deficit; however, none achieved a positive final height SDS.

Conclusions

Our results show that while SGA patients respond to the treatment with improvement in growth, they do not achieve height comparable to the rest of the population. Additionally, in this group side effects could be more frequent than anticipated, potentially limiting treatment completion.

Line-Field Confocal Optical Coherence Tomography in the Evaluation of Diagnostically Challenging Non-Melanoma Skin Cancer: A Preliminary Study

Authors

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Introduction

Dermoscopy is the primary diagnostic tool for skin cancer screening, yet certain non-melanoma skin cancers (NMSC) remain diagnostically challenging. Recently, line-field confocal optical coherence tomography (LC-OCT) has emerged as a non-invasive technique for evaluating malignant skin lesions.

Aim of the study

This study aimed to evaluate the diagnostic accuracy of LC-OCT compared to dermoscopy in determining the types and subtypes of NMSC in diagnostically challenging lesions.

Materials and methods

A total of 100 lesions with unclear dermoscopic findings, referred for surgical excision between July 2025 and January 2026, were assessed with LC-OCT. For tumors with mixed morphology, each component was analyzed independently. Finally, the diagnostic accuracy of LC-OCT was compared with dermoscopy, using the histopathological result as the reference standard. Results with $p< 0.05$ were considered statistically significant.

Results

79 lesions were included in the final analysis. The mean age of the patients was 75 years, with a slight female predominance (52%). The most common locations were face (n = 41), followed by trunk (n = 27), limbs (n = 8), and scalp (n = 3). Histopathological analysis confirmed 65 cases of basal cell carcinoma (BCC), 8 cases of squamous cell carcinoma/Bowen's disease, 4 cases of actinic keratosis, and individual cases of cutaneous horn, hidradenoma, sebaceous carcinoma, and keratoacanthoma. The overall diagnostic accuracy for tumor types was significantly higher for LC-OCT than for dermoscopy (92% vs. 76%). LC-OCT showed superiority in identifying BCCs (98% vs. 82%) and its subtyping (86% vs. 53%). Detailed analysis of BCC subtypes revealed that LC-OCT achieved 89% accuracy for the superficial subtype (vs. 79% in dermoscopy) and 91% for the nodular subtype (vs. 50% in dermoscopy). All the abovementioned results were statistically significant. Notably, LC-OCT identified aggressive components (nodular, micronodular, or infiltrative) in 12 out of 13 lesions that were clinically and dermoscopically misclassified as purely superficial BCC.

Conclusions

LC-OCT significantly enhanced diagnostic accuracy for NMSC compared to dermoscopy for tumor types and subtypes in challenging cases. Importantly, LC-OCT demonstrated high accuracy in detecting aggressive BCC components located beneath the skin surface, which may remain undetected by dermoscopy. While histopathology remains the gold standard for NMSC diagnosis, LC-OCT serves as a valuable tool to complement clinical evaluation.

Studying Medicine or the Presence of Diabetes Mellitus in Your Environment - What Shapes Knowledge About the Disease?

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Introduction

Diabetes is a critical global health challenge that requires widespread awareness. Although medical students typically possess the necessary theoretical knowledge, they may lack a practical understanding of nutrition. However, personal experience with diabetes does not guarantee accurate knowledge due to common misconceptions. Therefore, the impact of formal medical education versus personal exposure on diabetes awareness remains unclear.

Aim of the study

The aim of this study was to assess the impact of medical education versus personal exposure on students' knowledge of diabetes mellitus.

Materials and methods

The study was conducted as an anonymous online survey of 306 Polish university students (aged 18–28). Data were collected over a three-month period from December 2024 to February 2025. The survey consisted of a sociodemographic section and a knowledge test covering the etiology, pathophysiology and management strategies of diabetes.

Results

The field of study proved to be the primary factor differentiating knowledge levels (p-value < 0.001, partial eta-squared = 0.29), with a significant advantage observed among medical students. The environmental factor (presence of a person with diabetes in the immediate environment) was not statistically significant for the total sample (p-value > 0.05). However, a significant interaction correlation was observed (p-value = 0.026), indicating that family history associated with a slight increase in knowledge solely within the non-medical group. Medical students demonstrated significantly higher knowledge regarding pathophysiology and insulin treatment (p-value < 0.001), whereas no statistically significant differences were found between the groups regarding the dietary question (p-value = 0.078).

Conclusions

Formal medical education is a stronger determinant of knowledge about diabetes than personal experience with the disease. Among individuals without professional training, exposure to diabetic patients does not automatically translate into factual medical knowledge. Although medical students have a solid theoretical foundation, gaps in practical dietary knowledge suggest the need for potential adjustments to the curriculum.

Hybrid Session

Session Coordinators:
Piotr Gronowski
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Assessment of Awareness and Personal Attitudes of Medical Students Toward Hormonal Contraception

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Introduction

Despite the annual increase in awareness among Ukrainian women regarding the possibilities of hormonal contraception (HC), the level of its practical use remains low. The main limiting factor is patients' fears about side effects and potential negative effects on reproductive health.

Aim of the study

To assess the level of knowledge and identify hormonal contraception misconceptions among medical students during their education.

Materials and methods

An anonymous survey was conducted using a Google Form containing 33 questions. 54 medical students participated in the study. After analyzing the initial results, participants attended a lecture delivered by the Department of Faculty Obstetrics and Gynecology of Bogomolets National Medical University and completed a repeat survey. Differences were considered statistically significant at $p < 0.05$.

Results

The initial survey revealed that half of the students – 28 (51.9%) – obtained information about HC from internet sources, while nearly one in six received information from friends or relatives – 10 (18.5%) – and from physicians – 9 (16.7%). 17 (31.5%) students considered themselves sufficiently informed about HC, and 19 (35.2%) respondents reported personal experience with HC use. The most commonly reported side effects included weight gain – 39 (72.2%), mood changes – 40 (74.1%), decreased libido – 33 (61.1%), and headaches – 33 (61.1%). Concerns were expressed regarding the need for breaks during HC use – 22 (40.7%), possible effects on personality – 13 (24.1%), and mental health – 15 (35.2%). Every fourth respondent claimed possible infertility from HC – 14 (25.9%), and every fifth believed that HC accumulates in the female body – (16.7%). These beliefs contributed to a negative attitude toward HC in 61.1% of respondents. After the lecture, 54 (100%) respondents demonstrated full awareness of contraceptive methods, whereas prior knowledge levels were 96.1% for combined oral contraceptives (COCs), 92.6% for intrauterine devices (IUDs), 64.8% for vaginal HC, 59.3% for transdermal patches, and 53.7% for injectable contraceptives.

Conclusions

The study revealed low knowledge levels and a predominantly biased attitude toward hormonal contraception among future physicians, driven by misconceptions about side effects. Given limited involvement of gynecologists and family physicians in counseling, the findings highlight the need to strengthen their role in disseminating evidence-based information and implementing targeted educational programs.

Association of Endometriosis with BMI

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Introduction

Endometriosis is a chronic, estrogen-dependent gynecological disorder affecting approximately 10% of women of reproductive age. It is characterized by the presence of endometrial-like tissue outside the uterine cavity and commonly presents with chronic pelvic pain and reduced fertility. The pathogenesis of endometriosis remains poorly understood. Previous studies have suggested a link between endometriosis and body mass index (BMI), but the timing and mechanisms of this relationship remain unclear.

Aim of the study

To evaluate the association between endometriosis and body mass index (BMI) across different life stages, with particular focus on the period before menarche and in adulthood, and to determine when potential differences in BMI between women with and without endometriosis emerge.

Materials and methods

An online survey was distributed among women who consented to participate in the study (n = 873). Only complete questionnaires were included in the analysis (n = 460), allowing the formation of two subgroups: women with endometriosis (n = 241) and women without endometriosis (n = 219). BMI was assessed retrospectively for the period prior to menarche and during follow-up extending to January 2026. The survey also collected information on additional factors potentially influencing body weight, including number of pregnancies, number of deliveries, age, history of eating disorders, place of residence, and other lifestyle and clinical variables.

Results

No statistically significant differences in BMI were observed between women with and without endometriosis prior to menarche (19.64 ± 4.24 vs 20.10 ± 3.80, p = 0.253). In contrast, during follow-up, women with endometriosis had a significantly lower BMI than controls (24.09 ± 4.53 vs 25.46 ± 6.15; p = 0.008). These findings suggest that the association between endometriosis and lower BMI develops later in life rather than during early development.

Conclusions

Endometriosis is associated with lower BMI in adulthood, while no differences are evident before menarche. The underlying mechanisms remain unclear and may involve metabolic or inflammatory processes, reduced weight gain over time, reproductive factors such as nulliparity, or other lifestyle and clinical variables. Further research is required to determine whether lower BMI is a consequence of endometriosis, a modifying factor, or a result of confounding mechanisms.

CheXGPT: A multimodal reasoning language model for chest X-ray labelling and report generation.

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Introduction

Automated chest X-ray (CXR) report labeling enables large-scale imaging research, yet widely used baselines such as CheXbert provide fixed behavior, are limited to the 14 CheXpert labels, and do not support multimodal or multilingual report generation.

Aim of the study

To develop a single compact multimodal model that (1) achieves state-of-the-art performance and surpasses CheXbert on CheXpert-style 14-label report classification, (2) extends supervision to an expanded multi-label taxonomy beyond 14 labels, and (3) generates image-grounded, label-faithful reports across languages.

Materials and methods

We benchmarked many open-source LLMs (Qwen, Llama, Gemma, Phi, GPT-OSS) on CheXpert, MIMIC-CXR, ReXGradient-160K, PadChest (Spanish), and CASIA-CXR (French) using a unified prompt and CheXpert-compatible output schema. We ablated zero-shot, few-shot, and dynamic few-shot retrieval (pool=50), and evaluated quantized inference (INT4/INT8). We then fine-tuned and post-trained Qwen3-V-4B on ~1.3M radiology reports and ~450k CXR images with mixed objectives: supervised multi-label classification (CheXpert-14 plus additional labels) and instruction-style image-to-report generation, including multilingual training. Performance was evaluated on held-out test sets; 95% confidence intervals were obtained by bootstrapping.

Results

Qwen3-V-4B achieved macro-F1 0.93 (0.91–0.95) for 14-label classification, exceeding the CheXbert baseline in our benchmark. For generated reports, label similarity to gold labels reached macro-F1 0.86 (0.84–0.88) with BLEU 0.24, indicating improved label faithfulness. Dynamic few-shot retrieval improved recall for rare and ambiguous labels—most notably Lung Lesion and Pleural Other—and multilingual prompting improved robustness on non-English reports. Quantization preserved performance with reduced latency.

Conclusions

A post-trained 4B multimodal LLM can unify CheXpert-style labeling and multilingual, image-grounded report generation, providing a practical, efficient alternative to CheXbert with tunable prompt- and hardware-level trade-offs.

Chest X-Ray–Predicted Age as a Biomarker for Short- and Long-Term Mortality: Development and Validation of a Deep Learning Model

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Introduction

Chronological age is an imperfect measure of physiological health. Biological age, estimated from medical imaging may better capture an individual's true health status and risk. This study aimed to develop a deep learning model to estimate a patient's age from a chest radiograph (CXR) and to evaluate whether the discrepancy between this "CXR-age" and chronological age—the "CXR-age gap"—predicts all-cause mortality.

Aim of the study

To develop and externally validate a robust deep learning model capable of estimating biological age from chest radiographs (CXR) across diverse, multi-source datasets, and to investigate whether the derived CXR-age gap (difference between predicted imaging-based age and chronological age) serves as an independent and clinically meaningful biomarker of physiological aging that can predict short- and long-term all-cause mortality and improve risk stratification beyond traditional clinical and demographic risk factors.

Materials and methods

This retrospective multi-cohort study included 404,812 frontal CXRs from MIMIC-CXR, CheXpert Plus, PadChest, RexGradient, and CASIA CXR. A DenseNet-121 model was trained (80%) and tested (20%) to predict age, with a dual-input design including demographic variables. Performance was evaluated using MAE and Pearson r. Associations between CXR-age gap and 30-day, 90-day, and 1-year mortality were analyzed using multivariable logistic regression and Cox models adjusted for clinical covariates.

Results

The model predicted chronological age with a mean absolute error of 3.6 years and a Pearson correlation of r = 0.85 in the test set. The mean CXR-age gap was −0.2 years (SD 4.6). After adjustment, each 5-year increase in the CXR-age gap was associated with higher odds of mortality at 30 days (aOR 1.22, 95% CI 1.19–1.25) and 90 days (aOR 1.25, 95% CI 1.22–1.28), and a higher hazard of mortality at 1 year (aHR 1.18, 95% CI 1.16–1.20). Adding the CXR-age gap to a baseline clinical model improved discrimination for 1-year mortality (AUC 0.79 to 0.83). Saliency maps highlighted the heart, mediastinum, and pulmonary vasculature as key regions contributing to predictions.

Conclusions

Deep learning can estimate age from chest radiographs with good accuracy across large, multi-source datasets. The CXR-age gap is an independent predictor of short- and long-term mortality and provides incremental prognostic value beyond traditional clinical risk factors. This accessible imaging biomarker may support improved risk stratification and clinical decision-making.

Development and Validation of a Scalable One-Time Psychological Intervention Model for Drug-Sensitive Pulmonary Tuberculosis Patients: A Pilot Study

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Introduction

Studies have shown higher levels of anxiety and depression in pulmonary tuberculosis (TB) patients which negatively impacts treatment adherence and despite the emphasis on advocacy, communication and social mobilization under India's National TB Elimination Program (NTEP) structured psychological interventions remain underutilized in routine TB care.

Aim of the study

To compare Cognitive Behavioural Therapy (CBT), Supportive Counselling (SC), and Motivational Interviewing (MI) as a single session psychological intervention model for patients with Drug sensitive pulmonary TB (DSTB), in terms of feasibility, acceptability, and clinical impact

Materials and methods

Our case-control study aims to screen 80 cases and 80 controls of DSTB after 8 weeks of anti-tubercular therapy (ATT) and written informed consent. As this is an ongoing study, at present, 56 DSTB patients (cases) having normal cognition with mild to moderate anxiety and/or depression were assessed using GAD-7 and PHQ-9, respectively. They were randomized using computer generated numbers and a single session of one of the three interventions (CBT, SC, or MI) was delivered by an investigator. After the session, using three structured feedback forms filled by the patients, the investigators, and a supervising psychologist, the implementation outcomes were assessed. 53 DSTB patients (controls) after matching for key sociodemographic, clinical variables were enrolled and assessed for anxiety and depression. After 4 months from the date of baseline assessment anxiety and depression were reassessed. Presently, interim analysis of the available data is being submitted.

Results

Cases as compared to controls showed reductions in symptom scores. CBT reduced GAD-7 and PHQ-9 scores by 2.3 and 2.1 points, respectively; MI reduced scores by 3.68 and 4.4 points; and SC reduced scores by 3.63 and 3.1 points. Treatment completion was marginally higher in cases (control: 85.4%; CBT: 86.6%; SC: 87.1%; MI: 87.3), without significant difference. Based on the collected feedbacks an internal implementation scoring was developed which ranked SC highest for feasibility (91.0), acceptability (94.0), perceived effectiveness (86.3), sustainability/scalability (88.0), and digital integration (88.0), followed by MI, while CBT scored lowest.

Conclusions

Interim analysis suggests that SC has the strongest overall scalability and acceptability; MI showed the greatest symptom improvement. Both interventions can be easily delivered by trained healthcare workers and appear suitable for NTEP.

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External Occipital Protuberance Revisited: A Novel Morphological Description and Diagnostic Framework Using High-Resolution Computed Tomography

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Introduction

The external occipital protuberance (EOP) is a fundamental craniometric landmark; however, its exophytic anatomical variants (EOPVs) remain poorly defined due to a historical reliance on two-dimensional lateral cephalometry and inconsistent nomenclature. Data regarding the prevalence and morphological variability of EOPVs in paediatric and adolescent populations remain scarce.

Aim of the study

This investigation sought to interrogate the internal osseous architecture of the EOP and to establish a robust, observer-independent diagnostic framework for EOPV classification and to validate a novel, data-driven definition using high-resolution computed tomography (CT) data.

Materials and methods

A retrospective observational analysis was conducted on thin-slice head CT scans (0.3 mm collimation) of 345 paediatric patients (aged 0–18 years). Multivariate clustering was used to explore the structure of morphometric variation.

Results

Our findings demonstrate that the EOP and its exophytic Variant are a part of a compound biological continuum involving external lamina delamination. The data-driven EOPV Root Angle primary diagnostic threshold of <133° provided superior diagnostic fidelity over traditional linear definitions. Conversely, the literature-standard >10 mm threshold was proven statistically invalid for variant classification. A two-tier EOPV classification was established: Type I (tubercle) and Type II (wedge). EOPVs are formed through the delamination of the external lamina of the occipital bone. Analysis revealed that patients with EOPVs exhibit significantly lower baseline occipital bone density (373.23 HU) compared to those without (548.31 HU; $p < 0.001$), suggestively countered by a localised hypertrophic response within the variant itself (824.98 HU). Significantly, EOPV prevalence in the adolescent cohort (12–18 years) reached 40.3%, matching established adult estimates and indicating that morphological maturation at the nuchal enthesis occurs substantially earlier in the postnatal period than previously assumed.

Conclusions

The EOP is a compound structure comprising an anatomically stable base and a highly variable exophytic variant, which is the insertion site of the nuchal ligament. This study establishes a standardised, morphology-based classification system that replaces unreliable linear metrics. Recognising EOPVs as specialised enthesophytic adaptations at the nuchal ligament insertion provides a reliable basis for future longitudinal research and improves radiological reporting precision.

Is Polish Society Prepared for IVF Refurbishment? Knowledge and Attitudes Toward In Vitro Fertilization in Poland

Authors

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Introduction

When natural conception is difficult or impossible, individuals and couples might utilize the medical treatment known as in vitro fertilization (IVF) to help conceive a child. In this procedure, the egg is fertilized with sperm outside the body in a lab, and the resultant embryo is subsequently implanted into the uterus. Recent changes to Poland's reimbursement laws have made public awareness and understanding of in vitro fertilization (IVF) even more important.

Aim of the study

This study aims to assess the level of knowledge and awareness of in vitro fertilization (IVF) among Polish people.

Materials and methods

The study was conducted using a structured survey to assess the knowledge and perceptions of in vitro fertilization (IVF) among the general Polish population. The questionnaire consisted of 48 multiple-choice and open-ended questions divided into three main sections: sociodemographic characteristics, factual knowledge about IVF, and ethical considerations. Statistica 13.3 was used for all statistical analyses.

Results

The study involved 276 respondents; 77,9% (n=215) of respondents were women and 22,1% (n=61) were men. The average age of the respondents was approximately 34 years (SD = 13,22). The average length of time spent trying to get pregnant was 11 months (SD = 21,22). 40% of respondents confirmed that they know people who have used IVF, and one in ten women who have already given birth have used IVF. 67% of people consider the topic of IVF to be controversial, and as many as 21% believe that the disposal of unused embryos is a violation of the right to life. 72% of respondents support the reimbursement of in vitro treatments with public funds. Only 29% of people believe they have either good or excellent knowledge about in vitro.

Conclusions

The knowledge about in vitro fertilization in Poland is not widely spread, and the topic still raises many controversies and misunderstandings.

Large Language Models and Specialty Certification Examinations in Obstetrics and Gynecology: A Comparative Performance Analysis

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Introduction

Large language models (LLMs) are advanced artificial intelligence systems capable of understanding and generating human-like text. Although LLMs are progressively being integrated into healthcare to assist with clinical decision-making, diagnostics, and medical education, their domain-specific expertise, particularly in obstetrics and gynecology, remains underexplored.

Aim of the study

This study aimed to assess and compare the reasoning capabilities and accuracy of six widely used LLMs - ChatGPT 5.1, Gemini Flash 2.5, Gemini Pro 3.0, Claude Sonnet 4.5, Microsoft Copilot, and Llama 4 Maverick in the field of obstetrics and gynecology.

Materials and methods

A total of 355 single-best-answer questions from three most recent Polish Specialty Certificate Examination sessions in Obstetrics and Gynecology were submitted to the LLMs. Questions were translated into English to preserve medical terminology. Model performance was assessed based on overall accuracy and stratified by question difficulty. Statistical analyses included Cochran’s Q and McNemar’s tests.

Results

The results demonstrated that while all models exceeded the 60% passing threshold required for human specialists, significant performance disparities were present. Gemini Pro 3.0 achieved superior results, consistently exceeding 90% accuracy and maintaining stability regardless of question complexity. Conversely, Gemini Flash 2.5, Microsoft Copilot, and Llama 4 Maverick showed statistically significant performance degradation on difficult questions. Finally, Claude Sonnet 4.5 and ChatGPT 5.1 demonstrated moderate performance and sensitivity to question complexity.

Conclusions

Study findings suggest that while LLMs demonstrate baseline competency in obstetrics and gynecology, substantial variability exists in their reasoning abilities, necessitating expert oversight and rigorous validation before implementation in high-stakes clinical practice. Gemini Pro 3.0 appears to be the most robust model, whereas other LLMs show reduced performance on complex clinical scenarios.

The Role of Sleep Quality in Psychoemotional and Somatic Complaints Among Medical Students

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Introduction

Impaired sleep quality is a common problem among medical students due to a heavy academic workload and chronic stress. According to meta-analyses, 50–70% of medical students demonstrate unsatisfactory sleep quality as measured by the Pittsburgh Sleep Quality Index (PSQI). Insufficient sleep is associated not only with fatigue but also with psychoemotional and other physical symptoms; however, the mechanisms underlying the development of somatic manifestations require further investigation.

Aim of the study

To assess sleep quality in medical students and determine its relationship with psychoemotional status and the severity of somatic symptoms.

Materials and methods

130 students from Bogomolets National Medical University participated in the study. Data were collected through anonymous surveys via Google Forms. Sleep quality was assessed using the PSQI. Psychoemotional status was evaluated using the Generalized Anxiety Disorder-7 (GAD-7) and the Beck Depression Inventory-II (BDI-II). Somatic symptoms were assessed using the Somatic Symptom Scale-8 (SSS-8). Descriptive statistics and Spearman's correlation method were applied during the analysis.

Results

Impaired sleep quality was detected in 105 respondents (80.8%), while normal sleep quality was observed in 25 (19.2%). The mean anxiety level was 11 in the impaired sleep group and 7 in the normal sleep group; the mean depressive symptom scores were 24 and 12, respectively. The correlation coefficient between sleep quality and somatic symptoms was $r = 0.622$ ($p < 0.001$). Mean somatic symptom scores were 17 in the impaired sleep group and 10 in the normal sleep group. Analysis of symptom structure revealed the largest intergroup differences in asthenic and pain manifestations.

Conclusions

The study established that impaired sleep quality is a common phenomenon among students pursuing higher medical education. A statistically significant positive correlation was found between sleep quality indicators and physical manifestations, indicating an increase in somatic complaints with worsening sleep quality. Asthenic and pain symptoms demonstrated the greatest intergroup differences. Furthermore, respondents with impaired sleep quality reported higher levels of anxiety and depressive symptoms. These findings underscore the important role of sleep quality in shaping the psychoemotional and somatic well-being of medical students.

The Association between Cumulative Sexual Violence Experiences and Post-traumatic Stress Symptoms in Adulthood.

Authors

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Trustee of the paper

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Introduction

Sexual violence is associated with adverse mental health outcomes, including post-traumatic stress symptoms. While research has established the link between single experiences of sexual violence and post-traumatic stress, less is known about how cumulative exposure to multiple types of sexual violence affects symptom severity. Individuals exposed to a greater number of distinct traumatic experiences may be at elevated risk of more severe post-traumatic symptomatology. Emerging evidence suggests that cumulative trauma exposure may have distinct effects on mental health outcomes, yet this has not been fully characterized in the context of sexual violence.

Aim of the study

The aim of this study was to examine the association between cumulative exposure to different types of sexual violence and the severity of post-traumatic stress symptoms in adulthood.

Materials and methods

A cross-sectional study was conducted using data collected via an anonymous voluntary online questionnaire between March and November 2025. Sociodemographic data, including age and gender, were collected. Sexual violence exposure was assessed using the Revised Sexual Experiences Survey – Victimization Version (SES-V) translated into Latvian, which assesses multiple types of sexual violence experiences. Cumulative sexual violence exposure was operationalized as the number of different sexual violence experience types reported. Post-traumatic stress symptoms were assessed using the PTSD Checklist for DSM-5 (PCL-5) translated into Latvian, consisting of 20 items rated on a 5-point Likert scale. Data were analyzed using Microsoft Excel and IBM SPSS Statistics with descriptive statistics and Spearman's rank correlation.

Results

A total of 174 respondents were included in the analysis. Of these, 154 were women (88.5%), 18 were men (10.3%), and 2 respondents (1.1%) selected another gender option. Respondents' age ranged from 18 to 61 years. Spearman's rank correlation analysis revealed a statistically significant positive association between cumulative sexual violence exposure and post-traumatic stress symptom severity ($\rho = 0.507$, $p < .001$, $N = 174$).

Conclusions

Cumulative exposure to sexual violence is associated with greater severity of post-traumatic stress symptoms in adulthood. These findings highlight the clinical importance of systematically assessing cumulative trauma exposure when evaluating and treating individuals with a history of sexual violence.

Three-dimensional Organization of the Pulmonary Root: A Micro-CT-based Study with Anatomical Implications for Modern Transcatheter Ablation Techniques

Authors

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Introduction

The pulmonary root, comprising the valve and adjacent sinuses, forms a critical junction between the right ventricular outflow tract and pulmonary artery. Ventricular arrhythmias originating from myocardial extensions in the sinuses and cusps are increasingly treated with catheter ablation, including the reversed U-curve technique. Despite clinical interest, detailed anatomical data of this region are limited. This is the first study to use high-resolution micro-CT for three-dimensional analysis of the pulmonary root

Aim of the study

To perform a micro-CT–based morphometric analysis of the pulmonary root and its components

Materials and methods

Pulmonary root specimens from 25 adult donors obtained during routine forensic autopsies were prepared using a contrast-enhanced micro-CT protocol, excluding cases with cardiovascular pathology, prior cardiac surgery, trauma, or signs of tissue degradation. DICOM datasets were analyzed using dedicated segmentation software, and the pulmonary root was subdivided into 12 longitudinal cross-sections based on commissural plane landmarks (i.e. sinus centers at half their border length, three points at commissure midpoints and right- and left-half sinus positions at one-quarter and three-quarter border lengths). Measurements were standardized relative to the basal ring (BR) plane and oriented perpendicular to generate “sliced cake” projections for three-dimensional morphometric analysis. A fibro-arterial transition zone (FATZ) was defined as the region where the sinus wall merges with the pulmonary artery media, with its height measured as the shortest distance from the basal ring.

Results

Sinus heights at the sinus centers measured 17.31±2.52mm (posterior), 17.29±3.15mm (anterior left, LA), and 15.52±2.81mm (anterior right, RA; $p=0.046$). Heights at the commissures equaled 17.78±2.59mm (posterior left, PLC), 16.25±2.95mm (anterior), and 16.05±2.57mm (posterior right, PRC; $p=0.054$), respectively. Across all 12 cross-sections, the tallest sinuses were at PLC and the shortest at RA sinus centers($p<0.01$). FATZ height was highest at the PLC (13.22mm) and lowest at the PRC (5.38mm;$p<0.001$). Pulmonary artery media extended above 71±10% of PLC, 61±18% of PRC, and 7±12% of anterior commissure heights ($p=0.042$), and 38–42% of sinus center heights ($p=0.194$)

Conclusions

This study reveals regional variations in pulmonary root anatomy, including sinus and FATZ heights, providing guidance for catheter navigation and targeted ablation of idiopathic right infundibulum arrhythmias

Infectious Diseases Session

Session Coordinators:
Agnieszka Adamiak
Marta Szymczak

Knowledge, Awareness, and Attitudes of Medical Students Towards Tick-Borne Encephalitis

Authors

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Introduction

Tick-borne encephalitis (TBE) is one of the most common tick-borne diseases in Poland. Its incidence has been sharply rising in recent years. In 2024 there were 805 cases reported, a 309% increase since 2019. While the course of the disease is usually mild, it can lead to severe neurological deficits and even death. Vaccination is a safe and reliable prevention method, yet only about 10% of the Polish population is vaccinated against TBE. For those reasons, sufficient knowledge of TBE should be acquired by students during medical education to ensure effective diagnosis, treatment, and vaccination awareness.

Aim of the study

The study aimed to evaluate knowledge of TBE prevalence, symptoms, and treatment, factors influencing this awareness, as well as assessing the vaccination coverage among medical students.

Materials and methods

An anonymous survey was conducted among students of all years via social media platforms. The questionnaire included questions concerning personal experiences with tick-borne diseases, vaccination status and motives behind it, as well as a 14-item quiz covering crucial aspects of TBE. Each correct answer was awarded 1 point.

Results

The study included n=103 medical students: n=73/103 (70.9%) female, n=28/103 (27.2%) male and n=2/103 (1.9%) undisclosed with n=40/103 (38.8%) students from the pre-clinical years (1-3) and n=63/103 (61.2%) from clinical years (4-6). All students completed the survey. Of n=103 responders, n=64/103 (62.1%) reported a history of tick bites, and n=49/103 (47.6%) have had experiences with tick-borne diseases either personally or in their immediate social circle. Among students who completed the survey n=41/100 (39.8%) were vaccinated. Key motivators for vaccination included a health-conscious attitude, frequent outdoor activities and being vaccinated as a child by their parents. Factors contributing to vaccine hesitancy were lack of awareness and financial cost. The average score from the quiz part was 8.4/14 points. Overall, students of clinical years received significantly higher scores (avg. 9.2/14) than students from the first three years (avg. 7.3/14). Knowledge gaps were identified in questions regarding transmission mechanisms, (average score 0.6/2) and symptomatology, (average score 1.1/2).

Conclusions

1. The study shows the importance of clinical education in shaping TBE awareness among students. 2. It is crucial to actively promote vaccinations against TBE among students, since lack of awareness is a major reason of vaccine hesitancy.

6-Minute Walk Test as a Functional Screening Tool for Pulmonary Rehabilitation Referral in Clinically Treated Pulmonary Tuberculosis: A Cross-Sectional Study

Authors

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Introduction

Despite microbiological cure, many pulmonary tuberculosis (TB) patients continue to experience dyspnea, reduced exercise tolerance, and impaired quality of life due to residual lung damage. Although pulmonary rehabilitation (PR) improves outcomes, referrals in post-TB care are largely symptom-based, potentially overlooking patients with subclinical functional impairment. The Six-Minute Walk Test (6MWT) is a simple and low-cost measure of functional exercise capacity, but its role in clinically treated TB patients remains inadequately explored.

Aim of the study

To evaluate the Six-Minute Walk Test as a functional assessment and pulmonary rehabilitation referral tool in clinically treated pulmonary tuberculosis patients.

Materials and methods

This observational cross-sectional study was conducted at a tertiary care center in Northwest India.120 Clinically treated pulmonary TB patients aged 18–65 years, at least one month after treatment completion, underwent assessment using the 6MWT as per American Thoracic Society guidelines. Spirometry (FEV, FVC, FEV/FVC), modified Medical Research Council (mMRC) dyspnea scale, and the St. George's Respiratory Questionnaire (SGRQ) were recorded. Associations between 6MWT distance, spirometry parameters, dyspnea severity, and SGRQ scores were assessed.

Results

Interim analysis of 96 clinically treated pulmonary tuberculosis patients showed reduced 6MWT distance in 44 patients (46%). Spirometric abnormalities were present in 41 patients (43%), while 55 patients (57%) had preserved spirometry. Among patients with normal spirometry, 12 (22%) demonstrated reduced 6MWT performance, indicating discordance between spirometric measures and functional capacity. Lower 6MWT distance was associated with higher mMRC dyspnea grades and higher SGRQ scores ($p<0.05$).

Conclusions

This interim analysis indicates that a subset of clinically treated pulmonary tuberculosis patients experience reduced functional exercise capacity, including individuals with preserved spirometry. The associations observed between Six-Minute Walk Test performance, dyspnea severity, and health-related quality of life suggest that functional limitation following tuberculosis may not be fully reflected by spirometric measures alone. Within these limitations, the Six-Minute Walk Test emerges as a simple, low-cost, and reproducible functional tool that may help guide consideration for pulmonary rehabilitation, pending confirmation in the final analysis.

TB Association of India and Metropolis Hospital , India(National Funding Bodies of India)

AIDS-Defining Diseases Among Patients with Late HIV Diagnosis in a Single Center in Poland

Authors

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Introduction

Data from 2024 show that in the WHO European Region 54% of new diagnoses of Human Immunodeficiency Virus (HIV) was made late. Delayed diagnosis leads to decreased immunity and development of opportunistic infections and malignancies. Late HIV diagnosis is defined as HIV infection detected for the first time in a patient with a lymphocyte T CD4+ count <350 cells/μL or in those who have developed an AIDS-defining condition. Late diagnosis and therefore delayed antiretroviral therapy (ART) facilitates the further transmission of the virus and decreases patients' prognosis.

Aim of the study

The purpose of this study was to review the AIDS-defining diseases and the HIV-related parameters of patients with late HIV diagnosis treated in a single center in Poland between 2021 and 2025.

Materials and methods

A cross-sectional analysis of the diagnosis of AIDS-defining diseases and of laboratory results was conducted among patients with new late HIV diagnosis. Patients presenting symptoms of acute HIV infection were excluded from the analysis. Data were obtained from the database of the Department. The scope of investigation included sex, age, the co-occurrence of syphilis, HBV and HCV. HIV viral load (VL), lymphocyte T CD4+ count and CD4+/CD8+ ratio were assessed at the time of HIV diagnosis.

Results

The number of patients included in the study was n=83. Male/female ratio was found to be (62/21) and the average age was 41 years. In the analyzed group n= 9 (10,8%) had syphilis co-infection, n= 7 (8,4%) had HCV and n= 4 (4,8%) had HBV co-infections. The average HIV VL was 1157110 copies/mL (range: 262 – >10000000) The average lymphocyte T CD4+ count was 124 cells/μL (range: 1 – 604). A total of n=48/83 (57.8%) patients presented at least one AIDS-defining condition with the most common being Pneumocystis jiroveci pneumonia in n=17/83 (20.5%), followed by tuberculosis in n=14/83 (16.9%) and neurotoxoplasmosis in n=9/83(10.8%).

Conclusions

Late HIV diagnosis remains an important health issue in Poland. The most common AIDS-defining condition in the population of this study was Pneumocystis jiroveci pneumonia but the number of patients with tuberculosis is also alarming. Early HIV diagnosis is essential to improve the prognosis of people with HIV.

Characteristic of Patients, Who Required Post-Exposure Prophylaxis of Tetanus and Rabies - Single Center Study

Authors

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Introduction

Rabies is a viral disease caused by Rabies lyssavirus, which is transmitted by mammals. Infection may occur through the contact of saliva from an infected animal with damaged skin or mucous membranes. Tetanus is a bacterial disease caused by Clostridium tetani. Infection may develop through the entry of bacterial spores into the body through a disruption of skin integrity.

Aim of the study

We characterized patients who required post-exposure prophylaxis of tetanus and rabies.

Materials and methods

This single-center study analyzed patients presenting to the hospital after animal-related exposures in 2022-2025. Assessed variables included demographic data, time from exposure to medical presentation, patients' rabies and tetanus vaccination status, animal species and their vaccination status.

Results

We analyzed data of n=83 patients (n=48/35-women/men) who presented to the hospital following a bite, scratch, or exposure to saliva from animals with a mean age of 41.9 years. Out of n=83 patients, n=6/83 (7.2%) worked with animals. Among all patients, n=14/83 (16.9%) experienced exposure outside Poland. The mean time to presentation at a medical facility was 1.4 days for exposures occurring in Poland and 6.2 days for exposures abroad. Among the patients, n=57/83 (68.7%) were vaccinated against tetanus before hospitalization, n=19/83 (22.9%) were unvaccinated, n=7/83 (8.4%) vaccination status was unknown. Of the n=57 vaccinated individuals, n=42/57 (73.7%) had no documentation confirming vaccination and were unable to recall the exact timing of vaccination, n=5/57 (8.8%) provided vaccination documentation, and n=10 (17.5%) had no documentation but were able to report the year and circumstances of vaccination. None of the analyzed patients had been vaccinated against rabies before exposure. Among the animals involved, n=35/83 (42.2%) were cats, n=30/83 (36.1%) dogs, and n=18/83 (21.7%) other species (including fox, bat, squirrel, seal, hedgehog, wild boar, marten, rat, and monkey). Vaccination status was known for n=3 animals (dogs). Neurological symptoms such as gait disorder or seizure were observed in n=7/83 (8.4%) animals.

Conclusions

There is a need for individuals to be aware of their own tetanus vaccination status. Increased awareness of rabies vaccination is also essential, particularly among people working with animals and those traveling abroad. Exposure during travel may delay presentation to a medical facility for the post-exposure prophylaxis.

Clinical Profile of Patients Hospitalized for Lyme Disease Between 2023 and 2025 – Single-Center Study

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Introduction

Lyme disease is a disease caused by bacteria – Borrelia burgdorferi, transmitted by ticks. In 2025, the number of Lyme disease cases in Poland reached 48725, which represents a 66% increase compared to the previous year. Lyme disease can manifest clinically as erythema migrans, borrelial lymphocytoma, acrodermatitis chronica atrophicans, neuroborreliosis, Lyme arthritis, Lyme carditis, ocular borreliosis. The diagnosis of Lyme disease involves identifying characteristic clinical symptoms confirmed by two-stage serological tests.

Aim of the study

The aim of the study was to characterize the clinical characteristics of patients hospitalized due to Lyme disease.

Materials and methods

We analyzed medical records of people with Lyme disease admitted to our department in years 2023-2025 for demographic data, laboratory test results and clinical symptoms. Adults >18 years old with Lyme disease confirmed by positive results of two-stage serological screening tests: ELISA (IgG and/or IgM) and Western blot (IgG and/or IgM) were included to the study.

Results

Among all analyzed n=105 patients there were n=59 (56.2%) men and n=46 (43.8%) women (p=0.102), the mean age of all patients was 53.7 years. There were n=46/105 (43.8%) patients who observed a tick. Erythema migrans was noticed in n=25/105 (23.8%), n=28/105 (26.7%) presented neurological symptoms, and n=52/105 (49.5%) presented swelling of one or more large joints. Non-specific symptoms such as general weakness, dizziness and headache, fever, weakened muscle strength, and generalized pain had n=20/105 (19.0%) patients. In the study group a high-risk occupation (farmer, forester) had n=3/105 (2.86%) patients.

Conclusions

• The majority of patients did not notice a tick bite or erythema migrans, • The diagnosis of Lyme disease based on clinical symptoms often proves difficult. • We suggest wider using of tests for borreliosis among patients with non-specific symptoms.

Multimodal Deep Learning to Differentiate Viral vs Bacterial Pneumonia Using Chest Radiographs and Early Clinical Data: Development and External Validation on Open Datasets

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Introduction

Distinguishing viral from bacterial pneumonia early is clinically important but often uncertain from imaging alone. Large-scale open chest radiograph datasets enable multimodal modeling, yet etiology labels are not directly available in most radiology corpora.

Aim of the study

To develop and externally validate a multimodal deep learning model that classifies pneumonia etiology (viral vs bacterial) using chest X-ray (CXR) images and early clinical variables.

Materials and methods

We assembled a retrospective cohort from MIMIC-CXR-JPG linked to MIMIC-IV, deriving etiology labels from microbiology and virology testing within 8 hours of the index CXR: viral pneumonia (positive respiratory viral PCR/antigen; and bacterial pneumonia (positive blood/respiratory culture or urinary antigen; excluding mixed/indeterminate cases. Clinical features available at/near imaging time included demographics, comorbidities, vitals, and laboratory values (binary and continuous; total features). We trained a multimodal transformer fusion model comprising a pretrained Swin Transformer image encoder and a TabTransformer clinical encoder with gated cross-attention fusion (“Swin−TabFusion”). Baselines included image-only (Swin), tabular-only (XGBoost/MLP), and late-fusion (concatenation + MLP). Data were split at the patient level into train/validation/test (75%/15%/10%). Ongoing post-hoc analyses assessing impact on healthcare costs, diagnostic speed, as well as the prevention of complications such as sepsis and inappropriate use of antibiotics in a viral pneumonia. These findings, alongside administered antibiotics, will be presented at the conference.

Results

On the internal validation set, Swin−TabFusion achieved an AUC of 0.84 [0.81-0.85] and AUCPR 0.65 [0.63-0.69]. Sensitivity for bacterial pneumonia was 78%, specificity was 75%. Calibration was acceptable (Brier score 0.11). Explainability analyses highlighted lung opacity patterns (Grad-CAM) and inflammatory biomarkers (SHAP) as key contributors.

Conclusions

A multimodal transformer combining CXR images with early clinical data can differentiate viral vs bacterial pneumonia with strong discrimination and calibration, and shows generalizability across open external datasets. This framework supports future prospective evaluation for antibiotic stewardship decision support. Post-hoc analysis will outline the clinical and economic burdens, including antibiotic stewardship.

The Prevalence of Risk Factors for Long-Acting Injectable Antiretroviral Therapy Failure in a Polish Multicenter Cohort.

Authors

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Introduction

Although untreated Human Immunodeficiency Virus (HIV) infection leads to a gradual decline in immune function, resulting in opportunistic infections and malignancies, people with HIV (PWH) receiving effective antiretroviral therapy (ART) may have a life expectancy comparable to that of HIV-negative individuals. A new therapeutic regimen with long-acting injectable (LAI) therapy using cabotegravir (CAB) and rilpivirine (RPV) offers an alternative to daily oral regimens and may improve adherence and efficacy. Nevertheless, recent trials have demonstrated that the presence of ≥2 baseline factors—CAB/RPV drug resistance mutations (DRMs), A6 subtype, and/or body mass index (BMI) ≥30 kg/m²—was associated with increased confirmed virologic failure (CVF).

Aim of the study

The objective of this study was to evaluate the prevalence of predictors of CVF with CAB + RPV LA-IM ART in ART-naïve PWH.

Materials and methods

In this multicenter, observational, cross-sectional study, results were obtained retrospectively from the database of five clinical centers in Poland (ResiPol Group) between 2023 and 2025. The inclusion criteria were: HIV-1 infection, age ≥18 years, genotyping performed in ART-naïve individuals, and availability of BMI measurements. HIV subtype, the presence of DRMs for CAB and RPV, and patients' BMI were evaluated. HIV DRMs were interpreted according to the Stanford University Database. NCT06661317.

Results

Pooled data from 611 participants were subjected to analysis. A total of n = 377 individuals were included in the study. In the study group, HIV subtype A6 was present in 46.68% of patients (n = 176/377). DRMs for RPV in 20.69% (n = 78/377) were more frequent ($p < 0.05$) than those for CAB (4.77%, n = 18/377). No patients with combined DRMs to both CAB and RPV were detected. A BMI ≥30 kg/m² was observed in 7.16% of patients (n = 27/377). In total, 16.45% of patients (n = 62/377) had ≥2 risk factors: 15.38% (n = 58/377) had two risk factors and 1.06% (n = 4/377) had three risk factors.

Conclusions

The predominance of HIV subtype A6, identified in nearly half of patients, highlights the specific epidemiological profile of the study population. Approximately one-sixth of patients in our cohort had ≥2 risk factors for LAI CAB + RPV failure, underscoring the need for careful pre-treatment risk stratification for new therapies.

The Impact of COVID-19 Non-Pharmaceutical Interventions on Notifiable Infectious Diseases in Poland: A Comprehensive Analysis from 2014–2022

Authors

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Introduction

The COVID-19 pandemic prompted widespread non-pharmaceutical interventions (NPIs) like lockdowns and masking in Poland (2020–2022), significantly altering pathogen circulation. This created a unique opportunity to study the extended effects of these measures on other communicable diseases, moving beyond short-term observations.

Aim of the study

This study aimed to assess how the pandemic and associated NPIs affected the incidence of 17 notifiable infectious diseases in Poland over an extended period, from January 2014 to December 2022.

Materials and methods

Using national surveillance data aggregated monthly, we compared incidence during pandemic years (2020–2022) against pre-pandemic (2014–2018) and baseline (2019) periods. Data were deseasonalized. A negative binomial generalized linear model calculated incidence rate ratios (IRRs) relative to 2019, controlling for confounders. Spearman correlation measured associations between disease incidence, COVID-19 cases, and nine NPIs.

Results

rom 2020 to 2022, 13 of 17 diseases showed cumulative declines compared to 2014–2019, including whooping cough (peak reduction IRR 0.11 in 2021 vs. 2019), scarlet fever, chickenpox, and mumps. Invasive Streptococcus pneumoniae decreased initially but rebounded in 2022. Conversely, Clostridioides difficile incidence increased significantly (2021 IRR 1.84 vs. 2019). Norovirus, HIV, and syphilis surged later, coinciding with NPI relaxation. Higher NPI stringency generally correlated negatively with respiratory pathogens.

Conclusions

Long-term observation confirmed that widespread NPIs suppressed many communicable diseases, particularly respiratory infections, beyond SARS-CoV-2. The rebound of several infections upon NPI relaxation suggests potential shifts in population susceptibility. These findings can inform future public health strategies balancing disease control and societal needs, though further research on long-term dynamics is warranted.

N/A

Internal Medicine Case Report Poster Session

Session Coordinators:
Pajtra Jitaree
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Honorary patronage

Polskie Towarzystwo Gastroenterologii

A Rare Cause of Lower Back Pain: Osteodiscitis as a Complication of Staphylococcus aureus sepsis

Authors

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Background

Osteodiscitis, an infection of the intervertebral disc and adjacent vertebrae, is a severe complication of bacteremia, most frequently caused by S. aureus. Despite its rarity, the clinical presentation is often nonspecific, which may delay diagnosis and increase the risk of vertebral destruction, abscess formation and neurologic deficit. Hence, recognition through early imaging and targeted antibiotic therapy are crucial.

Case Report

A 74-year-old man was admitted due to severe low back pain (LBP), progressive weakness and an 8-kg weight loss over the past 2 months. Medical history included heart failure, pacemaker implantation, paroxysmal atrial fibrillation, hypertension, gout, fatty liver disease, and a recent hospitalization for S. aureus sepsis. Physical examination was unremarkable. Lab findings showed anemia and elevated inflammatory markers (CRP 142 mg/L). Blood cultures again grew methicillin-sensitive S. aureus (MSSA). MRI demonstrated destructive lesions in the lower thoracic vertebrae, with inflammatory infiltrate, consistent with osteodiscitis. Intravenous cloxacillin was initiated on day 3 but the response was limited (CRP 64 mg/L on day 19). Vancomycin was added on day 21. Neurosurgical consultation did not recommend surgery due to the absence of neurologic deficits. The course was complicated by Klebsiella pneumoniae urinary tract infection, which was managed with meropenem. On day 48, both antibiotics were discontinued due to severe drug-induced agranulocytosis, requiring granulocyte colony-stimulating factor. Due to persistent inflammation, the therapy was transitioned to oritavancin on day 84, with CRP decreasing to 1.2 mg/L by discharge on day 114.

Conclusions

This case highlights osteodiscitis as a rare but severe complication of bacteremia. Diagnosis is often delayed due to nonspecific symptoms, resulting in vertebral destruction albeit in the absence of neurologic deficits. Oritavancin represents an effective alternative in cases of adverse events. Given the rarity of osteodiscitis, no universally standardized treatment exists, and therapy must be individualized. Persistent or new-onset LBP, particularly after recent bacteremia, should raise suspicion for osteodiscitis, prompting early imaging and targeted therapy.

An Unexpected Diagnosis in a Patient with Post-Travel Rash from Gambia

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Background

Fever accompanied by rash in travelers returning from tropical regions represents a frequent diagnostic challenge in clinical practice. Cutaneous manifestations may be an early indicator of systemic infections, including viral illnesses acquired during travel. Careful dermatologic assessment, combined with a detailed travel history, is essential to guide further diagnostic evaluation and appropriate management.

Case Report

A 32-year-old man was admitted to the Department of Infectious Diseases due to fever, rash, and diarrhea that developed shortly after his return from Gambia, where he had stayed for seven days. He returned to Poland two days prior to admission and within hours developed high-grade fever up to 39.4°C, generalized weakness, headache, and abdominal pain. On the day of admission, a generalized maculopapular rash appeared on the trunk, accompanied by five episodes of loose, non-bloody stools. Physical examination revealed a diffuse maculopapular rash limited to the trunk. No other abnormalities were observed. Laboratory findings showed pancytopenia, with red blood cell count of 3.74 ×10/µL, platelet count of 89 ×10³/µL, and white blood cell count of 1.51 ×10³/µL. C-reactive protein was mildly elevated at 10 mg/L. Rapid antigen tests for malaria and dengue were negative. Chest radiography and abdominal ultrasonography showed no abnormalities. Nasopharyngeal swabs for SARS-CoV-2 and influenza were negative, and thick blood smear examination revealed no malaria parasites. Due to the clinical presentation and laboratory findings, testing for HIV infection was performed. The HIV screening test was positive, and HIV RNA was confirmed by polymerase chain reaction, with a viral load of 10,000,000 copies/mL, and the CD4+ T-lymphocyte count was 125 cells/µL. Antiretroviral therapy with tenofovir disoproxil fumarate, emtricitabine, and dolutegravir was initiated. During hospitalization, the patient's body temperature normalized, gastrointestinal symptoms resolved, and the cutaneous lesions regressed completely. He was discharged home in good general condition.

Conclusions

This case highlights the diagnostic significance of maculopapular rash in febrile travelers returning from tropical regions. Dermatologic manifestations may serve as an important early clue to systemic infections and should prompt comprehensive diagnostic evaluation. Early recognition of the underlying cause enabled timely initiation of appropriate therapy and favorable clinical outcome.

Drug Black Hairy Tongue in a Post-gastrectomy Patient

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Background

Black hairy tongue (BHT) is a benign, reversible condition characterized by hyperplasia and hyperkeratosis of filiform papillae, leading to elongation and black-brown discoloration due to chromogenic bacteria and yeasts. It is associated with gastrointestinal disorders, dysbiosis, hypoacidity, vitamin deficiencies, antibiotics, and poor oral hygiene. Prevalence is 0.6–11.3%, more common in men over 40 and smokers. In GI contexts, it links to chronic atrophic gastritis, peptic ulcer disease, and post-gastrectomy states via impaired microbiota and nutrient absorption.

Case Report

A 67-year-old woman with a history of Billroth I gastrectomy (2010), chronic atrophic gastritis, and recurrent peptic ulcer disease presented with heartburn, epigastric heaviness, halitosis, and bitter taste after H. pylori eradication therapy (antibiotics and bismuth). Examination revealed a dense black-brown coating on the posterior two-thirds of the tongue (1–1.5 cm thick), xerostomia, pale oral mucosa, and epigastric tenderness. Laboratory findings: hemoglobin 100 g/L, vitamin B12 127 pg/mL, riboflavin 2.8 µg/L; tongue swab: Candida albicans overgrowth; EGD: acute gastric ulcers, atrophic gastritis, hypoacidity; H. pylori negative. Diagnosis: Drug-induced black hairy tongue (BHT) with vitamin B deficiencies and candidiasis. Treatment: rabeprazole 20 mg once daily (2 weeks), pancrelipase (e.g., Creon) 25,000 units with meals, probiotic (e.g., Bifiform) twice daily (1 month), riboflavin 25 mg three times daily (4 weeks), cyanocobalamin intramuscularly (initially daily for 7–10 days, then weekly for 4–8 weeks, followed by monthly lifelong), fluconazole 150 mg once, topical nystatin four times daily (10 days), tongue scraping twice daily, and 1% sodium bicarbonate rinses. After 10 days, the coating lightened; by 3 weeks, near-complete resolution occurred, with ulcers healed on repeat EGD.

Conclusions

Drug-induced black hairy tongue can develop in patients with prior gastric surgery and chronic atrophic gastritis, particularly after antibiotic and bismuth therapy. Early recognition, patient education, and a multidisciplinary approach addressing both local oral factors and systemic predisposing conditions are crucial for effective management and rapid resolution.

Hepatitis E Virus - Induced Liver Impairment in an Immunocompromised Patient

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Background

Hepatitis E virus (HEV) has traditionally been considered uncommon in Europe. HEV infections are predominantly asymptomatic in the general population. However, immunocompromised individuals are at increased risk of chronic or severe disease, including fulminant hepatitis leading to acute liver failure. Chronic infection is defined as persistent viral replication for more than 6 months. Diagnosis should be based on HEV RNA RT-PCR testing, as serologic tests may yield false-negative results in immunocompromised patients due to insufficient antibody production.

Case Report

A 66-year-old male was admitted to the clinic with abnormal liver enzyme levels. His medical history is notable for end-stage renal disease of unknown origin. He underwent kidney transplantation at age 56 and is maintained on an immunosuppressive regimen consisting of prednisone, tacrolimus, and mycophenolate mofetil. The patient is also medicated for hypertension, dyslipidemia, and hyperuricemia. On admission, physical examination showed no evidence of infection, hepatomegaly, or pain. Laboratory results included: ALT 484 U/L (notably, ALT was 22 U/L 4 months prior), AST 227 U/L, ALP 144 U/L, GGTP 135 U/L, amylase 113 U/L, lipase 42 U/L, and INR 1. Virological assays were negative for HBV, HCV, HIV, CMV, and EBV. Low copper excretion in a 24-hour urine collection suggested against a diagnosis of Wilson's disease. Abdominal USG revealed hepatosteatosis and a solitary 4 mm hepatic cyst, with no other focal lesions. The gallbladder appeared non-distended with normal wall thickness and no evidence of cholelithiasis. Intrahepatic bile ducts were not dilated. Doppler USG excluded portal vein thrombosis and hepatic artery thrombosis. To identify the cause of liver impairment, an HEV-RNA assay was conducted, confirming active viral replication. The patient reported no recent travel but acknowledged consuming Asian-origin food products. Given that tacrolimus is a known risk factor for HEV replication, its dosage was reduced to promote viral clearance. This intervention was effective: three months later, the HEV-PCR test was negative, and transaminase levels had normalised. If the infection had persisted, ribavirin therapy would have been considered. In this case, timely diagnosis and adjustment of the immunosuppressive regimen were sufficient for resolution.

Conclusions

HEV infection, although uncommon in Europe, should be included in the differential diagnosis of liver damage in immunocompromised patients.

Leukaemia Cutis as an Initial Presentation of Acute Myeloid Leukaemia: Case Report

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Background

Introduction: Leukaemia cutis (LC) is defined as the infiltration of neoplastic leukocytes into the epidermis, the dermis, or the subcutaneous tissue. Cutaneous involvement typically follows or occurs simultaneously with diagnosis of hematologic malignancies. However, in approximately 2-3% of cases, LC presents as the primary disease manifestation, preceding identification of systemic leukaemia. The most common clinical presentations of LC involve nodules, papules, or plaques. Such skin lesions generally indicate advanced disease with suspected extramedullary involvement, and correlate with unfavourable prognosis, emphasizing the importance of comprehensive diagnostic evaluation.

Case Report

Case report: A 65-year-old man with no significant past medical history presented to the Dermatology Clinic with a 6-week disseminated, painless nodular skin lesions accompanied by systemic symptoms including night sweats and fatigue. Physical examination revealed multiple well-demarcated, erythematous-brown papules and nodules, distributed across the face, neck, trunk, and extremities. Several lesions showed crusting or ulceration with evidence of chronic excoriations. Laboratory investigation demonstrated leucocytosis, monocytosis, elevated CRP level, and elevated LDH activity. Peripheral blood smear revealed 5% blasts and 52% monocytes. Histopathological examination of the skin biopsy confirmed leukemic cell infiltration. Bone marrow biopsy exposed proliferation of immature cells with irregular nuclear morphology, which comprised approximately 40% of the marrow cells. Immunophenotyping was consistent with monocytic lineage. Molecular studies identified FLT3-ITD and NPM1 mutations. Based on these findings, a diagnosis of acute myeloid leukaemia (AML) was established. The patient was referred to the Hematology Department for adjusted treatment.

Conclusions

Conclusions: This case highlights the importance of recognizing cutaneous lesions as potential initial manifestations of hematologic malignancies. Clinicians play a vital role in directing appropriate diagnostic workup when encountering rapidly developing, atypical skin changes accompanied by systemic symptoms. Prompt histopathological examination, combined with hematologic evaluation, enables early diagnosis and treatment initiation, thereby improving AML patients' outcomes and prognosis.

Meningitis Associated with Staphylococcus aureus Bacteriemia as a Complication of Intra-articular Steroid Injection

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Background

Staphylococcus aureus is a Gram-positive bacterium colonizing mucous membranes and skin of at least 10% of asymptomatic carriers. Breaking of the mucocutaneous barrier due to trauma or medical procedures may cause translocation of the pathogen into deep tissues, causing localised infection and spread to distant organs. This may result in a plethora of clinical manifestations, including osteomyelitis, endocarditis, meningitis etc. Very few cases of meningitis as a complication of intra-articular injections have been described so far.

Case Report

A 53-year woman was admitted to the infectious diseases unit due to suspected meningitis. She had received intra-articular steroid injections for osteoarthritis a few weeks earlier. A few days before admission, the patient developed fever and headache. On physical examination, the patient was in moderate condition, with a neck stiffness (4-5 finger breadths), a positive Kernig's sign, and pain in the right hip on palpation and passive movements. Laboratory tests showed neutrophilia (35.7 x 10^3/microL), anemia (Hb 11.0 g/dL), elevated inflammatory markers (CRP 57.1 mg/L; procalcitonin 0.53 ng/mL), and elevated transaminase levels (ALT 122 U/L, AST 711 U/L). Head CT was normal. CSF analysis revealed pleocytosis (166 cells/microL) with neutrophil predominance, elevated protein (0.76 g/L), and low glucose (1.88 mmol/L). Multiplex PCR test of CSF was negative for common pathogens, but the kit used did not include Staphylococcus aureus. Subsequently, blood cultures were obtained and grew S. aureus. MRI showed inflammatory changes of the right iliopsoas, the right hip joint, and the lumbar spine. Based on physical examination, CSF findings, positive blood cultures, and MRI results, bacterial meningitis was suspected. Empiric intravenous ceftriaxone, vancomycin, and ampicillin was initiated and later narrowed to flucloxacillin. After discussion with an orthopedic surgeon, the patient was qualified for medical treatment alone and not for surgical treatment. The patient patient made a full recovery with lumbar pain being the only long-term sequela.

Conclusions

Negative CSF multiplex PCR results do not exclude bacterial meningitis, as rarer pathogens are not routinely covered by commercially available molecular panels. Intra-articular steroid injection, despite their low risk, may be a portal of entry for skin flora, leading to localized infection, with subsequent bacteremia and spread to distant sites, including the central nervous system.

More than 20 Years of Disease Course in Metastatic Non-Functional Pancreatic Neuroendocrine Tumor Treated with a Multidisciplinary Approach: A Case Report

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Background

Pancreatic neuroendocrine tumours (NETs) are rare and heterogeneous neoplasms characterized by diverse biological behaviour and clinical course. Most pancreatic NETs are non-functional and may remain asymptomatic for a long time, therefore they are often diagnosed at advanced stages. Although metastatic disease is usually associated with poorer prognosis, in selected patients long-term survival may be achieved with individualized multidisciplinary treatment, including surgical interventions as well as locoregional and systemic therapies. This case report presents a more than 20-year disease course of a patient with metastatic non-functional pancreatic neuroendocrine tumour.

Case Report

A 64-year-old man was diagnosed with a pancreatic neuroendocrine tumour 23 years ago. The tumour was clinically classified as non-functional, with no symptoms of hormonal hypersecretion during the disease course. In 2002, a distal pancreatectomy was performed. Due to disease recurrence, surgical excision of the tumour lesion was carried out in 2006, with histology confirming a metastasis of large-cell neuroendocrine carcinoma. In 2013, resection of liver segment S8 revealed a well-differentiated neuroendocrine carcinoma (G1) with a Ki-67 proliferation index of 8%. The patient was subsequently treated with somatostatin analogue therapy (octreotide). In 2021, somatostatin receptor scintigraphy demonstrated a lesion in liver segment S8 with high receptor expression. In 2022, microwave ablation of this lesion was performed twice. In 2023, marginal liver resection, cholecystectomy, and removal of tumour lesions from liver segments S5 and S8 were performed. Throughout the disease course, isolated liver metastases were observed, with no evidence of extrahepatic spread. Following multidisciplinary team decision, systemic treatment with lanreotide and everolimus was initiated. Everolimus dose was reduced due to elevated liver enzymes and was well tolerated. Chromogranin A concentration was 60.89 µg/L. Currently, the patient remains in good general condition, with ECOG performance status 0.

Conclusions

This clinical case illustrates that even in metastatic non-functional pancreatic neuroendocrine tumours, prolonged disease control can be achieved through consistent multidisciplinary management and long-term follow-up. The case highlights the importance of individualized treatment strategies and multidisciplinary team decision-making in the management of metastatic disease.

Necrobiotic Xanthogranuloma: A Rare Condition with Diagnostic Difficulties Over a 24-Year Course

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Background

Necrobiotic xanthogranuloma (NXG) is a rare non-Langerhans histiocytosis usually associated with hematological diseases such as multiple myeloma or monoclonal gammopathy of undetermined significance (MGUS). NXG is characterized by yellowish, brownish plaques or nodules usually localized in the periorbital area. The treatment of NXG is challenging; it often involves intravenous immunoglobulins (IVIG), triamcinolone acetonide injections (TAC), alkylating agents and surgical procedures.

Case Report

We report a case of a 65-year-old woman with edema of the eyelids and yellowish nodules localized on upper and lower eyelids. The symptoms in the periorbital area started in 2000 and worsened, causing limited eye movement. She was initially treated for granulomatosis with polyangiitis (GPA) and the disease included chronic sinusitis and eye edema with yellowish nodules. During the period of 2003–2022 she was treated with cyclophosphamide, methotrexate, and steroids due to GPA, without improvement in skin lesions. In 2022, no GPA activity was observed in laboratory investigations. Also for twenty years, owing to limited eye movement, the patient underwent many surgical procedures. Additionally, she was diagnosed with MGUS in December 2020, since then she remains under hematological follow-up. In 2023, she presented to the Department of Dermatology due to persistent skin lesions; NXG was diagnosed based on histopathological findings: collagen necrosis in the dermis surrounded by histiocytes, lymphocytes, and Touton-type giant cells. Histopathological material from periorbital lesions had been pre-obtained, however, the diagnosis of NXG was established only after dermatopathological reevaluation. Due to the deficiency of IgA and IgM antibodies and the excess of IgG antibodies in blood, IVIG treatment was not used, following immunological consultation, as it could potentially increase blood viscosity and the risk of disseminated intravascular coagulation (DIC). In January 2024, she began treatment with TAC injections (10 mg/ml) and hydroxychloroquine (HCQ) (200 mg/day). At a 24-month follow-up, after 13 TAC injections, hydroxychloroquine was reduced to 200 mg every other day due to regression of NXG lesions.

Conclusions

Patients suffering from persistent periorbital lesions particularly associated with hematological diseases should be evaluated for NXG. Dermatopathological reassessment, treatment with TAC injections and HCQ can lead to clinical improvement when IVIG is contraindicated.

Not Always Drug-Induced Liver Injury: Acute Liver Failure During Targeted Therapy in Chronic Lymphocytic Leukemia

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Background

Targeted therapies, including tyrosine kinase inhibitors (TKIs), used in patients with malignancies have been associated with rare but potentially life-threatening hepatic complications, such as hepatitis B virus (HBV) reactivation. In susceptible patients, HBV reactivation may progress to acute liver failure, and in selected cases, urgent liver transplantation remains the only potentially life-saving therapeutic option. However, post-transplant management may be particularly challenging.

Case Report

We report a case of a 58-year-old woman with a history of chronic lymphocytic leukemia (CLL) who was treated with the Bruton's TKI acalabrutinib. On admission, she presented with worsening jaundice, grade I–II hepatic encephalopathy, and anuria. Serological testing revealed findings consistent with HBV reactivation. Her condition progressed despite immediate treatment with nucleos(t)ide analogues. Laboratory tests showed evidence of extensive liver damage, with elevated ALT levels above 800 IU/L, AST levels above 250 IU/L, marked hyperbilirubinemia above 30 mg/dL, severe coagulopathy with INR above 10. She developed grade III-IV hepatic encephalopathy, acute renal failure requiring renal replacement therapy, and hemodynamic instability. Due to progressive liver failure and rapid clinical deterioration, a decision was made to proceed with urgent ABO-incompatible liver transplantation. Her liver transplantation was complicated by perioperative bleeding and postoperative sepsis. In the early postoperative period, graft function was stable under reduced-dose immunosuppression, and underlying CLL remained under observation without the need for active treatment. However, routine imaging studies revealed progressive lymphadenopathy during follow-up, and histopathological examination of the excised lymph node is in progress.

Conclusions

This case emphasizes the life-threatening risk of hepatitis B virus reactivation and underlines the importance of HBV screening and antiviral prophylaxis according to the guidelines. Post-transplant immunosuppression complicates oncologic treatment, requiring a balance between prevention of graft rejection and control of the underlying malignancy. Management of acute liver failure in such complex clinical settings requires early multidisciplinary collaboration between oncologists and hepatologists. The potential benefits and risks of liver transplantation should be carefully assessed and balanced on an individual basis.

Patients with Cushing's Syndrome Should Be Screened for Pathological Fractures

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Background

Chronic cortisol excess in Cushing's syndrome (CS) is associated with numerous comorbidities, including significant skeletal complications. Osteoporosis and osteoporotic fractures are reported in 22-61% and 16-78% of CS patients, respectively. Since bone densitometry (BD) often underestimates skeletal fragility in CS, spinal radiography or low-dose CT may provide more accurate assessment.

Case Report

We present a series of 5 pituitary ACTH-dependent Cushing's disease (CD) patients from the Krakow CS registry (ERCUSYN) illustrating the broad spectrum of long-term skeletal issues, diagnostic challenges, and the necessity for multimodal management in CS patients. A 35-year-old male with multiple pathological rib fractures 2 years pre-CD diagnosis had a lumbar T-score of -1.2 2 months post-neurosurgery. CD relapse 6 months post-operatively was followed by a metacarpal fracture 3 months later. Although osilodrostat controlled the CD and spinal T-score normalized (-0.7), new vertebral compression fractures occurred. A 32-year-old woman sustained multilevel (thoracic, lumbar, sacral) compression fractures a few months after CD diagnosis (lumbar T-score -2.3). Despite a year of successful CD pharmacotherapy, lumbar T-score declined to -4.4. 6 months post-neurosurgery and combined zoledronic acid/denosumab therapy, T-score improved to -3.0. A 63-year-old woman was diagnosed with CD following vertebral compression fractures requiring neurosurgical stabilization from L1 to L5. Femoral neck T-score at CD diagnosis was -2.4. 2 years post-diagnosis, after successful neurosurgery and bisphosphonate therapy, the T-score increased to -2.0 with no new fractures. A 39-year-old woman with CD-induced severe osteoporosis received ibandronic acid at diagnosis. 1.5 years after pituitary adenoma resection, with restored gonadal axis and continuous antiresorptive therapy, the spinal T-score improved from -3.2 to -1.9. It normalized to -0.9 after therapy discontinuation, and remained stable 13 years post-diagnosis. A 37-year-old woman presented with severe multiple rib fractures at CD diagnosis. 3 years post-successful neurosurgery, the lumbar T-score was -2.8. Despite 5 years of alendronate therapy and 4 years of estrogen and GH supplementation, the BD did not improve, however, no further fractures occurred.

Conclusions

Severe skeletal complications are clinically relevant in CS. Since pathological fractures often remain asymptomatic, routine screening should be standard for CS patients.

Spontaneous Remission of Cushing's Disease Following Subclinical Apoplexy: A 5-year Follow-up of Clinical-Hormonal Dissociation

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Background

Cushing's disease (CD) is the most common cause of endogenous Cushing's syndrome (CS). Spontaneous remission of CD is a rare phenomenon, usually associated with microadenoma apoplexy. The aim of this case report is to present the rare phenomenon of spontaneous CD remission resulting from pituitary apoplexy and the subsequent long-term clinical challenges.

Case Report

A 31-year-old female was admitted for elective hospitalization to evaluate the long-term effects of ACTH-dependent CD diagnosed in 2018. She presented with rapid weight gain (approximately 40 kg), menstrual irregularities, violaceous abdominal striae, hirsutism, and acne. Biochemical evaluation demonstrated loss of the circadian cortisol rhythm, with elevated midnight serum cortisol levels [16–24 µg/dL], lack of cortisol suppression after the overnight 1-mg dexamethasone test, and increased plasma ACTH concentrations [48–72 pg/mL] (ref: [10–60]). A significant ACTH rise following CRH stimulation supported a pituitary source of hypercortisolism. Pituitary MRI revealed a [1 mm] microadenoma. A 68Ga-DOTA-TATE PET/CT showed no evidence of ectopic ACTH secretion. In 2019, prior to the planned surgery, spontaneous clinical and biochemical remission of hypercortisolemia occurred. Cushingoid features resolved, body weight decreased by 40 kg, and menstrual cycles normalized. Follow-up pituitary MRI demonstrated imaging features consistent with prior pituitary tumor apoplexy, with subsequent evolution into a fibrotic residual lesion observed in 2022. For nearly four years, despite clinical remission, a lack of suppression in the 1-mg dexamethasone test (LDDST) and a positive desmopressin (DDAVP) stimulation test were observed. This suggested the persistence of abnormal corticotroph cells, requiring active observation for potential hypercortisolemia recurrence. Full normalization of the HPA axis was finally confirmed in 2023, with loss of DDAVP stimulation and appropriate suppression in LDDST.

Conclusions

Spontaneous remission of CD is an exceedingly rare phenomenon, most commonly resulting from pituitary tumor apoplexy. As demonstrated in this case, abnormal DDAVP stimulation may persist for a long period despite clinical and biochemical remission of hypercortisolemia. Therefore, such patients require long-term surveillance due to the significant risk of CD recurrence.

TAFRO syndrome: a case report of a rare systemic disorder

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Background

TAFRO syndrome is a form of idiopathic multicentric Castleman disease characterized by thrombocytopenia, anasarca, fever, reticulin fibrosis, and organomegaly. Because it lacks specific symptoms, it is frequently mistaken for hematologic, autoimmune, or liver diseases, leading to delays in diagnosis. Such delays can result in organ failure, as TAFRO syndrome is aggressive and rapidly progressive, making early recognition and initiation of immunosuppressive therapy essential.

Case Report

A 75yearold male was admitted due to longstanding progressive weakness, significant weight loss, increased abdominal girth, and impaired liver function, without a history of hematologic or autoimmune disorders. Laboratory tests revealed thrombocytopenia, elevated cholestatic and hepatocellular enzymes, hypoalbuminemia, and worsening renal failure. Ultrasound showed portal hypertension, hepatosplenomegaly, and massive ascites. Transjugular liver biopsy demonstrated pericentral hepatocyte atrophy, active inflammatory infiltrates, portal tract fibrosis, and a marked ductular reaction consistent with TAFRO syndrome. Bone marrow aspiration showed hematopoietic abnormalities without clonal proliferation, and molecular testing did not reveal markers typical of myeloproliferative disease. Wholebody PETCT showed no increased metabolic activity or evidence of lymphoproliferative disorder. During hospitalization, secondary infections developed due to immune dysfunction. Treatment included albumin replacement, systemic glucocorticosteroids, and interleukin6 blockade, while antimicrobial therapy was guided by culture results. Despite comprehensive management, the patient continued to have ascites accumulation, persistent thrombocytopenia, and progressive multiorgan dysfunction, reflecting the aggressive nature of TAFRO syndrome.

Conclusions

TAFRO syndrome is a rare variant of idiopathic multicentric Castleman disease marked by rapidly progressive systemic inflammation and organ failure. Firstline treatment consists of glucocorticosteroids and IL6 blockade, though immune imbalance and infectious complications are common. Despite these challenges, immunosuppressive therapy can stabilize inflammation, slow organ deterioration, and improve patient outcomes.

The Way to a Man’s Heart is through His Kidneys: Blood Culture -negative Endocarditis as an Underlying Cause of Glomerulonephritis: Case Report

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Background

Infective endocarditis (IE) is an infrequent disease with high mortality. It can present with a broad spectrum of symptoms due to systemic embolisation and immunological phenomena. Circulating immune complexes can deposit in renal tissue, causing glomerulonephritis. Positive blood cultures constitute a major diagnostic criterion and enable pathogen-specific treatment.

Case Report

A 54-year-old man with no history of chronic disease was admitted to the hospital due to severe anemia and renal dysfunction. A few days before he developed recurrent epistaxis, edema of the left leg and petechial rash on both legs. The patient complained of muscle weakness, fatigue, general pain and an unintended weight loss in the recent time. Due to laboratory findings, he was diagnosed with acute kidney injury. Renal biopsy was performed and revealed membranoproliferative glomerulonephritis, with suspicion of infectious etiology. C-reactive protein level was elevated and the patient developed fever with chills. Blood cultures were obtained several times and no bacterial growth was noted. Transthoracic echocardiogram revealed signs of vegetation on the aortic valve with secondary aortic regurgitation. Transesophageal echocardiogram confirmed diagnosis of infective endocarditis. Blood cultures stayed negative and a suspicion of an atypical etiology of IE was raised. Biological material was sent to the National Institute of Hygiene - serological tests yielded positive results for Bartonella species. Empirical antibiotic therapy was modified, and the patient underwent aortic valve replacement. Clinical and laboratory improvement was noted.

Conclusions

This case demonstrates an uncommon renal presentation of infective endocarditis, ultimately leading to acute kidney injury. It highlights how nonspecific signs of IE can be, with a wide range of symptoms from almost every system. Causative organisms of endocarditis may be challenging to culture, therefore clinicians should promptly consider serological and molecular identification techniques to initiate adequate treatment.

When Benign Lesions Tell a Bigger Story: A Case of Cowden Syndrome

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Background

Cowden syndrome (CS), also called multiple hamartoma syndrome, is a rare inherited disorder (about 1 in 200,000) usually caused by PTEN gene (Ch10q) mutations, sometimes arising de novo or by second hit mutations (due to heterozygous gene loss). PTEN normally helps control cell growth and death via PI3K, AKT, mTOR pathways. The disease mainly affects white women with hamartomas (that can lead to malignancy), presenting first as multiple mucocutaneous lesions. Diagnosis uses clinical criteria's (major & minor) and genetic testing.

Case Report

A female patient presented with long-standing chronic diarrhea (4-5 stools/day for several years), abdominal discomfort, asthenia, and recent gastroesophageal reflux symptoms. Patient's history included total thyroidectomy in 2023. Family history included maternal colorectal cancer. Physical examination showed multiple micronodular lesions on the dorsal hands and feet, abdomen was soft and non-tender. Laboratory tests were unremarkable. Colonoscopy revealed numerous rectal and transverse micropolyps, a 3-cm submucosal lipoma at the right colonic flexure, mild sigmoid inflammation and grade I internal hemorrhoids. Upper endoscopy showed diffuse esophageal and duodenal micropolyps, axial hiatal hernia and reflux esophagitis (LA class C). Histopathology showed nonspecific colitis and squamous esophageal changes with acanthosis. The association of multiple gastrointestinal polyps, skin lesions, thyroid history and family cancer history raised suspicion of Cowden syndrome, confirmed by genetic testing. Post diagnostic screening identified a cerebellar gangliocytoma, surgically excised (Lhermitte-Duclos disease) and dermatological findings including trichilemmomas and papillomas. Management included neurosurgical intervention, GERD treatment, antihypertensive therapy, dietary and lifestyle modifications and annual follow-up.

Conclusions

A multidisciplinary approach is essential for screening and management. Cancer risk is high from early adulthood, especially for breast, thyroid, endometrial and renal cancers, requiring organ-specific radiologic screening from childhood, early adulthood or 5–10 years before the earliest family case. Management is individualized and includes surgery, medication, laser therapy and emerging treatments. This case highlights the key role of genetic testing when clinical criteria are not fully met.

Internal Medicine Session I

Session Coordinators:
Natalia Cieślik
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Association between Sleep Quality and Graft Function in a Population of Kidney Transplant Recipients

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Introduction

Poor sleep quality is increasingly recognised as a risk factor for the development of chronic kidney disease. Potential mechanisms include elevated blood pressure and increased inflammation in individuals with disrupted circadian rhythms. Impaired nighttime recovery may also adversely affect kidney graft function in transplant recipients. However, evidence specifically addressing the relationship between sleep quality and graft function among Polish kidney transplant recipients is limited.

Aim of the study

This study aims to determine the association between sleep quality, assessed by the Athens Insomnia Scale (AIS), and kidney graft function, assessed by estimated glomerular filtration rate (eGFR).

Materials and methods

A total of 109 kidney transplant recipients participated in this study (mean age 52.3±13.3 years; mean time since transplantation 112.1±153.3 months). Sleep quality was assessed using the AIS, a validated questionnaire that evaluates sleep onset, nighttime awakenings, early-morning awakenings, total sleep duration, sleep quality, next-day well-being, functional capacity, and daytime sleepiness. Each item is scored 0-3; the total score range is 0-24, with a score of ≥6 indicating insomnia. Graft function was evaluated by eGFR using the CKD-EPI equation. Correlations were analysed using Spearman's rank correlation coefficient.

Results

The mean eGFR in the study population was 49.1±20.1 ml/min/1.73m². The mean AIS score in the evaluated population was 6,5 ± 4,5. Insomnia, defined as an AIS score ≥6, was present in 54.1% of patients. Frequent nighttime awakenings and early morning awakenings were associated with reduced eGFR. These two sleep parameters demonstrated the strongest correlations with graft function (Rho = -0.328, $p < 0.001$; Rho = -0.249, $p = 0.011$, respectively). Other sleep dimensions, such as sleep onset, duration, and daytime sleepiness, were not significantly associated with eGFR.

Conclusions

Our study demonstrated a correlation between sleep quality and graft function. Whether sleep fragmentation contributes to graft dysfunction or results from declining kidney function remains to be determined. Nevertheless, these findings underscore the importance of addressing sleep quality among kidney transplant patients.

Better Safe Than Sorry? Insight into Anti-Xa–Guided Enoxaparin Dosing in Internal Medicine Ward Patients

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Introduction

Low molecular weight heparins (LMWH) are widely used for prevention and treatment of thrombotic disorders. In older patients and those with renal impairment, dose reduction is frequently applied due to bleeding concerns, although this may increase the risk of subtherapeutic anticoagulation. Anti-Xa monitoring is recommended in selected populations, yet its real-world use remains inconsistent.

Aim of the study

To assess the frequency of subtherapeutic anti-Xa activity and its clinical determinants in internal medicine patients treated with enoxaparin.

Materials and methods

In this cross-sectional study, consecutive internal medicine ward patients receiving enoxaparin twice daily with available anti-Xa measurement were included. Blood samples were drawn 3–5 hours after at least the fourth dose. Demographic data, indications for anticoagulation and laboratory parameters were collected. Dose selection was left to physician discretion.

Results

Seventy-eight patients (mean age 64.3 years, 38.5% females) contributed 96 anti-Xa measurements. Main indications were venous thromboembolism (60%) and atrial fibrillation (39.7%). Mean dose was 0.88 (±0.29) mg/kg. Anti-Xa activity below 0.5 IU/mL was observed in 27.1% of cases. Undertreated patients were older (74 vs 59 years, $p<0.01$), more frequently had advanced renal impairment (G4–G5: 45% vs 16%, $p=0.02$), and had lower baseline haemoglobin (10.5 vs 12.0 g/dL; $p<0.001$). Anti-Xa levels were lower in AF than VTE (0.59 vs 0.74 IU/mL; $p=0.02$), reflecting lower administered dose (0.71 vs 1.00 mg/kg; $p<0.001$).

Conclusions

Subtherapeutic anti-Xa activity is common in internal medicine patients treated with LMWH, particularly among older and renally impaired individuals. Conservative dose reduction aimed at minimizing bleeding risk may result in insufficient anticoagulation. The clinical consequences of this strategy require further investigation.

Characteristic of Recipients of Orthotopic Liver Transplants (OLT) at a Polish Transplant Center - Analysis of Etiology, Demographic Profile and Significance of Multiple Etiologies

Authors

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Introduction

The complexity of indications for liver transplantation poses a growing challenge in modern transplantology. The co-occurrence of viral, neoplastic, and autoimmune diseases, as well as lifestyle-related conditions, is increasingly observed.

Aim of the study

This study aimed to analyze the etiological and demographic characteristics of recipients of orthotopic liver transplants (OLT), taking into account differences in gender, age, and the proportion of multiple etiologies (≥2 diagnoses).

Materials and methods

A retrospective database was developed of OLT and SLKT recipients from 2020–2024. Clinical data were cleaned and classified according to a standardized algorithm that allows for the identification of multiple diagnoses. The analysis included age, gender, pre-transplant creatinine level, and the primary cause of liver disease. Particular attention was paid to patient-induced etiologies: alcoholic liver disease (ALD), metabolic dysfunction-associated steatotic liver disease (MASLD), acetaminophen poisoning and death cap poisoning.

Results

892 OLT and SLKT recipients were included. The mean pre-transplant creatinine level was 1.9 ± 0.7 mg/dL. The most common single etiology was alcoholic liver disease (ALD, 15%), which increased to over 22% when multiple etiology cases were included. The next most common diagnoses included PSC, HCV, HCC, PBC, AIH, and Wilson's disease. Mixed etiologies affected 36.8% of recipients (n=329), most commonly HCC with HCV/HBV, or AIH with PSC. Men constituted 62% of all recipients and were more likely to be transplanted at an older age (over 50 years old), while women predominated in younger age groups, primarily with autoimmune diseases (AIH, PBC). Patient-induced etiologies (ALD, MASLD, poisoning) were significantly more common in men and in younger age groups (mean age 47±9 years), while autoimmune or cholestatic diagnoses predominated in women.

Conclusions

Over one-third of liver transplants and SLKT were in multiple etiology patients. Men constituted the majority of recipients, particularly in older groups and with lifestyle-related etiologies (ALD, MASLD, poisoning). Autoimmune diseases predominated in women, diagnosed and considered for transplantation at a younger age. The data indicate the growing importance of multifactorial transplant eligibility and demographic profiling in assessing risk and prognosis after transplantation.

Clinical and Biochemical Characteristics of Frailty Syndrome in Patients Hospitalized for Acute Pulmonary Embolism

Authors

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Introduction

Frailty syndrome (FS) is a multidimensional clinical state characterized by decreased physiological reserve and increased vulnerability to stressors. In the context of acute pulmonary embolism (APE), frailty may significantly influence the clinical course and disease severity, yet its specific impact on the biochemical and clinical profile of patients with APE remains insufficiently explored.

Aim of the study

This study aimed to evaluate frailty syndrome in patients with APE in relation to disease severity.

Materials and methods

This prospective observational study included 68 patients with APE, divided into frail and non-frail groups. Baseline evaluation included demographic data, Body Mass Index (BMI) and the Charlson Comorbidity Index (CCI). In all patients, standard biochemical tests were performed, including renal function, lipid profile, inflammatory and cardiac biomarkers. Clinical severity was assessed using the sPESI score and European Society of Cardiology risk stratification. FS was defined according to Fried's criteria, which include unintentional weight loss, self-reported exhaustion, weakness, slow walking speed and low physical activity. Comparative analysis was performed between frail and non-frail patients.

Results

Patients with APE and FS were significantly older [median 82 (62;95) vs 69 (60;89) years, $p<0.01$] and more often female (80% vs 52.6%, $p=0.02$) compared with patients without FS. Patients with FS(+) had a significantly lower BMI [27 (5.9) vs 31 (4.8) kg/m², $p<0.01$] and a higher comorbidity burden as measured by the CCI [6 (2;13) vs 3.5 (2;12), $p<0.01$]. Regarding the APE clinical course, the FS(+) group had a significantly higher prevalence of intermediate-risk APE (96.7% vs 79.9%, $p=0.03$), although sPESI scores did not differ significantly ($p=0.3$). Laboratory analysis revealed that FS(+) patients had significantly higher levels of NT-proBNP [2995 vs 771 pg/ml, $p<0.01$], Troponin [51 vs 29 ng/l, $p=0.04$] and CRP [38.4 vs 15 mg/dl, $p=0.003$]. Additionally, frailty was associated with lower GFR [55 vs 63 ml/min/1.73m², $p=0.03$] and lower total cholesterol [140.3 vs 177 mg/dl, $p<0.01$].

Conclusions

FS in patients with APE is associated with older age, higher comorbidity burden, impaired renal function and increased cardiac and inflammatory biomarkers. Frail patients more frequently present with intermediate-risk disease and unfavorable laboratory profiles. Assessment of frailty may provide valuable prognostic information and support individualized management strategies in elderly patients with APE.

Clinical and Comorbidity-Related Predictors of Positive SIBO Breath Test Results on Symptomatic Patients, Including Symptom Profiles and Bristol Stool Scale Assessment: a Retrospective Cross-Sectional Single-Centre Study.

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Introduction

Small intestinal bacterial overgrowth is an increasingly prevalent diagnosis among patients with functional gastrointestinal disorders. However, the clinical characteristics and predictive factors within the expanding population seeking commercial diagnostic services remain poorly defined.

Aim of the study

This study aimed to evaluate the prevalence of positive breath test results and to identify specific clinical predictive factors that may correlate with and forecast a diagnosis.

Materials and methods

A retrospective analysis was performed on a cohort of symptomatic patients undergoing lactulose breath testing. Clinical symptoms, medical histories, and stool consistency – categorised according to the Bristol Stool Scale – were recorded. Statistical significance was defined as a p-value of less than 0.05.

Results

An overall positivity rate of 53.2 per cent was observed. Statistically significant correlations were identified between positive results and patient-reported flatulence ($p = 0.015$), belching ($p = 0.041$), and diarrhoea ($p = 0.027$). Notably, no statistically significant association was found between objective stool types on the Bristol Stool Scale and the presence of bacterial overgrowth ($p = 0.522$).

Conclusions

Although studies demonstrate some variability in stool consistency among SIBO-positive patients, the Bristol Stool Scale does not serve as a significant predictive factor for SIBO diagnosis in the context of breath testing. While a thorough subjective history remains a vital component of the diagnostic qualification process, the high heterogeneity of the self-referring population necessitates caution. These results serve as a foundation for further research aimed at optimising patient selection and improving the efficiency of commercial diagnostic pathways.

Enoxaparin Dosing in Challenging Populations: A Model Based on Anti-Xa Activity

Authors

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Introduction

Enoxaparin dosing in internal medicine is typically based on body weight (1 mg/kg). In patients with impaired renal function, dose reduction is often performed empirically at the physician's discretion. Such adjustments may result in sub- or supratherapeutic anticoagulation. Although anti-Xa monitoring is considered the reference method for dose optimization, it is not always readily available. A regression-based approach may provide a structured alternative to empirical decision-making.

Aim of the study

To develop a regression model describing achieved anti-Xa activity and to compare its performance with routine weight-based dosing guided by clinical judgement.

Materials and methods

We analyzed 171 consecutive anti-Xa measurements in internal medicine patients treated with twice-daily enoxaparin. Once-daily regimens and out-of-window sampling were excluded. Blood samples were obtained 3–5 hours after at least the fourth dose. Body weight, administered dose, and renal function (eGFR, MDRD) were recorded. Linear regression was used to identify determinants of anti-Xa activity. Predictive performance was compared with physician-guided dosing.

Results

Seventy-eight patients met inclusion criteria, contributing 96 measurements. Of these, 56.4% were ≥65 years and 24.4% had CKD G4–G5. Weight-based dosing with discretionary renal adjustment showed weak association with achieved anti-Xa levels. A multivariable model including absolute dose, body weight and continuous renal function explained 24% of anti-Xa variability (RMSE 0.26) and demonstrated superior predictive accuracy compared with clinical dosing (RMSE 0.51), resulting in more frequent in-range anti-Xa values (86.5% vs 57.3%, $p<0.001$).

Conclusions

Empirical weight-based dosing with intuitive renal modification correlates poorly with achieved anti-Xa levels in a heterogeneous internal medicine population. A regression-based model improves prediction and increases the probability of achieving therapeutic range. A simplified dosing formula was derived: Single dose (mg) = 2/3 × body weight (kg) + 1/3 × eGFR + 7. External validation is required.

From Paper ECG to Artificial Intelligence: AI-Based Analysis of Cardiovascular–Kidney–Metabolic Syndrome Risk

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Introduction

Cardiovascular–kidney–metabolic (CKM) syndrome refers to the coexistence of cardiovascular disease (CVD), chronic kidney disease, and metabolic disorders such as Diabetes Mellitus (DM). In patients with DM, CKM syndrome is associated with increased morbidity and worse prognosis. Its diagnosis usually requires laboratory testing and specialist consultations. Electrocardiography (ECG) is a rapid, inexpensive, and widely available diagnostic tool. Recent advances in artificial intelligence (AI) enable extraction of clinically relevant information from ECG recordings beyond standard cardiological interpretation.

Aim of the study

To assess whether analysis of scanned paper ECG recordings using AI methods allows identification of CKM syndrome in people with DM.

Materials and methods

The study included 2,779 people with type 1 and type 2 DM. For this study, CKM syndrome was defined by the presence of CVD and/or chronic kidney disease. Paper-based 12-lead ECG recordings were digitized and used as input data for deep neural network models. Model performance was evaluated using standard classification metrics, including accuracy, F1 score, and area under the receiver operating characteristic curve (AUC).

Results

CKM syndrome was identified in 492 participants (17.7%). AI-based models demonstrated moderate to good ability to distinguish people with and without CKM syndrome. Models incorporating information from multiple ECG leads achieved the highest classification performance.

Conclusions

Scanned paper ECG recordings constitute a valuable data source for AI analysis. The ability to leverage routinely collected ECG data using AI highlights its potential as a practical and scalable diagnostic support tool, AI-based ECG assessment may support early risk stratification for advanced CKM syndrome in people with DM, particularly in settings with limited access to advanced diagnostic investigations.

Prophylaxis of Chronic Kidney Disease Among Young Adults. “Nerki bez Usterki”- Educational and Screening Program in Poland

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Introduction

The global prevalence of chronic kidney disease (CKD) is estimated at 850 million cases, accounting for approximately 10% of the world's population. Within the next 20 years, CKD is projected to become the 5th leading cause of death worldwide. CKD is an underdiagnosed condition in its early stages, particularly among young adults. Early identification of urinary abnormalities may enable timely nephrological evaluation and help prevent long-term complications.

Aim of the study

The aim of this project was to assess the feasibility and preliminary outcomes of a large-scale urine screening program designed for the early detection of potential kidney disease among secondary school students in Poland. The aim of the project is to screen 4500 young adults (18–19 years old) attending 3rd and 4th grades of secondary schools.

Materials and methods

The project “Nerki bez usterki” consists of two stages. The first stage is educational, featuring school-based lectures aimed at raising awareness about kidney diseases, their symptoms, and the importance of early diagnosis and appropriate treatment. In the second stage, participation is voluntary, and students may collect a urine dipstick test kit for self-testing. Participants independently perform general urine testing and anonymously submit their results via a dedicated project website. Abnormal results are defined as the presence of protein (PRO), blood (BLO) or glucose (GLU) in urine.

Results

A total of 3,590 students participated in educational meetings across Warsaw, Lublin, Białystok, Szczecin. Among them, 795 students collected urine test kits and submitted test results electronically. Overall, 76.9% of urine test results were within normal limits, while 23.1% demonstrated abnormalities indicative of potential kidney disease risk. The prevalence of abnormalities was as follows: PRO-7.4%, BLO-4.4%, GLU-0.9%, PRO+BLO-6.5%, PRO+GLU-2.1%, BLO+GLU-0.5%, PRO+GLU+BLO-1.3%.

Conclusions

Implementing prevention is the most crucial and cost-effective strategy for halting the progression of kidney disease. By prioritizing early intervention, it becomes possible to modify key risk factors associated with CKD. This project demonstrates that school-based urine screening combined with digital self-reporting is a feasible and effective approach for early identification of urinary abnormalities among adolescents. This initiative supports the implementation of structured, nationwide preventive programs aimed at early CKD detection and increased nephrological awareness in the adolescents.

National Ministry of Science and Higher Education MEiN/2023/DPI/3574

Role of Right Ventricular–Pulmonary Arterial Coupling Assessed by Echocardiography in Emergency Care Setting to Predict Acute Kidney Injury in Normotensive Patients with First Episode of Acute Pulmonary Embolism

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Introduction

Acute pulmonary embolism (APE) is a major cause of morbidity and mortality, ranking after myocardial infarction and stroke. Right ventricular (RV) failure is a hemodynamic consequence of APE. This condition can lead to renal congestion including acute kidney injury (AKI) and is detectable via echocardiography.

Aim of the study

The aim of this study was to evaluate the prognostic value of echocardiographically assessed right ventricular–pulmonary arterial coupling in predicting acute kidney injury in normotensive patients presenting with a first episode of acute pulmonary embolism in the emergency care setting.

Materials and methods

This single-center, retrospective study evaluated echocardiographic predictors of AKI. AKI was defined as a >0.3 mg/dL increase in plasma creatinine within 72 hours of diagnosis.

Results

350 normotensive patients experiencing a first episode of APE were included. AKI has occurred in 38 patients (11%) (AKI+group) vs control group-patients without AKI (AKI-). No significant difference was found in terms of age, sex and major comorbidities. Compared to those without AKI, the AKI (+) group presented reduced left ventricular ejection fraction [60% (55–60) vs. 60% (58–64), P = 0.006], larger RV dimensions [41 mm (34–45) vs. 38 mm (33–43), P = 0.04], and a higher prevalence of McConnell's sign (36.8% vs. 18.6%, P = 0.01). AKI (+) patient have shown reduced RV systolic function [TAPSE: 18 mm (15–23) vs. 22 mm (18–25), P = 0.007] and elevated PASP [43 mmHg (38.5–53.8) vs. 39.2 mmHg (29.5–48.9), P = 0.004]. The TAPSE/PASP index was significantly lower in AKI (+) patients [0.39 (0.29–0.64) vs. 0.55 (0.4–0.8), P < 0.001], and multivariate analysis confirmed it as the only independent predictor of AKI [OR 0.066, 95% CI 0.009–0.472, P = 0.007].

Conclusions

AKI is a notable complication in normotensive APE patients. The TAPSE/PASP ratio serves as a useful echocardiographic marker for identifying those at increased risk due to RV disfunction and renal congestion.

Survival-Oriented Clustering Using Obstructive Sleep Apnea and Polysomnographic Variables

Authors

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Introduction

Long-term mortality risk among patients undergoing polysomnography is heterogeneous and not fully explained by conventional sleep-disordered breathing severity metrics. We aimed to identify data-driven mortality-risk phenotypes by integrating demographics, comorbidities and polysomnography with time-to-event outcomes, and to explore whether distinct sub-phenotypes exist within derived risk strata using unsupervised clustering.

Aim of the study

To identify data-driven mortality risk phenotypes in a polysomnography cohort and detect distinct subgroups within risk strata using clustering

Materials and methods

We analyzed 4,368 consecutive adult patients referred for full-night attended polysomnography. Participants were followed for 8–20 years; 1,017 individuals (23.28%) died and 3,351 (76.72%) were alive at the end of follow-up. All-cause mortality and cause-of-death categories were obtained from national registry data.We applied two complementary approaches: (1) conditional inference survival trees to define data-driven risk groups and (2) a multivariable Cox model to compute individual risk scores and stratify patients by quantiles. Discrimination was assessed by concordance index (C-index); group separation by Kaplan–Meier curves and log-rank tests. To evaluate internal heterogeneity within the derived risk groups, we additionally performed unsupervised clustering using DBSCAN, and summarized cluster profiles using radial plots.

Results

Both approaches produced clearly separated survival strata with increasing age, nocturnal hypoxaemia and cardiometabolic burden. The Cox model showed strong discrimination (C-index 0.785; 95% CI 0.770–0.799) and stepwise worsening survival across higher-risk groups. Survival trees identified a parsimonious 3-group risk structure, with the highest risk in older patients with worse oxygenation and greater cardiovascular comorbidity. A 4-group solution further divided intermediate risk, uncovering a cardiovascular-burden phenotype despite similar OSA severity. Unsupervised clustering within risk strata revealed additional sub-phenotypes characterized by differing patterns of hypoxaemia, cardiometabolic comorbidity and symptom burden, visualized using radial plots.

Conclusions

Survival-oriented stratification identifies clinically meaningful OSA phenotypes beyond AHI and may support risk-tailored follow-up and targeted prevention strategies. Within-stratum clustering may further refine phenotype definition by highlighting clinically distinct subgroups within broader risk categories.

The Impact of Sugar Consumption on Lipid Profile in Kidney Transplant Recipients

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Introduction

A well-balanced diet is one of the important parts of recovery after kidney transplantation. Dietary habits are strongly associated with blood lipid levels, and dyslipidemia may contribute to aggravation of graft function by promoting atherosclerosis. One of the most common dietary habits in population is addition of sugar or honey to beverages and frequent consumption of sweets.

Aim of the study

The aim of study was to assess the impact of consumption of sweets and addition sugar or honey to beverages on blood lipid levels among kidney transplant recipients.

Materials and methods

The Food Intake Variety Questionnaire (FIVeQ) was taken non-anonymously among patients from transplantological outpatient clinic and hospital department. This questionnaire assess variety of diet over the last 7 days. Then the laboratory test results including lipid profile parameters were collected for up to 12 months following questionnaire completion. Data were collected between February and December 2025.

Results

Data were collected from 76 respondents including 45 men and 31 women. 38 patients reported adding sugar or honey to beverages and/or eating sweets while 38 denied these dietary habits. Patients reporting sugar or sweets consumption had higher blood triglyceride levels (median 146 mg/dl, IQR 104-252, n=38) compared to the patients who denied these habits (median 119 mg/dl, IQR 96.7-155, n=38). This difference was statistically significant (p=0.026).

Conclusions

Consumption of sweets and the addition of sugar or honey to beverages might be one of the factors associated with dyslipidemia in kidney transplant recipients. These findings indicate the necessity of dietary education in post-transplant care.

Internal Medicine Session II

Session Coordinators:
Jan Derenda
Wiktoria Mastej

Honorary Patronage

WARSAW MEDICAL CENTER

Airway Obstruction in Patients with Sarcoidosis: Indicence and Impact of Sarcoidosis Activity

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Introduction

Sarcoidosis is primarily considered to be a restrictive lung disease. However, airway obstruction may also occur in patients with this condition.

Aim of the study

The aim of this study was to assess the incidence of airway obstruction in patients with sarcoidosis and to identify disease features that distinguish sarcoidosis with obstructive pattern form other patients with the disease.

Materials and methods

This study was a part of a project designed to assess the clinical manifestation of patients with sarcoidosis and the diagnostic utility of Fluorodeoxyglucose Positron Emission Tomography-Computed Tomography (18 FDG PET-CT) in identifying patients with active pulmonary sarcoidosis. Sixty nine consecutive patients with sarcoidosis participating in the project underwent pulmonary function testing. Obstructive ventilatory pattern was diagnosed when the value of Forced Expiratory Volume in 1 second/Forced Vital Capacity (FEV1/FVC) was below the lower limit of normal (z-score < -1.645). Anthropometric and clinical data, results of selected laboratory tests and imaging were compared between patients with and without airway obstruction.

Results

Among 69 patients with sarcoidosis 15 (21.7%) presented airway obstruction. Of these, asthma was previously diagnosed in 9 (60.0%) and atopic dermatitis was present in 6 (40.0%) cases. In contrast, asthma was present in 18.5% and atopic dermatitis in 7.4% patients without airflow limitation (p=0.01 and p=0.005, respectively). There were no differences in the incidence of hilar/mediastinal lymphadenopathy in both groups, however, patients without airway obstruction tended to have a higher overall metabolic activity of lung lesions on PET-CT scans (SUVmax ≥2 and <8 in 2 out of 15 patients vs 24 out of 54 patients, p= ,0248; SUVmax ≥8 in 7 out of 15 patients vs 7 out of 54 patients, p=0,0086) than patients with an obstructive ventilatory pattern.

Conclusions

Our results show that one in five patients with sarcoidosis may present with an obstructive ventilatory pattern and this does not seem to be influenced by the presence of thoracic lymphadenopathy. Patients with airway obstruction should be carefully screened particularly for the co-existence of asthma and atopy bearing in mind that respiratory symptoms may not result only from sarcoidosis itself.

Association of Sleep Quality with Metabolic Parameters in a Population of Kidney Transplant Recipients

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Introduction

Poor sleep quality represents a significant clinical concern - it has been associated with adverse lipid profiles and elevated cardiovascular risk in the general population. This relationship is particularly pertinent for transplant recipients, who are routinely exposed to immunosuppressive regimens that disrupt lipid metabolism. Agents such as calcineurin inhibitors (cyclosporine, tacrolimus), steroids, and mTOR inhibitors (sirolimus, everolimus) are recognised contributors to an atherogenic profile. Given the increased vulnerability of kidney transplant (Ktx) recipients to dyslipidemia, it is essential to assess and address additional risk factors, including modifiable lifestyle behaviours that may affect this risk.

Aim of the study

This study aims to determine the association between sleep quality, as measured by the Athens Insomnia Scale (AIS), and metabolic profile parameters (total cholesterol, LDL-C, HDL-C) in a cohort of Polish kidney transplant recipients from one transplantation centre.

Materials and methods

Data were collected through a cross-sectional survey of Polish Ktx recipients, including 109 patients (61 males, 47 females, mean age was 52.3±13.3 years). Sleep quality was assessed using the AIS - an 8-item validated questionnaire that evaluates various parameters of sleep quality. A total score range is 0 to 24, with a score of 6 or higher indicating insomnia. Metabolic parameters included total cholesterol, LDL-C, HDL-C, and triglycerides. Correlations were analysed using Spearman's rank coefficient.

Results

The mean AIS score in the evaluated population was 6,5 ± 4,5. Insomnia, defined as an AIS score of 6 or higher, was present in 54.1% of patients. The mean results of total cholesterol were 175.5 ± 41.4 mg/dL, for LDL-C 89.5 ± 38.7 mg/dL and for triglycerides 157.5 ± 88.5 mg/dL. Significant correlations were observed between the total AIS score and total cholesterol (ρ=0.230, p=0.036), as well as between daytime fatigue (one of the sleep quality parameters included in AIS) and LDL-C (ρ=0.283, p=0.023).

Conclusions

The presence of insomnia in more than half of surveyed patients highlights its clinical significance within the kidney transplant recipient population. Overall, poor sleep quality is associated with an unfavourable metabolic profile, including increased levels of total cholesterol and LDL cholesterol. These findings underscore the need for insomnia prevention and treatment following kidney transplantation.

Association of Obstructive Sleep Apnea with Cardiovascular Mortality: A Competing-Risk Analysis

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Introduction

Obstructive sleep apnea (OSA) is a common respiratory disorder characterized by recurrent upper airway obstruction, intermittent hypoxia and sleep disruption. OSA is linked to cardiovascular morbidity, but evidence on cardiovascular mortality is limited, particularly when competing causes of death are considered. Clarifying this association is crucial for risk stratification and long-term prognostic assessment.

Aim of the study

The aim of this study was to evaluate the association between obstructive sleep apnea and cardiovascular mortality and to identify additional clinical factors associated with this outcome using cause-specific and competing-risk survival models.

Materials and methods

This observational cohort study included 4,368 patients with and without OSA followed for cardiovascular mortality. Cardiovascular death was defined using cause-of-death data, while non-cardiovascular death was treated as a competing event. Associations were evaluated using cause-specific Cox proportional hazards regression and Fine-Gray competing-risk models. Multivariable analyses were adjusted for demographic and clinical covariates, including age, sex, atrial fibrillation, hypertension, smoking status, metabolic treatment, hyperthyroidism and sleep-related parameters.

Results

During follow-up, 1,017 cardiovascular deaths occurred. Among cardiovascular deaths, heart failure and ischemic heart disease were the predominant causes, followed by cerebrovascular events. OSA was independently associated with increased cardiovascular mortality in both cause-specific Cox regression (HR 1.84; 95% CI 1.35-2.51; $p<0.001$) and the Fine-Gray competing-risk model (sHR 1.75; 95% CI 1.29-2.39; $p<0.001$). Additional independent predictors of cardiovascular mortality included older age, male sex, atrial fibrillation, smoking, and hyperthyroidism. Higher Epworth Sleepiness Scale scores were associated with increased risk, corresponding to approximately 2-3% higher risk per one-point increase. Mild headache severity was associated with lower risk, whereas moderate headache severity was not significantly associated with the outcome. The direction and magnitude of associations were consistent across both modeling approaches.

Conclusions

OSA is independently associated with higher cardiovascular mortality, even after accounting for competing non-cardiovascular deaths. Atrial fibrillation, hyperthyroidism, and daytime sleepiness further contribute to cardiovascular risk in this cohort, supporting the prognostic relevance of OSA for cardiovascular outcomes.

Clinical Variability of aHUS: Organ Involvement and Underlying Variants in Patients Affected by Atypical Hemolytic Uremic Syndrome

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Introduction

Atypical hemolytic uremic syndrome (aHUS) is a rare thrombotic microangiopathy characterised by nonimmune hemolytic anemia, thrombocytopenia, and renal failure. Its pathogenesis results from dysregulation of the alternative complement pathway, which damages the microvascular endothelium. The most common variants involve complement factor H (CFH), membrane cofactor protein (MCP/CD46), and complement factor I (CFI). While aHUS predominantly affects the kidneys, it may also target the central nervous system (CNS), heart, gastrointestinal tract, or skin.

Aim of the study

This study analyzed genetically sequenced aHUS patients to investigate how specific variants resulting in complement abnormalities impact the clinical phenotype, particularly regarding organ involvement.

Materials and methods

The study included 6 aHUS patients treated after an acute disease episode confirmed by biopsy. Informed consent for genetic testing was obtained from each subject. The follow-up period was 7.6±5.9 years. Clinical data were collected using medical documentation. Genetic testing was performed using NGS+MLPA methods.

Results

The group consisted of 6 patients (3 males, 3 females), mean age 37.5±7.5 years. aHUS was the primary cause of end-stage renal disease in 83%, with one case of IgA nephropathy. Pathogenic variants were identified in 83.33%: CFH (33.3%), CFHR1-3 (33.3%), CFI (16.6%), and aHUS risk haplotypes (16.6%). All patients had systemic thrombotic microangiopathy with symptomatic hemolysis. Multiorgan disease occurred in 2 patients (33.3%): kidney and heart involvement in one patient (16.6%) with CFI variant, and kidney and CNS involvement in one patient (16.6%) with CFH risk haplotype. Four patients (66.7%) showed only renal involvement. Due to the small study group, no significant correlation was identified between disease severity and genetic background.

Conclusions

The study shows that patients with varying severities of aHUS exhibit no significant correlation between disease severity and the genetic alteration (no genotype-phenotype correlation was found). Pathogenic variants of the alternative complement pathway are extensive, and due to variable penetrance, may affect the kidney alone or also the central nervous system and heart. These results highlight the unpredictability of aHUS clinical manifestations, underscoring challenges in risk assessment and emphasizing the importance of additional disease-triggering factors. Apart from genetic analysis, complementary functional studies are indicated.

Determinants of Career Plans Among High School Students in the Context of Medical Deserts and Workforce Shortages

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Introduction

The global healthcare sector faces a significant workforce shortage; the World Health Organization estimates a deficit of 11 million health workers worldwide by 2030. Unequal distribution of medical staff contributes to medical deserts — areas with limited access to healthcare professionals. In Poland, this mainly affects rural areas and small towns and is aggravated by an aging population. To address these shortages effectively, it is crucial to understand the motivations and attitudes of high school students, who represent the future medical workforce, particularly their willingness to work in underserved areas.

Aim of the study

The study aims to identify factors shaping career choices among future healthcare professionals and to inform strategies encouraging students to pursue medical careers in high-demand regions.

Materials and methods

An online survey using an original questionnaire was conducted among high school students in Poland (grades I–IV). The study included 4377 respondents (mean age approximately 16 years); most were female (93.8%) and attended schools in large (47.8%) or medium-sized cities (49.9%). Participants rated career-related factors on a five-point scale. Data were analyzed using Statistica software, including descriptive statistics, non-parametric tests, factor analysis, and linear regression models ($p \leq 0.05$).

Results

Internal motivation, including personal passion and the desire for knowledge, was the strongest driver of medical career choice. Altruistic motives ranked highest, while media influence was lowest. Financial status influenced perceptions; students from higher-income households valued pragmatic motives and university reputation, whereas those in a difficult financial situation identified financial and logistical barriers. Most preferred studying and working in large cities, while rural areas were least attractive, although students living there were more open to them. Students facing financial difficulties were more likely (44.4%) to choose shortage specializations. The influence of school career counselors on students' decisions was strikingly low.

Conclusions

Financial and logistical barriers contribute to workforce imbalances, especially in rural areas. Students from lower socioeconomic and rural backgrounds represent key potential for addressing shortages and should be supported through targeted scholarships. Strengthening professional career counseling in schools is necessary to promote shortage specializations and improve medical workforce planning.

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Impact of Amiodarone Therapy on Thyroid function: A Prospective Three-Month Single-Center Study in Latvia

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Introduction

Amiodarone is an antiarrhythmic medication used to treat and prevent a number of types of cardiac dysrhythmias. According to the literature, 15–20% of amiodarone-treated patients develop either amiodarone-induced thyrotoxicosis or amiodarone-induced hypothyroidism. Latvia is considered an iodine-deficient region, which may affect changes in thyroid hormone levels during amiodarone therapy.

Aim of the study

The aim of this study was to investigate changes in thyroid function, specifically thyroid-stimulating hormone (TSH) levels before and after three months of amiodarone therapy. The study also aimed to evaluate the impact of elevated anti-thyroid peroxidase (anti-TPO) antibody levels and baseline thyroid ultrasonographic abnormalities on subsequent thyroid dysfunction.

Materials and methods

In this prospective study, amiodarone therapy, used as a second-line treatment in most patients, was prescribed to 21 patients for at least three months. Indications included atrial fibrillation (n = 17), recurrent ventricular tachycardia (n = 3), and premature ventricular complexes in patients with structural heart disease (n = 1). Before initiation of amiodarone therapy, thyroid ultrasonography was performed, and serum anti-TPO, TSH, and peripheral thyroid hormones (T3 and T4) were measured. All patients were euthyroid at baseline. After three months of amiodarone therapy, TSH levels were re-evaluated. Statistical analysis was performed using SPSS, applying non-parametric tests to assess the impact of baseline thyroid ultrasound abnormalities and elevated anti-TPO levels on TSH changes during amiodarone therapy.

Results

Abnormal TSH levels were observed in 38% (n=6): TSH was above the reference range in 19% (n=3) and below the reference range in 19% (n=3). Patients with thyroid structural changes on ultrasound (n = 6) identified before initiation of amiodarone therapy more frequently demonstrated significant changes in TSH levels after three months of treatment ($p < 0.05$). All three patients with elevated anti-TPO levels had TSH levels above the reference range after three months of therapy.

Conclusions

Thyroid ultrasound findings and elevated anti–TPO may be associated with significant subsequent changes in TSH levels and the possible development of thyrotoxicosis and hypothyroidism in patients receiving amiodarone therapy. Further studies with larger sample sizes and longer follow-up are needed to guide a more cautious approach to prescribing amiodarone in such patients.

The Causes of Chronic Kidney Disease in Atypical Haemolytic Uremic Syndrome Patients and Its Correlation with Disease Severity

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Introduction

Atypical haemolytic uremic syndrome (aHUS) is a rare disease characterized by thrombotic microangiopathy (TMA). Therefore, its manifestations are thrombocytopenia, haemolytic anaemia and ischemic injury – particularly of kidneys as well as brain, the heart, the lungs, the intestines and other. The main kidney dysfunction in aHUS is acute kidney injury leading in some cases to chronic kidney disease (CKD). Nevertheless there are cases with prior history of CKD who subsequently develop TMA. This observation corresponds with current medical knowledge about complement activation in a broad range of diseases including primary and secondary glomerulopathies and systemic diseases.

Aim of the study

The aim of the study was to identify the cause of CKD in patients with aHUS and to evaluate the association between CKD etiology and disease severity.

Materials and methods

The study group consisted of 23 patients affected by aHUS aged 34.6±15.4 years. It includes 12 females and 11 males. From all the participants 6 of them have aHUS in native kidneys and 17 patients are renal recipients. Observation time is 7.6±5.9 years.

Results

Analysing the causes of CKD we have found pure TMA in 56% of patients, combined TMA with IgA nephropathy (IgAN) in 9%, chronic glomerulonephritis (GN) in 18% (primarily focal segmental glomerulosclerosis – 4.5%, C3 GN – 4.5%, immune-complex membranoproliferative GN – 4.5%, IgAN – 4.5%). In 17% of patients the cause of CKD was unknown -either was not determined or biopsy were not performed. More often the first episode of aHUS results in CKD (74%) than in acute kidney injury (26%). In 14 patients (60.8%) an urgent haemodialysis was administered on admission. In 7 out 17 transplant recipients (41%) aHUS diagnosis was established post-transplant. The rest of the organ recipients were diagnosed with aHUS before the renal transplantation. All the patients presented clear signs of TMA regardless of the cause of CKD. In 16 out of 23 patients anti-C5 therapy was administered resulting in complete or partial remission and resolution of TMA symptoms in each case.

Conclusions

The study shows that TMA can be isolated pathology affecting mostly the kidney or it may accompany other GN – IgAN most often. TMA may develop de novo in a kidney transplant recipient. In GN with complement activation a shift to TMA was observed. Apart from distinct etiology of CKD a good response for anti-C5 inhibitor was observed. Therefore, the results emphasize the need to carefully assess each patient to introduce the right treatment.

The Effectiveness of Packed Red Blood Cells Transfusion in Treating Posthemorrhagic Anemia Caused by Gastrointestinal Bleeding

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Introduction

Gastrointestinal (GI) bleeding is one of the most common medical emergencies that might quickly become life-threatening. Acute bleeding often requires hemodynamic stabilizations, since blood loss can lead to severe anaemia, causing tissue hypoxia. In such cases, packed red blood cells (PRBCs) transfusion, together with endoscopic hemostasis, is the basis of treatment.

Aim of the study

The aim of the study was to analyse the effectiveness of PRBCs transfusion in treating posthemorrhagic anemia caused by GI bleeding.

Materials and methods

A retrospective study analyzed medical records of patients who had been admitted to the Department of Internal Medicine, Kaunas Hospital of the Lithuanian University of Health Sciences in 2024 and were diagnosed with GI bleeding, posthemorrhagic anemia, and had received at least one PRBCs transfusion. A transfusion was considered effective if Hb increased by at least 10 g/l. Statistical data analysis was performed using IBM SPSS Statistics software (version 30.0). Descriptive statistical analysis, Mann-Whitney U test was performed for data analysis and differences were considered statistically significant when $p<0.05$.

Results

The study included 171 patients, of whom 94 (55%) were female and 77 (45%) were male. The mean of age was 72 (min. 20; max. 96) years. 120 (70.2%) patients had bleeding in the upper GI tract, 44 (25.7%) in the lower GI tract, and in 7 (4.1%) patients bleeding occurred in both. On average, each patient received 3.11±1.725 units of PRBCs. Most received 2 units of PRBCs (53.8%). Between 1 and 4 units of PRBCs were administered to 85.9% of patients, and more than 4 units to 14.1%. Almost half (45%) of patients required more than 1 transfusion. Transfusion was repeated if Hb was<80-100 (g/l) or declined and if signs of bleeding or hypoxia persisted. A second transfusion was administered to 77 (45%) patients, a third to 24 (25.5%), a fourth to 10 (5.9%), and a fifth to 4 (2.3%) patients. The first blood transfusion was effective in 124 (72.5%) patients (mean Hb increase 15.08 g/l), the second in 55 (71.4%) (14.86 g/l), the third in 15 (62.5%) (10.38 g/l), the fourth and later in 3 (30%) (6.85 g/l).

Conclusions

The findings indicate that blood transfusion was most effective after the first and second administrations. The effectiveness decreased with the subsequent transfusions, particularly after the third transfusion. An inadequate Hb response to PRBC transfusion in later administrations should prompt re-evaluation of the bleeding source.

The Outcome of Liver Transplantation in Elderly Patients – a Single Centre Study

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Introduction

Liver transplantation (LT) is a life-saving procedure in both end-stage liver disease and acute liver failure. The qualification for LT involves an assessment of patient's health status, mental state and family support. Age is currently an uncertain determinant of LT outcome and its impact on LT success requires further investigation.

Aim of the study

The purpose of this study is to assess the outcome of LT among elderly patients, defined as patients at 65 years old (yo) or more at the time of LT, in comparison with young adult patients defined as 50 yo or less.

Materials and methods

We conducted a retrospective analysis of 150 patients ≥ 65 yo, who underwent LT at Medical University of Warsaw from 01.2023 to 11.2025. As a comparable control group, we analyzed 150 patients ≤ 50 yo. Morbidity after LT was defined as the length of hospitalization directly after LT. Various statistical analyses, including Mann-Whitney U and chi-squared tests, were employed.

Results

We analyzed a group of 150 elderly patients with median age of 68 yo, ranging from 65 to 78 yo (95 males, 63.3%) and a group of 150 young patients with median age of 41 ranging from 18 to 50 yo (89 males, 59.3%). In the ≥ 65 yo group, there were 8 retransplantations and 27 deaths, in comparison to 7 and 19 in ≤ 50 yo group, respectively, no significant statistical difference was observed ($p = 0.791$ as for retransplantation and $p = 0.2$ as for death). Graft loss defined as death or retransplantation occurred in 29 cases in the ≥ 65 yo group (19.3%) and 23 cases in ≤ 50 yo group (15.3%), with no statistical significance ($p = 0.360$). Those patients were excluded from further investigation. There was no statistical difference in duration of hospitalization after LT ($p = 0.253$, median of 17 days ranging from 10 to 85 days in the ≥ 65 yo group vs 16 days ranging from 9 to 78 days in the ≤ 50 yo group).

Conclusions

In conclusion, this retrospective study showed a similar outcome of LT in elderly patients in comparison with younger patients. The process of qualification of elderly patients should not be based only on patient’s age, but mainly on general health condition.

The impact of electronic devices on health - perspective of Polish university students

Authors

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Introduction

Rising concern over non-ionizing EMF necessitates assessing future health professionals' awareness. This study evaluates students' knowledge and perceptions to address societal misconceptions and their role in health education.

Aim of the study

Evaluate students' EMF awareness and identify misconceptions concerning ionizing versus non-ionizing radiation. Assess health risk perceptions, precautionary behaviors, and the impact of medical physics education on professional preparedness.

Materials and methods

A 36-item online survey evaluated EMF knowledge and habits among 517 students from 19 Polish universities (age 22±5, range 17-50). Demographics: 54.9% females (3.5% undisclosed), 38.1% (n=197) rural residents, and 66.2% (n=342) in medical programs. The focus was academic background and professional or personal encounters with device-related health symptoms.

Results

Of 517 students, 52.4% (n=271) reported awareness of electromagnetic hypersensitivity. Clinical encounters with such patients were rare (6.9%, n=8/116), while social encounters reached 39.5% (n=204). Proficiency scores ≤3 were reported regarding ionizing applications (94.1%, n=486) and non-ionizing health impacts (93.4%, n=483), with only 38.3% (n=198) having formal biophysics education. Despite this, 73.1% (n=378) recognized a dual-natured EMF impact, though 35.4% (n=183) claimed below-threshold exposure remains harmful. In technical tests (N=450), participants erroneously attributed various ionizing radiations to electronics: general ionizing (28.7%, n=129), X-rays (16.9%, n=76), alpha (13.8%, n=62), gamma (12.2%, n=55), and beta particles (10%, n=45). Among 167 symptomatic users, side effects included eye pain (86.2%, n=144), fatigue (85.6%, n=143), and concentration issues (75.4%, n=126). Regarding microwaves, 12.4% (n=64) linked cancer to 3 or more daily meals, and 28.5% (n=147) restricted food heating. Smartphone habits (N=517): 37.1% (n=192) always and 18.2% (n=94) occasionally avoid nocturnal proximity. Of 259 identifying negative outcomes, 77.2% (n=200) attributed subsequent headaches to nocturnal smartphone proximity, and 71.4% (n=185) cited daytime fatigue. High-voltage line proximity would not influence house choice for 33.1% (n=171).

Conclusions

Findings show a gap between health anxiety and EMF proficiency, driven by confusion between ionizing and non-ionizing radiation. Precautionary behaviors and skepticism underscore the need for improved medical physics curricula to help future professionals debunk myths and address societal fears.

Laboratory Medicine Session

Session Coordinators:
Kinga Kmiecik
Anna Budzińska

A Preliminary Study of the Impact of Temperature, Freezing, and Thawing on CH50 Stability Using a Liposome-based Method

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Introduction

The complement system is implicated in various diseases, and measurements of classical pathway activity (CH50) are crucial for diagnosing complement deficiencies and monitoring C5-targeted therapies. However, CH50 assays are highly sensitive to pre-analytical conditions; therefore, sample transport and storage can significantly affect result reliability.

Aim of the study

The aim of the study was to evaluate CH50 stability in serum under various storage conditions simulating routine laboratory practice.

Materials and methods

This preliminary study evaluated CH50 stability in serum samples from seven healthy female donors under different conditions: storage at -80°C followed by multiple freeze-thaw cycles; storage at room temperature (RT) or 4°C for up to 168 hours; and storage at -20°C for 30 days. CH50 activity was measured using a spectrophotometric liposome assay. Bias was calculated as the percentage difference from reference values and compared to quality control thresholds (CVa=6%, RCV=10%, ACL=17%, TAE=18%).

Results

CH50 activity remained stable (≤6% bias) for up to two freeze-thaw cycles, ≤ 3hours at RT, and≤ 24 hours at 4°C. Storage at RT beyond 3 hours, at 4°C beyond 24 hours, or for 30 days at -20°C led to a significant decline in CH50 stability (≤ 30.6% bias at RT; 17% bias at -20°C). Regression analyses confirmed these findings, indicating that stricter pre-analytical controls are essential.

Conclusions

CH50 activity is stable only under stringent conditions: up to two freeze-thaw cycles,≤ 3hours at RT, or≤ 24 hours at 4°C. Prolonged storage, additional freeze-thaw cycles, and particularly storage at -20°C, significantly compromise CH50 stability. Rigorous pre-analytical protocols are vital for reliable CH50 measurements. Further studies are needed to validate these results in larger, more diverse cohorts.

Analysis of Pro-inflammatory Cytokines Concentrations in Platelet Concentrates as a Possible Cause of Adverse Transfusion Reactions Using Immunological Methods

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Introduction

Platelet transfusions are a therapeutic intervention for patients with thrombocytopenia where they help prevent or treat active bleeding. Despite advancements in blood components processing recipients often experience adverse reactions, including febrile non-hemolytic transfusion reactions with symptoms like fever, chills, and nausea. These reactions are often attributed to the "storage lesion" - a phenomenon occurring during platelet storage. It's speculated that while aging in vitro immunocompetent cells release pro-inflammatory mediators. These substances, like TNF-α, IL-1β, IL-8, can induce systemic inflammatory responses in the recipient upon infusion.

Aim of the study

The study seeks to quantify the concentration of 3 proinflammatory cytokines: TNF-α, IL-1β, IL-8 in platelets units post-transfusion and compare the concentration between two methods of analyzing.

Materials and methods

Cytokines concentrations were measured in 40 residual platelet concentrates. The analysis was performed via flow cytometry on BD FACSCanto II using CBA (Cytometric Bead Array) Human Enhanced Sensitivity kit with capturing beads by Becton Dickinson. The results were calculated by FCAP Array 3.0. A second immunoassay was performed on Ella by Bio-Techne. This method uses cartridges, where the analyte is captured by antibodies attached to glass nanoreactors. The concentrations of IL-8 were compared for 25 samples.

Results

Mean concentrations of: TNF-α, IL-1β, IL-8 measured in 40 samples were respectively: 0; 0,32 ± 0,26; 11,46 ± 6,52. Through statistical analysis we found high correlation between the results of compared IL-8 concentrations ($r=0,91$, $p < 0,05$).

Conclusions

The results demonstrate the presence of pro-inflammatory cytokines in platelet concentrates which, depending on their concentration, may suggest a potential association with transfusion reactions. Compared with reference values reported in the literature (The Magnetic Luminex Performance Assay kit for human high-sensitivity cytokines: IL-1β 0.23 (0.19–0.35); IL-8 2.49 (1.68–3.28); TNF-a 3.26 (2.65–3.79)), IL-8 showed notably higher concentration. However, none of the available studies were performed using an identical method. Despite a strong correlation between the two methods evaluated in our study, without validation confirming their agreement we cannot rely on results obtained by a different method. Further research is required to analyze a larger number of platelet concentrates and to measure these parameters in plasma from healthy donors.

Student Minigrant no. 24/M/MG/N/25

Cytotoxic Effects of Ashwagandha (Withania somnifera) on K562 Erythroleukemia Cells

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Introduction

Interest in plant-derived compounds as potential anticancer agents has increased in recent years, particularly in the context of hematological malignancies. Ashwagandha (Withania somnifera), a medicinal plant traditionally used in herbal medicine, has been reported to modulate oxidative stress, inflammatory pathways, and programmed cell death in leukemia models. Previous studies suggest that its bioactive constituents can inhibit proliferation of certain leukemia cell lines by inducing apoptosis, highlighting their potential therapeutic relevance. However, the effects of ashwagandha on erythroleukemia cells remain underexplored. The K562 cell line, a widely used in vitro model of human erythroleukemia, provides an appropriate system to assess changes in cancer cell survival following exposure to natural compounds.

Aim of the study

This study aimed to evaluate the cytotoxic effects of ashwagandha on K562 cells and to explore its potential influence on erythroleukemia therapy.

Materials and methods

K562 cells were cultured in RPMI-1640 medium supplemented with fetal bovine serum and antibiotic–antimycotic solution. Cells were seeded in 96-well plates and treated with ashwagandha at concentrations of 50, 25, and 12.5 mg/ml. Cell viability was assessed using the MTT assay. Following incubation, the formazan crystals were solubilized in DMSO, and absorbance was measured at 490 and 630 nm. Statistical analysis was performed using one-way ANOVA with Tukey’s post hoc test (Statistica software).

Results

Ashwagandha reduced K562 cell viability in a dose-dependent manner: 20.6%, 26.3%, and 34.0% at 50, 25, and 12.5 mg/ml, respectively. One-way ANOVA revealed a significant effect of ashwagandha concentration on cell viability ($p = 0.034$), with post hoc analysis showing a statistically significant difference between the 50 mg/ml and 12.5 mg/ml groups ($p = 0.028$).

Conclusions

These results indicate that ashwagandha exerts cytotoxic effects on human erythroleukemia cells, supporting its potential as a complementary agent in anticancer research. Further studies are warranted to elucidate its mechanisms of action and therapeutic relevance.

Minigrant Studencki WUM - 11/F/MG/N/24

How to Make Laboratory Tests More Time- and Cost-Efficient? Comparison of Novel Erythrocyte Sedimentation Rate (ESR) Assessment using Mindray BC-760 and Gold Standard Westergren Method

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Introduction

The Westergren erythrocyte sedimentation rate (ESR) measurement is a traditional, reference method recommended by the ICSH and is used as an indicator of inflammation. Although considered "old-fashioned," this test remains popular and useful in routine practice. However, to reduce the amount of blood required and to save time while retaining diagnostic value, alternative ESR measurement technologies are being developed.

Aim of the study

The aim of this study was to compare the diagnostic value, accuracy, and repeatability of ESR measured by the ESR method in Mindray BC-760 hematology analyzer with the Westergren methods.

Materials and methods

The study was conducted at the Central Laboratory of the Central Clinical Hospital in Warsaw using specimens submitted for routine testing. ESR was measured using the Westergren method in Westergren tubes (Sarstedt 1.8 ml, 3.8% trisodium citrate) for 60 minutes each. Alternatively, ESR was measured using the Mindray BC-760 in EDTA tubes (Sarstedt Monovette 2.6 ml EDTA-K2) with time of analysis of 100 seconds. The study included 200 samples (114 females and 86 males), with a mean age of 60 years for females and 59 years for males. For the precision study, mean, standard deviation (SD), and coefficient of variation (CV) were calculated. The Spearman's rank correlation test was used to evaluate correlation. Method comparison, evaluation and Passing-Bablok regression were performed. The Bland-Altman test was used to calculate bias, median, and 95% limits of agreement.

Results

The median ESR measured by the BC-760 was 8.0 mm, compared to 9 mm measured by the Westergren method. The study group was divided into two subgroups based on ESR range: normal value (<20 mm/h, 147 samples) and elevated value (>20 mm/h, 53 samples). The obtained Spearman's rank correlation coefficient for the entire group was 0.9407 (95% CI: 0.9218 to 0.9552), for the normal subgroup, 0.8658 (95% CI: 0.8170 to 0.9022), and for the elevated subgroup 0.9441 (95% CI: 0.9031 to 0.9680). Passing-Bablok linear regression yielded a proportional difference with a regression equation of +0.000 = 1.000x. Bland-Altman analysis showed a median of 0 (95% CI: 8.00–14.29).

Conclusions

This study demonstrated very good comparability between the alternative ESR assay and the classic Westergren method. ESR measurement using the BC-760 hematology analyzer provides reliable results and is both cost- and time-effective.

Phenotyping of Maternal Lewis Blood Group Antigens Directly From Human Milk: a Non-invasive Approach for Dietetic Research

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Introduction

The composition of human milk oligosaccharides (HMOs) and the milk microbiome plays a crucial role in infant metabolic and neurodevelopmental programming and is influenced by both maternal genetic and modifiable lifestyle factors, particularly diet. Lewis blood group antigens Lea and Leb, determined by the activity of alpha-(1,3/1,4)- and alpha-(1,2)-fucosyltransferases encoded by the FUT3 and FUT2 genes, determine maternal secretor status and provide a genetically determined baseline for HMO profiles. To accurately assess the impact of nutritional factors, stratification of individuals according to their Lewis phenotype is essential.

Aim of the study

This study provides a methodological foundation for nutritional research aimed at investigating the role of maternal diet in shaping human milk composition and the infant microbiota. The objective was to develop a non-invasive, ELISA-based method for detecting maternal phenotypic groups directly from breast milk samples.

Materials and methods

An indirect ELISA was optimized to detect Le and Le antigens in human milk. Different milk preparation procedures, dilutions, and blocking conditions were evaluated to ensure suitability for this complex food-derived biological matrix. Results obtained from milk samples were compared with standard blood-based serological testing.

Results

The optimized ELISA protocol successfully identified Lewis phenotypes in human milk with high concordance with blood-based results. From a dietary research perspective, this method was reliable under typical milk processing conditions and enabled clear differentiation of maternal secretor status, a key variable in diet–microbiome studies. The strongest analytical signals were observed at milk dilutions of 1:1 and 1:10. Detection of the Le antigen depended on blocking conditions, with BSA and casein outperforming non-fat dry milk in revealing weak positive signals, whereas the Le antigen was stable under all conditions tested, allowing clear identification of secretor phenotype.

Conclusions

Establishing this non-invasive protocol represents an important step for clinical dietetics and lactation research. By enabling direct phenotypic screening from milk samples, researchers can more effectively isolate and study the impact of maternal nutrition on milk oligosaccharides and the microbiome. This approach facilitates a more personalized understanding of how diet influences the biological quality of human milk.

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The Concentration of GFAP, Nfl, S100 and Lactate, Cell count and IgG Index in Patients with Multiple Sclerosis and Other Inflammatory and Non-inflammatory Neurologic Diseases

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Introduction

The differential diagnosis of central nervous system (CNS) diseases is challenging due to their complex nature, often involving inflammation, neurodegeneration, and demyelination. Proteins derived from neuronal and glial cells, such as S100, glial fibrillary acidic protein (GFAP), and neurofilament light chain (Nfl), measured in cerebrospinal fluid (CSF) and serum, can help assess CNS impairment. S100 and GFAP serve as markers of astrocyte injury, while Nfl indicates axonal damage. Elevated CSF lactate suggests oxidative stress and mitochondrial dysfunction. The IgG index is a well-established marker of intrathecal IgG synthesis.

Aim of the study

To evaluate the potential of GFAP, Nfl, S100, lactate, and cell count in CSF and serum for differentiating CNS diseases with and without inflammatory mechanisms.

Materials and methods

CSF and serum samples from 36 patients (aged 8–83, median 37; 53% female) were analyzed. Diagnoses included multiple sclerosis (MS, n=7), other inflammatory neurological diseases (OIND: viral encephalitis, neuroborreliosis, autoimmune encephalitis, optic nerve inflammation, ADEM; n=15), and other non-inflammatory neurological diseases (ONIND: ALS, migraine, seizures; n=14). GFAP, Nfl, S100, and IgG were measured using a Cobas Roche analyzer; lactate with an ABL835FLEX Radiometer; and CSF cell count with a Sysmex XN analyzer. Statistical analysis included Brown-Forsythe, Welch ANOVA, and Welch's t test.

Results

No significant differences in GFAP, Nfl, or S100 concentrations in CSF and serum, or in CSF cell count, were found among MS, OIND, and ONIND groups. However, CSF lactate was significantly higher in MS and OIND compared to ONIND (1.4 mmol/L, 1.5 mmol/L, and 1.0 mmol/L, respectively; $p<0.05$). The IgG index was significantly higher in MS than ONIND (0.83 vs. 0.58, $p<0.05$), but not significantly different between MS and OIND or OIND and ONIND.

Conclusions

GFAP, Nfl, S100, and CSF cell count did not differentiate MS, OIND, and ONIND. Elevated CSF lactate distinguished inflammatory from non-inflammatory diseases. A higher IgG index in MS compared to ONIND supports its utility for MS diagnosis. Limitations include small sample size and heterogeneity, which may affect statistical power and generalizability.

Laryngology, Audiology, Phoniatrics & Ophthalmology Session

Session Coordinators:
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ABR.AI: An integrated AI-based System for Automated Auditory Brainstem Response Analysis and Hearing Threshold Estimation

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Introduction

Auditory Brainstem Response (ABR) is a widely used objective method for hearing assessment and auditory pathway evaluation. Despite its essential role, ABR interpretation, particularly wave V identification and hearing threshold estimation remains time-consuming and strongly dependent on expert experience, leading to observer-related variability. Recent advances in artificial intelligence (AI) create an opportunity to automate ABR analysis and improve diagnostic efficiency and reproducibility.

Aim of the study

The primary aim of ABR.AI project is to develop and validate an AI-based system for automated ABR analysis, enabling reliable hearing threshold estimation. The secondary aim is to design and implement an integrated digital platform, including dedicated software for technicians and physicians, as well as educational platform with an AI chatbot providing ABR-related information adapted to patients, technicians, and clinicians.

Materials and methods

A dataset of 16,757 ABR medical records was collected, with 15,105 records used for training and 1,652 for testing. Deep learning models based on image processing of graphical ABR representations were trained to estimate hearing thresholds. Automated threshold estimates generated by the model were then compared with thresholds marked by expert clinicians. In parallel, a clinical application was designed to support workflow integration. The platform enables ABR data import and manual or fully automated wave V-based analysis. Additionally, an AI-based educational and decision-support chatbot was developed using expert-curated ABR-related knowledge, tailored to three user groups: patients, technicians, and physicians.

Results

The ABR.AI AI model achieved approximately 88% accuracy at 0 dB tolerance and over 98% accuracy within ±10 dB tolerance compared with expert-defined hearing thresholds. The integrated clinical platform enabled efficient review and sharing of ABR results between technicians and physicians. Expert evaluation confirmed the clinical reliability and usability of AI-based educational support tools.

Conclusions

The ABR.AI project has evolved from a proof-of-concept into a clinically applicable AI-based platform for automated ABR analysis. By combining deep learning algorithms with integrated clinical software, the platform enhances diagnostic efficiency and reproducibility, representing a meaningful step toward standardized, AI-assisted hearing diagnostics.

This research is conducted as part of the project "ABR.AI - system oparty o technologię AI do szacowania progu słyszenia na podstawie szeregów natężeniowych rejestracji odpowiedzi fali V," nr KPOD.07.07-IW.07-0222/24. Krajowy Plan Odbudowy i Zwiększania Odporności 2024/ABM/03/KPO/KPOD.07.07-IW.07-0222/24-00.

Cardiovascular Peptide Biomarkers Are Associated with Macular Degeneration in The Bialystok PLUS General Population Cohort

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Introduction

Age-related macular degeneration (AMD) and cardiovascular disease (CVD) share numerous risk factors. This suggests overlapping some pathophysiological pathways, however, protein biomarkers for AMD remain lacking. Therefore, identification shared circulating protein profiles offers a promising strategy to elucidate this connection, improving early detection of AMD and provides an opportunity to discover new therapeutic targets.

Aim of the study

Investigation of the association between circulating cardiovascular protein biomarkers and age-related macular degeneration (AMD) in a Bialystok PLUS population-based cohort study.

Materials and methods

This cross-sectional analysis included 699 participants aged ≥50 years (AMD+ = 93; AMD− = 606). AMD was graded from fundus photos with the use of the Wisconsin and modified International Classification systems. Ninety-two cardiovascular proteins were quantified in serum with the Olink Target Cardiovascular III panel. Age-adjusted linear or logistic regressions assessed biomarker-AMD associations, and receiver-operating-characteristic (ROC) curves evaluated discriminative performance.

Results

After adjustment, AMD+ participants exhibited lower galectin-4 ($\beta = -0.15$, $p = 0.043$) and TNF-receptor-superfamily-member-10C (TNFRSF10C) ($\beta = -0.17$, $p = 0.037$) concentrations and higher von Willebrand factor (vWF) levels ($\beta = 0.22$, $p = 0.036$) versus AMD− individuals. Galectin-4, TNFRSF10C, and vWF predicted AMD with areas under the ROC curve of 0.613 (95% confidence interval [CI] 0.516–0.709), 0.606 (0.520–0.692), and 0.594 (0.500–0.687), respectively. Optimal cut-offs were 4.05 NPX for galectin-4, 5.09 NPX for TNFRSF10C, and 8.03 NPX for vWF, yielding sensitivities/specificities of 57%/63%, 58%/62% and 55%/63%, respectively.

Conclusions

Elevated vWF and reduced galectin-4 and TNFRSF10C are independently associated with AMD, suggesting overlapping vascular, inflammatory and apoptotic pathways with CVD. Incorporation of these peptides into risk-stratification algorithms could enhance early AMD detection and motivate mechanistic studies targeting the TRAIL–TNFRSF10C axis and galectin-mediated signaling.

Equations for More Accurate Cochlear Duct Length as Measured by Computed Tomography of the Temporal Bone

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Introduction

Accurate preoperative estimation of cochlear duct length (CDL) can aid in cochlear implant (CI) planning and electrode selection. While various mathematical formulas have been proposed to calculate CDL from geometric cochlear parameters extracted from CT imaging, discrepancies between manual techniques and modern software introduce variability in clinical practice.

Aim of the study

This study aimed to compare CDL values derived from three established literature-based equations – Alexiades, Schurzig, a combined formula – and a proposed “corrected-combined” modification of the latter against OTOPLAN software to evaluate differences and correlations between them.

Materials and methods

Retrospective analysis was performed on CT scans of 48 cochleae of CI candidates. Cochlear parameters, including basal turn diameter (A-value) and width (B-value), were measured using OTOPLAN (version 3.1) and applied to each formula to estimate CDL at the level of organ of Corti. The corrected-combined equation utilized a modified lateral wall to organ of Corti distance of 0.629 mm based on synchrotron imaging data in literature. Agreement was assessed via mean differences, standard deviation (SD) of differences and coefficient of determination (R2). Friedman's test with Dunn's post-hoc was performed to compare individual CDL values and absolute errors relative to OTOPLAN. To further quantify predictive accuracy of the conversion formulas, the Mean Absolute Error (MAE) was calculated, which was followed by Wilcoxon test.

Results

Among literature-based equations, the combined equation demonstrated both the lowest mean difference (1.20 mm) and SD of difference (0.12 mm) relative to OTOPLAN. Furthermore, along with Schurzig’s equation, it displayed the highest value of R2 coefficient (0.996). However, its modification in the corrected-combined equation resulted in significantly lower mean difference (-0.12 mm). The analysis confirmed that the corrected-combined approach yielded significantly lower absolute errors than all other manual methods. Furthermore, the derived conversion equations significantly reduced the magnitude of error across all manual methods with a median improvement in accuracy ranging from 0.082 mm to 1.975 mm.

Conclusions

The corrected-combined equation provides the most accurate manual reflection of OTOPLAN-derived CDL values. The proposed conversion equations enable straightforward translation of results across different techniques, facilitating reliable comparison and standardization of CDL measurements among studies.

This work was carried out as part of the research project No. 2024/ABM/03/KPO/KPOD.07.07-IW.07-0221/24-00, funded by the Medical Research Agency.

Nd:YAG Laser Capsulotomy Effectiveness: Factors Influencing Treatment Outcomes in Patients with Posterior Capsule Opacification

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Introduction

Posterior capsule opacification (PCO) is the most common late complication following cataract surgery and a frequent cause of decreased visual acuity. Neodymium-doped yttrium aluminum garnet (Nd:YAG) laser capsulotomy is the standard treatment. However, visual outcomes are not always satisfactory and can be limited by coexisting ocular or systemic diseases.

Aim of the study

The aim of this study was to assess the short-term effectiveness of Nd:YAG laser capsulotomy, measured by improvement in visual acuity at the first postoperative follow-up (7-14 days after the procedure), and to identify factors associated with suboptimal visual outcomes.

Materials and methods

We performed a retrospective cohort analysis of patients treated with Nd:YAG laser capsulotomy for posterior capsule opacification in 2024 at a university ophthalmology center. The study group included 91 patients, representing 107 treated eyes. We assessed distance visual acuity before surgery and at the first postoperative visit, 7-14 days after the procedure. In addition, the impact of age, time since cataract surgery, initial visual acuity, and the presence of coexisting ocular or systemic diseases on treatment outcomes was evaluated. Statistical analysis was performed by GraphPad Prism 10.

Results

Visual acuity improved in 85 eyes (79.4%), while in 18 eyes (16.8%), no improvement or deterioration was noted. The mean change in visual acuity was 0.266. Age and time elapsed since cataract surgery were not significantly associated with treatment outcome. A significant negative correlation was found between baseline visual acuity and postoperative improvement ($p < 0.001$). The presence of any coexisting ocular disease significantly increased the risk of treatment failure (OR = 5.94, $p = 0.0138$). Age-related macular degeneration (AMD) was the most relevant factor associated with lack of improvement (OR = 2.97, $p = 0.0458$), whereas epiretinal membrane (ERM) and glaucoma were not significantly associated with the outcome.

Conclusions

Nd:YAG laser capsulotomy is widely used as a short-term treatment for PCO, but nearly one in five patients does not achieve visual improvement. Pre-existing AMD is the most frequent cause of treatment failure. Careful preoperative assessment and clear communication with patients about uncertain visual prognosis are essential, especially in patients with coexisting conditions. This is particularly relevant in academic clinical centers, where patients often present with more complex comorbidity profiles.

Retrospective Analysis of Diagnostic Practices in Patients with Retrobulbar Optic Neuritis

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Introduction

Optic neuritis (ON) is a major neuro-ophthalmic emergency and often represents the first manifestation of chronic demyelinating disorders such as multiple sclerosis (MS) or neuromyelitis optica spectrum disorders (NMOSD). Despite its prognostic relevance, ON has been diagnosed mainly clinically. In September 2025, revised McDonald criteria, endorsed by the European Committee for Treatment and Research in Multiple Sclerosis, incorporated the optic nerve as a fifth anatomical location for MS diagnosis. These criteria recommend optical coherence tomography (OCT) and visual evoked potentials (VEP) to demonstrate dissemination in space, while magnetic resonance imaging (MRI) plays a complementary role. This change highlights the need to evaluate real-life diagnostic practice before implementation of the new criteria.

Aim of the study

To assess real-life diagnostic pathways for suspected ON in an emergency eye department of a tertiary referral center in Warsaw, Poland, in the pre-new guidelines era.

Materials and methods

We performed a retrospective analysis of medical records of patients diagnosed with retrobulbar ON at the emergency eye department between January 2015 and December 2025.

Results

A total of 132 cases were included (mean age 39.3 years), with a female predominance (70.5%). Median visual acuity at presentation was 0.30 logMAR, and severe legal blindness level of vision (≥1.0 logMAR) was observed in 19.7% of cases. Optic disc edema was documented in 23.7%. A history of previous ON was present in 18.2% of patients. This group presented a higher prevalence of documented or suspected MS (OR 23.56, $p<0.001$). Recurrent ON in the same eye occurred in 15.3% of cases and was also significantly associated with MS diagnosis (OR 9.60, $p<0.001$). Overall, MS was documented or suspected in 20.5% of patients. Among all patients, OCT was performed in 25.0%, VEP in 18.9%, brain MRI in 37.9%, and orbital MRI in 23.7%. Neurological symptoms were reported in several cases: sensory disturbances in approximately 12% of cases, motor deficits in 6%, balance impairment in 5%, and cognitive complaints in 4%.

Conclusions

In an eye emergency setting, retrobulbar ON is still diagnosed primarily by clinical observation, with limited and inconsistent use of objective tests. Routine use of OCT and VEP in this case may improve alignment with current standards and improve risk stratification for demyelinating disease.

Simple Phenotypic Classification of Head and Neck Paragangliomas Integrating Tumour Size, Site and Proliferative Activity

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Introduction

Head and neck paragangliomas are rare and biologically heterogeneous tumours, with highly variable presentation and clinical behaviour. As a result, clinically useful risk stratification remains difficult

Aim of the study

We explored whether unsupervised clustering could identify clinically meaningful paraganglioma phenotypes using routinely available tumour characteristics, with particular emphasis on molecular and immunohistochemical variables. We also asked whether data-driven phenotypes might help account for biological heterogeneity and differences in presentation and disease course

Materials and methods

Retrospective surgical cohort analysed using Gower distance and k-medoids clustering of clinical and Ki-67 data

Results

We analysed 147 patients who underwent surgery for paraganglioma. The median age at operation was 57 years (IQR 44–67). Median maximum tumour diameter was 28.5 mm (IQR 20.0–45.0; n = 94). The most common tumour location was cervical (52/147), followed by tympanic (24/147) and jugular foramen (22/147); mixed-site tumours were observed in 10/147. Among patients with available documentation, 84/108 (77.8%) were symptomatic; multifocal disease was reported in 15/127 (11.8%), and catecholamine secretion in 7/31 (22.6%). Using Gower distance and k-medoids clustering, we performed unsupervised phenotyping in a core dataset (n = 140) including tumour size (maximum diameter), Ki-67, laterality, anatomical site and key clinical features. A two-cluster solution emerged. One cluster represented the predominant phenotype characterised by low proliferative activity and typical tumour size (median Ki-67 1.5%; median maximum diameter 27 mm). The second cluster was less frequent and showed higher proliferative activity and larger tumours (median Ki-67 4.75%; median maximum diameter 32 mm). Internal validation with repeated split-half prediction strength suggested moderate stability of the two-cluster structure (median 0.60; IQR 0.49–0.65). Cluster 2 also demonstrated a clear cervical predominance compared with Cluster 1 (14/18, 77.8% vs 42/95, 44.2%; p = 0.011)

Conclusions

We propose a simple, data-driven phenotypic classification of head and neck paragangliomas based on tumour size, anatomical site and proliferative activity (Ki-67). This approach distinguishes a predominant “small/typical-size, low-proliferative” phenotype from a less common “cervical-predominant, larger, higher-proliferative” phenotype, offering a pragmatic framework for biologically informed stratification that warrants external validation

Lifestyle Medicine & Public Health Session

Session Coordinators:
Maja Piechowska-Jóźwiak
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An Exploratory Analysis of the Distribution, Occupational Patterning, and Functional Impact of Self-Reported Musculoskeletal Symptoms in Latvian Workers

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Introduction

Musculoskeletal disorders (MSDs) are a major contributor to work-related functional limitations across occupational sectors. While MSD research often focuses on single anatomical regions, growing evidence suggests that multi-site symptom clustering better explains functional impact and ergonomic risk.

Aim of the study

This study explores the distribution of musculoskeletal symptoms across body regions,their co-occurrence,functional consequences,and variation across occupational groups in a heterogeneous sample of Latvian workers.

Materials and methods

A cross-sectional exploratory analysis was conducted among 46 employed adults using the Latvian-translated Nordic Musculoskeletal Questionnaire (NMQ). 12-month prevalence of musculoskeletal symptoms was assessed for 8 body regions and dichotomised as present or absent. A total musculoskeletal symptom score (range 0–9) was calculated. Multi-site symptom burden was categorised as none (0 regions), single-site (1 region), or multi-site (≥2 regions). Participants were grouped into 4 occupational categories based on job tasks and work characteristics. Functional impact was assessed using a derived binary variable indicating any work interruption due to musculoskeletal symptoms. Descriptive statistics, Spearman correlation analyses, and Chi-square tests of association were applied.

Results

The median total musculoskeletal symptom burden over 12 months was 3(mean 3.04±2.36), with most affected regions being lower back(67.4%), neck(58.7%), and shoulders(43.5%). Multi-site symptoms occurred in 56.5% of participants. Significant positive correlations were observed between anatomically related regions, including neck and shoulders(ρ=0.379,p=0.009), neck and upper back(ρ=0.401,p=0.006), and shoulders and wrists/hands(ρ=0.419,p=0.004), indicating symptom clustering. Higher proportions of multi-site symptoms were observed in certain occupational groups; however, the association between occupational group and multi-site symptom burden was not statistically significant(x^2=5.85,df=3,p=0.119).

Conclusions

This exploratory analysis highlights a high prevalence of multi-site musculoskeletal symptoms among Latvian workers, with clustering across body regions and functional consequences.Although between-group differences were not statistically significant, occupational patterns suggest job-specific task influences on multi-site symptom burden.Findings support a multi-site, function-oriented approach to ergonomic risk assessment and provide a foundation for larger, occupation-specific studies.

Are we there yet: Can Large Language Models pass the Polish State Specialization Examination in Neurology?

Authors

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Introduction

Artificial intelligence has emerged as a cutting-edge technology, also influencing the field of medicine. Among AI technologies, large language models (LLMs) are of particular interest in the health and medical sciences.

Aim of the study

This study aimed to analyze the performance of five LLMs, including ChatGPT o3, Gemini 2.5 Pro, Copilot Pro, Claude Opus 4, and DeepSeek-R1, on the Polish State Specialization Examination in Neurology.

Materials and methods

The questions were presented exactly as they appeared on the exam, retaining their original format without any changes made by the research team.

Results

All LLMs passed the examination, with ChatGPT o3 achieving the best results. Significant differences were found between DeepSeek-R1 and the other LLMs, with DeepSeek-R1 achieving a lower proportion of correct answers in all cases. Fleiss' κ analysis revealed significant agreement among the five LLMs in their responses to the examination questions ($\kappa = 0.754$, $p < 0.001$). Thus, following DeepSeek-R1 exclusion, the agreement increased slightly ($\kappa = 0.809$, $p < 0.001$), indicating greater consistency among the remaining four models. Finally, receiving operator characteristic curves, demonstrated acceptable discriminative ability of item difficulty index for to discriminate between correct and incorrect responses, with area under curve values ranging from 0.681 (for Claude Opus 4) to 0.753 (for Gemini 2.5 Pro).

Conclusions

Each LLM model analyzed was able to successfully pass the Polish state specialization exam in neurology. However, none of the models achieved a perfect score, which highlights the need for caution when using them in exam preparation; to date, they cannot be relied upon as the sole source of knowledge.

Consumption of Sweets and Its Association with Fasting Glucose and Kidney Function Parameters in Kidney Transplant Recipients

Authors

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Introduction

Post-transplantation care is a complex issue involving all aspects of patients' life including treatment adherence, physical activity and rehabilitation, psychological support and dietary habits. As untreated or poorly controlled diabetes can lead to renal failure and a subsequent need for a kidney transplantation, it is essential to monitor patients' fasting glucose levels. Adequate assessment of glycaemic control and graft function should indicate necessary dietary adjustments or administration of drugs.

Aim of the study

The study aimed to determine whether higher consumption of sweets is associated with higher fasting glucose levels and altered kidney function in renal transplant recipients.

Materials and methods

The population of the study consisted of transplant recipients. The participants were surveyed using the Food Intake Variety Questionnaire (FIVeQ). All individuals had undergone renal transplantation at least one year before the survey and were not hospitalized for more than two days before the questionnaire. We correlated participants' sweet consumption with fasting glucose (N=98) and estimated glomerular filtration rate (eGFR) along with serum creatinine (N=103).

Results

Statistical analysis was performed using linear regression. The results revealed a statistically significant negative association between sweets intake and fasting glucose level (B=-22.0, p=0.019), with sweets consumption explaining 5.6% of the variance (R2=0.0562). A significant positive correlation was observed between sweet consumption and eGFR (p=0.198, B=16.3). In contrast, no significant association was established between sweet consumption and creatinine levels (p=0.574).

Conclusions

Observed findings present a clinical paradox and contrast with general dietary expectations. The regression model for this cohort appears inverted. This may indicate behavioural modification, such as dietary restrictions or a different clinical status, rather than the physiological effect of higher sugar intake. Therefore, it is crucial to analyse additional dietary factors to properly assess the fasting glucose levels, graft function, and patient compliance.

Do We Know Enough About Diabetes? An Analysis of Knowledge and Awareness in the General Population

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Introduction

Diabetes mellitus is a major public health challenge, significantly affecting quality of life and generating substantial social costs. Effective prevention and early diagnosis depend on public knowledge of its symptoms, risk factors and complications.

Aim of the study

To characterize the study population and assess respondents' knowledge of diabetes, its symptoms, complications, and impact on quality of life.

Materials and methods

A cross-sectional anonymous questionnaire survey was conducted between October 2025 and February 2026 among 426 individuals from the general population in Poland, recruited using convenience sampling via publicly available online and paper-based questionnaires. Data on demographics, knowledge of diabetes, its symptoms, risk factors, complications, and health-related behaviors were analyzed using descriptive statistical methods. Results were presented as absolute numbers and percentages.

Results

The mean age of respondents was 31.6 ± 14.4 years, and women predominated (81.0%). Over half had higher education or were students, including 19.0% medical students. Most respondents recognized diabetes as a common disease (89.7%) and as negatively affecting quality of life (94.6%). Although 87.1% declared knowledge of symptoms, only 31.7% correctly identified all key symptoms. Hypoglycemia was correctly identified by 49.5% of participants. Normal fasting glucose values were known by 71.6%, whereas awareness of HbA1c was low (31.7%). Overweight or obesity (94.4%), unhealthy diet (85.0%), and physical inactivity (77.7%) were the most recognized risk factors. Diabetes was less often associated with smoking (45.3%) and alcohol consumption (56.3%), and nearly one in four respondents incorrectly indicated infections as a cause of the disease. Awareness of complications varied, with diabetic foot being the best recognized (86.1%). Around 60–70% of respondents identified associations between diabetes and kidney disease, atherosclerosis, myocardial infarction, and stroke. Cataract (47.9%), increased cancer risk (49.8%), and psychological or psychiatric complications (44.1%) were mentioned considerably less often. Full knowledge of all analyzed complications was demonstrated by only 14.1% of respondents.

Conclusions

Despite high public awareness of diabetes prevalence and its impact on quality of life, comprehensive knowledge remains insufficient in the general population. The findings indicate a need for intensified educational initiatives.

Environmental Identity and Sleep Disturbances in Kidney Transplant Recipients

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Introduction

Sleep disturbances are common among recipients of kidney transplants and negatively affect quality of life. As long-term outcomes increasingly extend beyond graft survival, psychosocial factors influencing sleep quality warrant greater attention in this population. Environmental identity has been associated with health-related behaviors and well-being. However, its association with insomnia severity in this population remains unexplored. In this context, environmental identity is understood as the psychosocial component of the human-environment relationship rather than an indicator of actual environmental exposure.

Aim of the study

The aim of this exploratory study was to examine the association between self-declared environmental identity and sleep disturbances in recipients of kidney transplants.

Materials and methods

Patients were recruited at the Department of Transplantology, Immunology, Nephrology and Internal Diseases of the Medical University of Warsaw. The study population consisted of 109 adult kidney transplant recipients, at least one year post-transplantation. A cross-sectional study design was used. Participants completed the Environmental Identity Scale and the Athens Insomnia Scale. These psychosocial instruments used were treated as indicators of subjective functioning rather than predictors of causal nature. Statistical analyses were conducted using JASP software, and Pearson's correlation coefficient was calculated based on mean Environmental Identity and Athens Insomnia Scale scores for each participant.

Results

The study included 109 kidney transplant recipients. Pearson's correlation analysis revealed a weak negative association between environmental identity and insomnia severity ($r = -0.20$, $p = .037$, 95% CI [−0.37, −0.01]).

Conclusions

Higher environmental identity among kidney transplant recipients was associated with lower insomnia severity. However, the observed association was weak and the cross-sectional design of the study precludes causal inference. Despite these limitations, the observed association suggests that psychosocial factors, including the human-environment relationship, may be relevant to sleep quality in this population. Future research should combine psychosocial measurements with objective environmental data and adopt a longitudinal design.

Gender-related Patterns in Specialty Preferences Among Indian Medical Students in Kazakhstan: A Cross-sectional Study

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Introduction

Specialty preference influences workforce distribution; evidence among international medical students training outside their home country remains limited.

Aim of the study

To assess gender-related patterns in preferred specialties and key motivating factors among Indian medical students at Karaganda Medical University.

Materials and methods

A cross-sectional questionnaire study was conducted among Indian medical students (n=132). Preferences for specialties and motivations (salary, prestige, career opportunities, work–life balance, emotional workload, training duration, international practice opportunities) were rated on a Likert scale. Gender comparisons were performed using x^2 tests for categorical variables ($\alpha=0.05$).

Results

The study included 132 Indian medical students (97 men, 73.5%; 35 women, 26.5%). Surgery was the most frequently preferred specialty in both groups (men 45.4%; women 25.7%). Male students demonstrated higher odds of preferring surgical specialties compared with female students (OR = 2.40, 95% CI 1.02–5.65); however, this association did not reach conventional statistical significance ($x^2 = 3.35$, $p = 0.067$). Across both genders, the highest-rated motivating factors for specialty choice on a Likert scale (1–5) were interest in practical skills, specialty prestige, and career and academic opportunities. No statistically significant gender differences were observed for any assessed motivational factor, including salary expectations, work–life balance, emotional workload, training duration, or opportunities for international practice (Mann–Whitney U test, all $p > 0.05$).

Conclusions

Among Indian medical students studying in Kazakhstan, a gender-related trend in specialty preferences was observed, with higher odds of surgical preference among male students, while motivational profiles were largely comparable between genders. The absence of significant gender differences in key motivating factors suggests that observed variations in specialty choice may be influenced by broader sociocultural or structural determinants rather than divergent individual motivations. These findings have implications for healthcare workforce planning and highlight the need for tailored career counselling strategies for international medical student populations. Interpretation should consider the smaller female subgroup, which may have limited statistical power.

Sleep Quality and Anthropometric Parameters (BMI and Waist-to-Hip Ratio) in Kidney Transplant Recipients: Single Transplant Center Survey Findings

Authors

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Introduction

Despite improvements in graft survival and post-transplant care, kidney transplant (KTx) recipients remain at elevated cardiovascular (CV) risk. While waist-to-hip ratio (WHR), body mass index (BMI), and sleep quality are all recognized indicators of CV complication risk in this group of patients, the correlations between these parameters have been insufficiently studied.

Aim of the study

The study explores the relation between sleep quality and anthropometric parameters (BMI and WHR) in post-KTx patients in a single transplant center to assess whether these CV risk indicators are interrelated.

Materials and methods

The data were collected using a cross-sectional, anonymous questionnaire disseminated among KTx recipients (min. 12 months post-procedure) in a single transplant center. The standardized Athens Insomnia Scale (AIS), consisting of multiple-choice questions, was used to assess sleep patterns. Respondents provided their height and weight for BMI calculations and were measured with a measuring tape to obtain the WHR. Information was gathered between February, 2025 and December, 2025.

Results

The study group comprised 108 participants. The mean BMI was 25.7 kg/m², with 51 (46.8%) healthy-weight, 42 (38.5%) overweight (BMI ≥25), and 15 (14.7%) obese (BMI ≥30) patients. The mean WHR was 0.92 in females and 0.98 in males. Abdominal obesity (≥ 0.85 for females and ≥ 0.90 for males) was present in 65.4% of the subjects. Insomnia (AIS≥6) was present in 54.1% of respondents. The mean AIS score was 6.67 in healthy-weight, 6.48 in overweight, and 5.87 in obese patients. Higher WHR values were linked ($rho=-0.203$, $p < 0.05$) with longer sleep duration perception (lower AIS section score). The findings also revealed a significant, negative correlation ($rho=-0.200$, $p<0.05$) between body mass and nighttime awakenings. No significant association between BMI and total AIS score, nor between WHR and total AIS score, was found.

Conclusions

Despite the high prevalence of BMI >25 kg/m² (53.2%), abdominal obesity (65.4%), and insomnia (54.1%) in the studied population, no significant association between BMI or WHR values and total AIS values in KTx patients was found. However, a higher WHR was associated with longer sleep duration, while greater body mass was associated with fewer sleep complaints. These unintuitive findings necessitate further study. The effects of factors such as immunosuppressive therapy or post-transplant metabolic changes, specific to the post-KTx population, may be worth controlling for.

Sleep Quality and Blood Pressure in Kidney Transplant Recipients: Single Transplant Center Survey Findings

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Introduction

The population of patients after kidney transplantation (KTx) is characterized by a high prevalence of sleep disorders, which are in turn strongly associated with cardiovascular (CV) complications and metabolic diseases. Therefore, assessing sleep quality may be useful in identifying potential risks and preventing the development of the aforementioned conditions in post-KTx patients.

Aim of the study

The study analyzed patterns in sleep quality, as reported by KTx recipients, exploring their correlation with patients' systolic (SBP) and diastolic (DBP) blood pressure values.

Materials and methods

The data were collected using a cross-sectional, anonymous questionnaire disseminated among KTx recipients (min. 12 months post-procedure) in a single transplant center. The standardized Athens Insomnia Scale (AIS), consisting of multiple-choice questions, was used to assess sleep patterns. Participants were also asked to provide three average values of their SBP and DBP, as measured in a home setting. Information was gathered between February, 2025 and December, 2025.

Results

The study group comprised 109 participants. Insomnia (AIS≥6) was reported by 59 patients (54.1%), most commonly in its mild form (42 patients, 38.5%), followed by moderate (12 patients, 11.0%) and severe insomnia (5 patients, 4.6%). Mean DBP increased from 77.59 mmHg in patients without insomnia to 80.93, 81.74, and 85.20 mmHg across mild, moderate, and severe insomnia groups, respectively, while mean SBP was lower without insomnia (126.31 mmHg) and comparable across insomnia severity groups (133.12, 133.00, 132.00 mmHg). AIS score was found to correlate positively ($p < 0.05$) with elevated SBP (rho=0.226) and higher DBP (rho=0.281). Significant positive correlations ($p < 0.05$) also linked the frequency of nighttime awakenings with elevated SBP (rho=0.201) and poorer daytime functioning (higher AIS component score) with elevated DBP (rho=0.205). Worse well-being during the day (higher AIS component score) was positively correlated ($p < 0.05$) with higher SBP (rho=0.246) and DBP (rho=0.362).

Conclusions

There is a significant prevalence of insomnia among KTx recipients, with over half of the participants reporting sleep disturbances. The study reveals a positive correlation between AIS score (i.e., insomnia severity) and blood pressure, particularly evident for DBP. Since early identification and management of sleep disorders may help mitigate CV risk in KTx patients, sleep quality should be assessed and integrated into post-transplant care protocols.

The Impact of Various Dietary Components on Sleep Quality in Kidney Transplant Patients

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Introduction

Organ transplantation is a life-saving procedure that significantly impacts nearly every aspect of a patient's life, including sleep. Sleep disorders are relatively common among kidney transplant (KTx) recipients; therefore, identifying all factors that may affect sleep quality is relevant for improving their overall quality of life. One factor that remains largely unexplored in the KTx population is the potential influence of dietary habits on sleep patterns.

Aim of the study

This study evaluates the impact of specific food products and dietary categories on sleep quality among KTx patients.

Materials and methods

This cross-sectional study included 108 KTx recipients (61 males, 47 females; mean age 52.3 13.3 years; mean time since KTx 112.1 153.3 months). Sleep quality was assessed using the Athens Insomnia Scale (AIS; range 0-24). Dietary diversity was evaluated using the 63-item Food Intake Variety Questionnaire (FIVeQ), which covers 11 food categories. Spearman’s rank correlation coefficients (rho) were calculated to analyze the relationships between variables.

Results

Based on the AIS diagnostic criteria, where insomnia was identified at a score of 6, sleep disorders were present in 54.1% of patients. The mean AIS score was 6.5 4.5. Spearman correlation analysis revealed a weak but statistically significant positive correlation between dietary fat intake and worse sleep quality (rho=0.231,p = 0.016), as well as between fruit consumption and nocturnal awakenings (rho = 0.202, p = 0.036). No significant correlations were found for other food categories.

Conclusions

The results suggest that specific food groups, such as fats and fruits, may influence sleep quality in kidney transplant recipients, thereby affecting their overall well-being. This study highlights that implementing more customized nutritional guidelines for KTx patients could positively impact their health-related quality of life.

The Quality Of Life With Obesity „QUOLO” Questionnaire – A Validation Study

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Introduction

As the global prevalence of obesity reaches epidemic proportions, the medical community is increasingly recognizing that body mass index alone is an insufficient metric for evaluating patient health. Comprehension of the multifaceted impact of excess weight on quality of life has become a vital priority for healthcare providers and researchers aiming to deliver holistic care.

Aim of the study

The aim of this study was to validate the QUOLO questionnaire and analyze the relationship between BMI and multidimensional quality of life.

Materials and methods

The study employed the Quality of Life with Obesity (QUOLO) questionnaire, an author-developed psychometric instrument designed to assess the specific challenges faced by individuals with varying body mass. The survey consists of 67 items that offer a multidimensional assessment across critical domains, including detailed demographics, co-morbid health conditions, psychological well-being, and social functioning. This cross-sectional research study comprised 117 participants and was conducted specifically to validate the QUOLO survey.

Results

The quantitative analysis revealed counterintuitive patterns, challenging conventional assumptions about weight and happiness. Underweight individuals exhibited marginally higher quality of life scores, while obese individuals had significantly lower general physical health scores. However, their overall subjective quality of life was comparable to that of the general population. Interestingly, participants with a higher BMI reported lower internalized stigma and reduced fear of social interaction than those with a lower BMI. Additionally, the study revealed a gender disparity, as male participants reported higher levels of psychological distress than females, which contrasts with typical population-level data.

Conclusions

The absence of a strong, deterministic, linear relationship between BMI and overall quality of life in this sample indicates that body weight alone does not determine subjective well-being. These findings imply that psychological resilience and social factors may play a larger role than adiposity itself. Therefore, clinical interventions should address not only weight reduction but also the specific psychological needs of patients, as validated by the QUOLO instrument.

Through the Forest to Health: as a Step into Well-being

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Introduction

In response to concerning reports on the deteriorating mental health of young people, an anonymous survey was conducted among students from 24 Polish universities. Based on the findings, the project "Through the Forest to Health" was implemented. The project was based on the hypothesis that structured engagement with natural environments may facilitate psychological restoration, enhance mood, and strengthen mental resilience.

Aim of the study

The study aimed to comprehensively evaluate the mental health status of medical students. A secondary objective was to implement targeted interventions in the form of four structured forest-based activities, designed to improve mood, mitigate stress, and promote overall psychological well-being. Additionally, the effectiveness of these interventions was systematically assessed.

Materials and methods

The study included a nationwide survey conducted among over 1600 students from 24 Polish universities. The intervention comprised four activities conducted in a forest setting: an educational walk, canvas painting, a team-based outdoor game, and physical exercise. The impact of the interventions was evaluated using POMS-based questionnaires, administered before and after each activity. Statistical analyses included the chi-square test of independence and the Mann-Whitney U test.

Results

Findings confirmed a substantial psychological burden among participants, with 20% reporting a formal diagnosis of depression and 40% meeting DSM-5 criteria, exceeding rates observed in the age-matched general population (35.7%). Following the interventions, participants exhibited improvements in mood, reductions in negative affect, enhanced relaxation, and overall increases in well-being. Participants also reported greater willingness to engage socially, indicating that structured forest-based activities positively influenced mental state.

Conclusions

The mental health status of medical students is critically concerning, and structured interventions in natural environments may constitute an effective and accessible approach to support psychological well-being. Forest-based activities can function as a complementary modality alongside professional psychological care, enhancing engagement, reducing barriers to support, and strengthening mental resilience. The project received highly positive feedback from participants, underscoring the importance and potential utility of implementing similar initiatives in academic settings.

Microbiology & Antibiotics Session

Session Coordinators:
Anna Mateusiak
Zuzanna Chadysz

Alternative Integration Site AttB-like of φSa3 Prophage as a Potential Driver of Enhanced Virulence in Methicillin-resistant Staphylococcus aureus Clinical Isolates

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Introduction

Methicillin-resistant Staphylococcus aureus (MRSA) remains one of the most critical nosocomial pathogens prioritized by the WHO. In the vast majority of human isolates, the β-hemolysin gene (hlb) is disrupted by integration of the φSa3 prophage, which carries the immune evasion gene cluster (IEC) encoding staphylococcal complement inhibitor (SCIN), chemotaxis inhibitory protein (CHIPS), and staphylokinase (SAK). This integration exemplifies a trade-off between toxin production and immune evasion. However, emerging evidence suggests that φSa3 may integrate into alternative genomic loci, potentially allowing simultaneous preservation of β-hemolytic activity and IEC-mediated immune escape.

Aim of the study

This study aimed to identify and molecularly characterize MRSA strains exhibiting an atypical virulence profile, defined by the coexistence of an intact hlb gene and IEC determinants, and to determine alternative integration sites of the prophage φSa3.

Materials and methods

Twenty-one clinical MRSA isolates demonstrating β-hemolytic activity on blood agar were collected from patients at the University Clinical Center in Warsaw. Hemolysis was graded semi-quantitatively. Two PCR assays were designed to distinguish between intact and φSa3-disrupted hlb alleles. The presence of IEC genes (scn, chp, sak) was assessed by PCR. Whole-genome short-read sequencing of a representative isolate (SA584) was performed using the Illumina MiSeq platform (Illumina, USA). Genome annotation was carried out with RASTtk and manually curated. Comparative genomic analysis was conducted using the reference strain MRSA252 (EMRSA-16/SCCmec_II/ST36/CC30/spa-type_t018), which carries φSa3 integrated in the canonical hlb site.

Results

All isolates exhibited β-hemolysis, although with variable intensity. An intact hlb gene was confirmed in every strain. The IEC genes scn and chp were detected in all isolates, whereas sak was absent. In the genome SA584 (2.799 Mb, %GC 32.76, SCCmec_Vb, ST338, CC59, spa-type_437) two point mutations were identified in the attB/hlb sequence. Notably, φSa3 was found integrated within the vSaβ genomic island, disrupting hsdS and resulting in the loss of key vSaβ genes.

Conclusions

The coexistence of functional β-hemolysin and IEC genes indicated that analyzed MRSA strains may bypass the traditional virulence trade-off, potentially enhancing their pathogenic potential. Alternative prophage integration may represent an underrecognized mechanism contributing to the evolution of highly adaptable MRSA lineages.

Evaluation of the Bioactivity of Oligosaccharide Fractions Isolated from Mare's Milk in the Eeradication of Cutibacterium acnes Biofilm

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Introduction

Cutibacterium acnes is a Gram-positive anaerobic bacterium that is part of the human skin microbiome. It can lead to the development of acne vulgaris or bone tissue infection during orthopedic surgeries, mainly when the balance of skin microbiota is disrupted. To limit the spread of biofilm forming and antibiotic resistance, especially to macrolides, alternative bioactive agents for combating C. acnes are being sought. Animal milk oligosaccharides (AMOs) are soluble carbohydrates present in mammalian milk. Due to their structure, AMOs can interact with the surface of bacterial cells, affect adhesion to the substrate, and interfere with biofilm formation processes. Oligosaccharides have a wide range of beneficial effects, including prebiotic properties, stimulation of the immune system, and inhibition of pathogen growth.

Aim of the study

The aim of the study was to determine the effect of AMOs from mare's milk on the eradication of C. acnes biofilm.

Materials and methods

The study used the reference bacterial strain C. acnes No. 11827 from the American Type Culture Collection. Oligosaccharides from milk pooled from 55 mares were obtained by lipid and protein removal, and then lyophilization. The biomass of bacterial biofilm before and after AMO treatment was stained using a crystal violet. A spectrophotometric method was used to analyze changes in optical density (OD) as an indicator of biofilm growth/eradication, compared to a control containing broth or lactose, which is a component of the oligosaccharides fraction. The following oligosaccharide concentrations 100; 50; 25; 12.5; 6.25 and 3.125 mg/ml and their corresponding lactose values were analyzed. The experiments were performed in triplicate.

Results

In results the effect of AMO depends on the concentration that was observed indicated both growth and cessation of bacterial multiplication. In individual results, AMO has the most eradication effect at a concentration of 50 mg/ml oligosaccharides which suggests the lowest average OD value of the biofilm of C. acnes. Lactose did not affect the biofilm.

Conclusions

Studying the effect of mare's milk oligosaccharide fractions on biofilm formation by C. acnes may be an innovative, natural therapy and prevention of infection without spreading antibiotic resistance. Further research is needed to clarify the mechanism of action and determine the optimal conditions for using the tested fractions as potential ingredients in medical preparations.

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Improving Gynecologic Patient Safety Through Quick and Effective UV-C Decontamination of Transvaginal Ultrasound Probes

Authors

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Introduction

Transvaginal ultrasound (TVUS) probes may transmit microorganisms despite the use of disposable covers; therefore, fast high-level disinfection is required in ambulatory practice.

Aim of the study

To evaluate the in vitro efficacy of a no-touch UV-C chamber for rapid decontamination of TVUS probes contaminated with selected urogenital pathogens.

Materials and methods

An E72 endovaginal transducer was experimentally contaminated with suspensions (0.5 McFarland) of clinical isolates of Staphylococcus aureus, Staphylococcus haemolyticus, Streptococcus agalactiae, Klebsiella pneumoniae, Escherichia coli, Acinetobacter baumannii and Pseudomonas aeruginosa, and reference strains of Candida albicans and Trichomonas vaginalis. Bacterial/fungal suspensions were spread on the transducer tip and handle; for T. vaginalis the probe was immersed in the suspension. Disinfection was performed in an Antigermix® S1 UV-C chamber (254 nm; 293 mJ/cm²; 90 s). Post-disinfection recovery was quantified by culture (CFU/mL) from swabs (bacteria/fungus) and by trophozoite counts after 24 h culture in Diamond's medium (T. vaginalis). Experiments were run in triplicate; transducer vs handle reductions were compared with Wilcoxon signed-rank test ($\alpha = 0.05$).

Results

UV-C achieved near-complete elimination of all tested bacteria and C. albicans, with 99.88–100% reduction and 4–6 log10 decreases versus controls. Gram-positive cocci showed ~5 log10 reduction; Gram-negative bacilli and C. albicans ~4 log10; Enterococcus faecalis reached 6 log10 with no colonies detected post-disinfection. Reduction levels did not differ significantly between transducer and handle. For T. vaginalis, motile trophozoites decreased by 82.38%, without a measurable log10 reduction.

Conclusions

Although the sample size in our study was limited and statistical significance was not reached, the substantial logarithmic reduction strongly indicates the effectiveness of this method. A 90-s UV-C chamber cycle provided rapid, substantial in vitro decontamination of TVUS probes against common bacterial and fungal urogenital pathogens, while protozoal reduction was lower. UV-C may be a practical adjunct to probe covers in outpatient settings; larger and clinical evaluations are warranted.

Metabolic Interference of Diosgenin and Tigogenin Derivatives: A Non-Membranolytic Approach to Targeting Gram-Negative Bacteria

Authors

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Introduction

Due to the growing problem of antibiotic resistance, scientists are searching for new antibacterial therapies, paying particular attention to natural compounds and their derivatives. Among them, sapogenins – aglycones of saponins – have become a promising subject of research due to their antifungal, antiprotozoal, and antibacterial properties. Studies indicate that sapogenins, although lacking sugar molecules, may exceed their parent saponins in terms of antibacterial activity. They can also serve as a starting point for further chemical modifications.

Aim of the study

The aim was to evaluate the antibacterial potential of diosgenin and tigogenin derivatives against Gram-negative bacteria and the effect of modifications at the C-3 position. Additionally, the study aimed to identify the antibacterial mechanism of action, including the impact on bacterial cell metabolism.

Materials and methods

C-3 modified diosgenin and tigogenin derivatives were synthesized and verified (NMR). Their activity against E. coli and P. aeruginosa was determined by growth inhibition (OD600, 24h). Mechanisms were explored via metabolic fingerprinting (Biolog EcoPlate) and membrane integrity assays (carboxyfluorescein leakage) on POPC and POPC:cholesterol liposomes.

Results

Modifications of the molecular skeleton have a significant effect on derivatives' activity against Gram-negative bacteria. Pseudo-DSG and Glu-TIG were the most effective inhibitors of E. coli growth, while Dios-O-Nicot and Pseudo-DSG showed the highest activity against P. aeruginosa. A key discovery was the determination of their mechanisms of action. Unlike saponins, the derivatives did not cause leakage from liposomal bacterial membranes. EcoPlate analyses showed that the compounds disrupt carbon metabolism by inhibiting the utilization of sugars and amino acids. This suggests that the tested derivatives act through specific metabolic interference rather than membrane lysis.

Conclusions

The study confirmed that diosgenin and tigogenin derivatives are promising agents against Gram-negative bacteria, with Pseudo-DSG showing the strongest activity. SAR analysis showed that modifications at the C-3 position can affect the efficacy of the compounds. Furthermore, the active compounds act primarily by disrupting metabolism, interfering with the utilization of carbon sources. In conclusion, rational modifications of sapogenins can increase their activity, positioning this group of secondary plant metabolites as antibacterial leads.

Phenotypic and Genetic Resistance to Clindamycin and Metronidazole in Clinical Isolates of Bacteroides, Parabacteroides, and Phocaeicola

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Introduction

Gram-negative anaerobes of the genera Bacteroides, Parabacteroides, and Phocaeicola colonise the gastrointestinal tract but may also cause systemic infections. Metronidazole and clindamycin are commonly used to treat anaerobic infections; however, increasing resistance has been reported worldwide. Clindamycin resistance is mainly mediated by erm genes (ermB, ermF, ermG) encoding 23S rRNA methyltransferases that modify the antibiotic-binding site. The msrSA gene encodes an efflux pump that removes clindamycin from the cell. Resistance to metronidazole may be associated with the presence of the nim gene, which encodes 5-nitroimidazole reductases that inactivate the drug.

Aim of the study

The aim of this study was to determine the phenotypic susceptibility of Bacteroides, Parabacteroides, and Phocaeicola strains to clindamycin and metronidazole and to identify genetic determinants of resistance, including ermB, ermF, ermG, msrSA, and nim genes.

Materials and methods

The 62 Bacteroides, Parabacteroides, and Phocaeicola strains were collected from patients with gastrointestinal diseases, including inflammatory bowel disease and cancer. Species identification was performed using MALDI-TOF mass spectrometry. Antimicrobial susceptibility to clindamycin and metronidazole was determined by the disk diffusion method, according to EUCAST guidelines. PCR was used to detect the presence of ermB, ermG, emrF, msrSA, and nim genes.

Results

Among the 62 analysed isolates, phenotypic resistance to clindamycin was observed in 24 strains (38.7%), with inhibition zone diameters ranging from 6 to 40 mm. The ermF gene was detected in 25 isolates (40.3%) and ermG in 7 isolates (11.3%), whereas ermB was not detected. The presence of ermF or ermG was identified in 9 isolates that remained phenotypically susceptible to clindamycin. The msrSA gene was present in 7 strains. All isolates were susceptible to metronidazole. Two strains (Ph. vulgatus and B. ovatus/xylanisolvens) carried nim genes but did not exhibit phenotypic resistance. Statistical analysis demonstrated a strong correlation between phenotypic resistance to clindamycin and the presence of the ermF gene ($\varphi = 0.63$; 95% CI: 0.45–0.76; $p < 0.001$).

Conclusions

A considerable proportion of the analyzed isolates demonstrated resistance to clindamycin, predominantly associated with the presence of the ermF gene, whereas all strains remained susceptible to metronidazole. Consequently, continuous monitoring of antimicrobial resistance among anaerobic pathogens is warranted.

Reduction of Antibiotic Resistance Genes and Duplication of the blaNDM-1 Gene as a Sophisticated Survival Strategy of Multidrug-Resistant Klebsiella pneumoniae in the Clinical Environment

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Introduction

New Delhi metallo-β-lactamase (NDM)–producing Klebsiella pneumoniae (KP) is classified as a highest-priority pathogen and is responsible for a wide range of life-threatening healthcare-associated infections. The blaNDM gene confers resistance to nearly all β-lactams, including carbapenems and the most recent β-lactamase inhibitor combinations (BL/BLIC). In NDM-producing KP, blaNDM is typically accompanied by numerous additional antibiotic resistance genes (ARGs), often exceeding 20, located primarily on plasmids, resulting in extensively drug-resistant phenotypes. We focused on a clinical KP isolate carrying blaNDM-1 but exhibiting a markedly reduced resistance profile to non-β-lactams.

Aim of the study

To detect KP-NDM strains among clinical isolates from patients of the Warsaw Clinical Center and to characterize the resistome, genomic localization and organization of blaNDM-1 in the selected isolate KP398, to assess its clinical, epidemiological, and evolutionary context.

Materials and methods

36 NDM-producing K. pneumoniae isolates were collected between 2017 and 2020. Identification was performed using the VITEK MS system (bioMérieux). Susceptibility to 30 antibiotics and specialty tests were performed according to EUCAST guidelines. Whole-genome sequencing of isolate KP398 was performed using a hybrid approach combining sequencing on the AVITI (Element Bio) and on the MinION (ONT) platforms. Genome assembly was conducted using the Hybracter pipeline. Annotation was performed with RASTtk and manually curated.

Results

All 36 isolates carried blaNDM-1 and exhibited resistance to carbapenems, including BL/BLIC. Isolate KP398 was distinguished by full susceptibility to aminoglycosides. Its genome (5.49 Mb in size, %GC 57.33) belonged to sequence type ST11. Three autonomous replicons were identified. Two copies of blaNDM-1 were detected: one located on a mosaic plasmid pKP398_1 (53 kb; %GC 55.35; RepE replication system; IncR incompatibility group; mobilizable), and the second integrated into the chromosome. Both blaNDM-1 copies were embedded within an approximately 22 kb region flanked by IS3000 and remnants of Tn3-like transposable elements. Only six additional ARGs were identified in the entire genome.

Conclusions

The coexistence of chromosomal and plasmid-borne blaNDM-1 copies combined with a reduced resistome may represent a sophisticated evolutionary strategy, ensuring stable inheritance of carbapenem resistance while maintaining the potential for horizontal gene transfer under clinical selective pressure.

Surveillance of Antimicrobial Resistance and ESBL Production in Uropathogenic Escherichia coli: A Regional Study from Southern Poland

Authors

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Introduction

Antimicrobial resistance has emerged as one of the most pressing challenges of modern medicine, threatening the effectiveness of standard therapeutic options worldwide. Among uropathogens, Escherichia coli remains the predominant cause of urinary tract infections in both community and hospital settings. The rapid spread of resistant strains, particularly those producing extended-spectrum β-lactamases (ESBLs), increasingly limits empirical treatment choices and contributes to therapeutic failures.

Aim of the study

This study aimed to analyze antimicrobial resistance patterns in E. coli urinary isolates from both outpatient and inpatient settings in southern Poland, assess susceptibility based on EUCAST guidelines, and identify CTX-M genes linked to ESBL production.

Materials and methods

A total of 8,320 urinary isolates were analyzed, including 1,918 E. coli from outpatients and 6,402 from hospitalized patients. Identification was performed by MALDI-TOF, susceptibility testing followed EUCAST guidelines, and CTX-M genes were detected by PCR.

Results

Significant differences were observed between community- and hospital-acquired infections. Beta-lactams and fluoroquinolones showed reduced effectiveness, while meropenem remained highly active. Oral agents, including nitroxoline, fosfomycin, and pivmecillinam, retained high efficacy. Pivmecillinam showed promising results, and might be underutilized in clinical practice despite its favorable susceptibility profile.

Conclusions

Rising resistance to aminopenicillins and fluoroquinolones in E. coli isolates underscores the need to shift empirical therapy toward nitroxoline, fosfomycin, and pivmecillinam. Prioritizing these effective oral agents, guided by local resistance surveillance, is a vital carbapenem-sparing strategy to curb the spread of multidrug-resistant strains and preserve the existing therapeutic arsenal.

Neurology & Neurosurgery Case Report Poster Session

Coordinators:
Aleksandra Skórska, Bestun Rashid

Butterfly Glioma Presenting as Progressive Memory Decline: A Radiologic-Surgical Case Correlation

Authors

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Trustee of the paper

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Background

Butterfly gliomas are aggressive infiltrative tumors that extend across the corpus callosum into both cerebral hemispheres, most commonly representing high-grade gliomas. Because they preferentially involve frontal and cingulate networks, early symptoms may be cognitive or behavioral rather than focal neurological deficits, leading to delay diagnosis

Case Report

This is a descriptive case report of a single patient presenting with progressive cognitive decline who was found to have a corpus callosal high-grade glioma. Clinical history.neurological examination findings, and hospital course were reviewed. Neuroimaging included contrast-enhanced MRI with advanced techniques such as perfusion imaging and MR spectroscopy. Operative findings from subtotal surgical resection were documented. Postoperative clinical status and discharge management were recorded.No experimental intervention or comparative analysis was performed.

Conclusions

Subtle cognitive decline can be the initial presentation of midline-crossing high-grade gliomas. Characteristic MRI features and advanced imaging are critical for diagnosis, but surgical management remains challenging due to diffuse bilateral spread.

Non funding

Early Functional Improvement After Nusinersen Loading Phase in an Adult Patient With SMA Type 3: A Case Report

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Background

Spinal muscular atrophy (SMA) is an autosomal recessive disorder caused by biallelic mutation in exon 7 in SMN1 gene. The lack of SMN protein, the product of SMN1 gene, leads to degeneration of the lower motoneurons resulting in progressing muscle weakness and atrophy. Nusinersen was the first disease modifying therapy (DMT) for SMA approved in Europe in 2017 and introduced in Poland in 2019. The effectiveness of nusinersen was well demonstrated in clinical trials with children, however, there is still need of real world data (RWD) from adult population. This case report shows functional improvement following the loading phase of nusinersen therapy in an adult patient with SMA type 3.

Case Report

A 23-years-old man with SMA type 3 was admitted to the Department of Neurology for intrathecal administration of the fifth dose of nusinersen (day 180) within the national SMA treatment program. The first symptoms, including recurrent falls and gait impairment due to proximal muscle weakness appeared when he was 16 years old. As the disease progressed, motor functions continued to deteriorate, along with a significant muscle atrophy. The diagnosis of SMA3, confirmed by a genetic testing, was established when he was 23 years old. The patient was qualified for nusinersen therapy and he received the first dose three months after diagnosis. Up to the current admission, he received four loaded doses of nusinersen. According to program recommendations, the patient was assessed with functional tests at the baseline (T0), at the fourth dose (63rd day) and then at each maintaining dose. We observed a clinically meaningful improvement in motor functions after two and six months of treatment compared to the baseline. In Hammersmith Functional Motor Scale Expanded (HFMSE) test, the score increased by three points. The six-minute walk test (6MWT) distance improved from 464 m to 500 m. These objective findings correlated with patient-reported functional improvement and caregiver observations, particularly in stair climbing and overall mobility.

Conclusions

This case shows that adult patients with type 3 SMA can experience a significant functional improvement after nusinersen therapy. Awareness of SMA among various specialists is crucial to avoid delays in diagnosis and to immediately initiate treatment that halts disease progression and may even improve motor functions.

From Multiple Sclerosis to Cryptococcosis: Meningitis Developing After Fingolimod Treatment : A Case Study

Authors

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Background

Multiple sclerosis (MS) is a chronic autoimmune disease of the central nervous system, commonly treated with immunomodulatory or immunosuppressive therapies. Fingolimod, the first oral disease-modifying therapy approved for MS, prevents lymphocyte migration into the CNS, thereby reducing inflammatory activity. However, its mechanism of action may predispose patients to opportunistic infections.

Case Report

A 46-year-old woman with relapsing-remitting MS, treated with fingolimod for seven years, was admitted with a one-month history of pulsating bilateral headache and low-grade fever. Initially diagnosed with rhinitis and trigeminal/occipital neuralgia, she experienced only temporary symptom relief after non-steroidal anti-inflammatory treatment. Neurological examination revealed left-sided hemiparesis and dysmetria. Laboratory tests showed leukopenia without lymphopenia. Cerebrospinal fluid (CSF) analysis demonstrated elevated protein concentration and decreased glucose levels. Empirical antibacterial and antiviral therapies were initiated, and fingolimod was discontinued. Despite treatment, the patient's condition deteriorated after one week, with the onset of vomiting, mixed aphasia, and impaired consciousness. Contrast-enhanced brain MRI revealed meningeal thickening at the skull base. Modification of therapy to vancomycin, intravenous glucocorticosteroids, and valproic acid led to partial clinical stabilization. Ultimately, CSF culture identified Cryptococcus neoformans as the causative pathogen. Targeted antifungal therapy with amphotericin B followed by fluconazole resulted in significant clinical and radiological improvement.

Conclusions

Cryptococcal meningitis is a rare but potentially life-threatening complication of immunosuppressive therapy in MS patients. This case highlights the importance of considering opportunistic fungal infections in patients treated with fingolimod who present with nonspecific symptoms such as headache, fever, and altered mental status. Early CSF analysis, including fungal culture, is crucial for prompt diagnosis and appropriate treatment.

Implantation of a Ventriculoatrial Shunt with the Assistance of Intravascular Technique: A Case Report

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Background

Ventriculoperitoneal shunting remains the standard surgical treatment for hydrocephalus; however, alternative cerebrospinal fluid (CSF) diversion routes are required when the peritoneal cavity and pleural space are no longer viable. Ventriculoatrial shunting (VAS) is an established second-line option, but accurate placement of the distal catheter can be technically challenging, particularly in patients with complex surgical histories. Reports describing the use of intravascular techniques to assist VAS placement are scarce.

Case Report

We report the case of a 24-year-old woman with congenital hydrocephalus, intellectual disability, and epilepsy, who presented with ventriculoatrial shunt dysfunction after multiple prior CSF diversion procedures and revisions. Due to failure of peritoneal and pleural absorption and difficult venous anatomy, a hybrid surgical–endovascular approach was employed. The distal catheter was initially inserted into the venous system under intravascular guidance. Following early malposition and recurrent shunt malfunction, a subsequent endovascular revision using microguidewire-assisted navigation successfully advanced the catheter into the right atrium. Post-procedurally, the patient demonstrated clinical improvement with stabilization of ventricular size on imaging and no evidence of thrombotic or infectious complications.

Conclusions

This case illustrates that intravascular assistance can facilitate accurate distal catheter placement during ventriculoatrial shunt implantation and revision in complex cases. Multidisciplinary collaboration between neurosurgery and interventional radiology may enhance procedural safety and effectiveness when conventional techniques are limited. Further reports and larger studies are needed to better define the role of endovascular techniques in VAS surgery.

Minimally Invasive Transorbital Approach in Foreign Body Removal: A Case Series

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Background

Various types of foreign bodies in the orbit affect patients across all age groups. It is estimated that approximately 35% of ocular injuries are caused by foreign bodies, some of which require neurosurgical intervention. With the development of minimally invasive endoscopic and exoscopic techniques, the evacuation of intraorbital foreign bodies (IOrbFBs) has become a standard approach in selected cases.

Case Report

We present two patients of different ages who were hospitalized within the same threemonth period due to intraorbital foreign bodies. The first patient was a 52yearold man with a history of an accident in 2008 that resulted in metal fragments penetrating his eye. The injury required surgical removal of the foreign bodies. In 2021, the patient was admitted to the Department of Neurosurgery at the Medical University of Białystok due to progressive rightsided exophthalmos accompanied by diplopia, both of which had been present for approximately one year. MRI revealed a lesion described as a vascular malformation with fibrotic changes, causing a mass effect on the surrounding tissues and nerves and leading to the reported symptoms. Based on the patient's history, he was qualified for surgical treatment via a transorbital approach. The second patient, in his late twenties, was admitted for removal of a foreign body located in the supraconal region of the right orbit. Since April 2025, he had been experiencing discomfort caused by a metal fragment lodged within the orbit. Initially, he was admitted to another hospital, where a craniofacial CT scan revealed a metallic foreign body positioned just below the roof of the right orbit. An attempt to surgically remove the fragment in April was unsuccessful. The patient reported rightsided ptosis, which persisted until his admission to the hospital in Białystok. The final surgical procedure was performed on July 8, 2025, without complications.

Conclusions

Foreign bodies located in the orbital cavity or the retrobulbar space can be safely and effectively removed using minimally invasive techniques, including the transorbital approach. This case series highlights the advantages and clinical utility of this method.

Pediatric Narcolepsy with Cataplexy: A Case Report

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Background

Narcolepsy is a chronic neurological disorder characterized by excessive daytime sleepiness and dysregulation of rapid eye movement (REM) sleep. In pediatric populations, clinical presentations are heterogeneous and may mimic psychiatric or behavioral disorders, often leading to delayed diagnosis. Timely identification is crucial to optimizing functional outcomes and improving quality of life.

Case Report

A 14-year-old female presented with progressive excessive daytime sleepiness that began at 9 years of age and intensified during puberty. Symptoms included recurrent unintended sleep episodes during school activities, frequent daytime naps, fragmented nocturnal sleep, nightmares, and episodes consistent with emotion-triggered transient muscle weakness (cataplexy). Neurological assessment, including examination, brain magnetic resonance imaging, and electroencephalography, produced normal results. Initial polysomnography identified sleep-onset REM periods (SOREMP) and frequent periodic limb movements during sleep (PLMS index 56.2/h). Repeat polysomnography confirmed SOREMP. Multiple Sleep Latency Testing demonstrated pathological sleepiness with four SOREMP episodes, a mean sleep latency of 2 minutes 45 seconds, and a mean REM latency of 1 minute 45 seconds. These findings met ICSD-3 diagnostic criteria for narcolepsy type 1. The Paediatric Epworth Sleepiness Scale score was 18 at diagnosis, indicating severe daytime sleepiness. Autoimmune screening revealed isolated ANA/anti-DFS70 and cerebellar antibodies without clinical significance, while anti-NMDA and onconeural antibodies were negative. Behavioral recommendations, including scheduled daytime naps, were provided, and pharmacologic treatment was initiated with methylphenidate modified-release (18 mg daily) and clomipramine (10 mg daily). Follow-up demonstrated improved daytime functioning with a reduction in Epworth scores to 8-11 and near-complete resolution of cataplexy; however, residual excessive daytime sleepiness persisted. Due to ongoing symptoms, treatment modification with modafinil (100 mg daily) was introduced later in follow-up.

Conclusions

This case illustrates the clinical presentation and diagnostic approach in pediatric narcolepsy. The combined use of polysomnography and Multiple Sleep Latency Testing is essential for accurate diagnosis. Long-term follow-up demonstrates that pharmacologic therapy alleviates symptoms, although individualized management strategies are often required.

Phenotypic Variability in HINT1-Related Axonal Neuropathy: Five Cases Including Late-Onset and Delayed Diagnosis

Authors

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Background

Autosomal-recessive axonal neuropathy with neuromyotonia (ARAN-NM; OMIM 137200) is a rare hereditary peripheral neuropathy caused by biallelic loss-of-function variants in the HINT1 gene, first described in 2012. It is recognized as one of the common causes of recessive axonal Charcot-Marie-Tooth (CMT2), especially in the European population, where HINT1 variants account for 11% of recessive axonal cases and 76% with neuromyotonia. The onset is typically in childhood or early adolescence, characterized by progressive muscle stiffness, distal weakness, neuromyotonic EMG discharges, mild sensory deficits, and foot deformities. Despite wide recognition, it still poses diagnostic challenges due to variable expression and occasional absence of clinical neuromyotonia.

Case Report

We report 5 unrelated patients with confirmed ARAN-NM via exome next-generation sequencing. Four patients carried a founder homozygous variant NM_005340.7:c.110G>C, p.Arg37Pro; one had a compound heterozygous variant NM_005340.7:c.110G>C(;)299A>G, p.Arg37Pro, p.Glu100Gly. Symptom onset occurred at ages 6, 7, 8, 14, and 35 years, with the diagnosis at 9, 54, 27, 53, and 57 years. Despite early-onset symptoms, in four cases, diagnosis was delayed by 20-40 years, as HINT1 was not linked to neuropathy before 2012 and clinical overlap with other inherited disorders (e.g., PMP22-related CMT1A). Adult patients exhibited severe distal leg weakness and instability while walking. Two had mild hand weakness, while the two oldest exhibited severe hand weakness. The pediatric patient exhibited a subtle gait abnormality, as noted by their parents. None of the patients reported paramyotonia. Electroneurographies revealed axonopathy with secondary demyelination features. Clinical neuromyotonia was absent in all cases, however one patient showed spontaneous fibrillations on EMG.

Conclusions

These cases highlight phenotypic variability in ARAN-NM, including diagnostic delays, despite recognizable symptoms, and rare late-onset presentation. Although EMG remains the gold standard for detecting neuromyotonia, clinical myotonia may be absent or underreported, as in our cases, which complicates suspicion. HINT1–related ARAN-NM should be considered in unexplained axonal CMT2, regardless of neuromyotonia absence or onset age. Broad genetic testing enables early diagnosis of ARAN-NM and symptomatic care.

Primary Central Nervous System Lymphoma: When the Clinical and Radiological Picture Delays Diagnosis

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Background

Primary central nervous system lymphoma (PCNSL) is a rare malignancy, most often occurring in the form of diffuse large B-cell lymphoma (DLBCL). Although it used to be diagnosed mainly in immunodeficient patients, an increasing incidence is now observed in immunocompetent individuals. A nonspecific clinical presentation, atypical lesion location, and temporary regression after corticosteroid therapy significantly hinder diagnosis.

Case Report

We present the case of a 41-year-old male patient, previously not treated for any chronic diseases, admitted to the Neurology Clinic due to a one-week history of balance disturbances, nausea, and diplopia when looking to the left. Neurological examination revealed horizontal nystagmus to the left, dysmetria of the left upper limb, and gait ataxia. Contrast-enhanced brain MRI showed a lesion within the fourth ventricle and adjacent cerebellar structures, with homogeneous contrast enhancement and brainstem edema. An elevated rCBV (relative cerebral blood volume) on perfusion imaging suggested a proliferative process. Further diagnostics included a CT scan of the chest, abdomen, and pelvis, which showed no focal abnormalities. Cerebrospinal fluid (CSF) analysis showed elevated protein levels, without neoplastic cells on flow cytometry. Due to worsening symptoms on the third day of hospitalization, intravenous corticosteroids were administered, resulting in temporary clinical improvement. After discontinuation of steroids, the patient's condition deteriorated, and follow-up MRI showed progression of lesions with new foci. Based on restricted diffusion in DWI sequences and MR spectroscopy, PCNSL was suspected. Craniotomy and macrobiopsy of the cerebellar lesion confirmed CNS-DLBCL. Chemotherapy was initiated, leading to regression of the lesions and resolution of edema. Subsequently, autologous stem cell transplantation was performed. Follow-up MRI showed no signs of recurrence.

Conclusions

This case highlights the significant diagnostic challenges posed by PCNSL and the impact of corticosteroid therapy on both clinical presentation and radiological findings. Early consideration of PCNSL in the differential diagnosis of CNS lesions remains crucial for timely implementation of causal treatment.

Progressive Neuromuscular Symptoms in a Patient With Long-Standing Multiple Sclerosis: A Diagnostic Challenge

Authors

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Background

Multiple sclerosis (MS) is a chronic inflammatory demyelinating disease of the central nervous system with heterogeneous clinical presentation and course. Long-standing MS may be complicated by progressive neurological deficits, treatment-related adverse effects, and overlapping neuromuscular symptoms, which can pose significant diagnostic challenges. Differentiating MS progression from concomitant neuromuscular disorders is essential for appropriate management.

Case Report

We present a female patient with a 20-year history of relapsing–remitting multiple sclerosis, diagnosed in 2001 based on McDonald diagnostic criteria (2000). Disease-modifying therapies included glatiramer acetate, interferon beta-1a, and later fingolimod, which was discontinued due to intolerance, lymphopenia, and leukopenia. In 2021, the patient experienced clinical and radiological relapse with dysphagia and limb weakness; MRI revealed new and contrast-enhancing demyelinating lesions in the brain and spinal cord. Treatment with ocrelizumab (three courses) resulted in radiological stability, with no disease activity on follow-up MRI in August 2022. The last documented MS relapse occurred in December 2022. From November-December 2023, the patient reported progressive generalized weakness, fatigue, muscle atrophy, limb stiffness, and lumbar pain syndrome. Neurological examination revealed right-sided limb weakness (4/5), and distal hand muscle atrophy. Serial brain MRI (January 2024) showed no new lesions or disease activity. Repeated electroneuromyography did not provide sufficient evidence of motor neuron disease. Muscle biopsy revealed no inflammatory changes. Genetic evaluation revealed two heterozygous variants of uncertain significance in the SETX gene (c.5851C>T, p.His1951Tyr; c.1374T>G, p.Phe458Leu) and raised suspicion of hereditary distal motor neuropathy.

Conclusions

This case highlights the diagnostic complexity of progressive neuromuscular symptoms in a patient with long-standing multiple sclerosis and stable radiological findings. The discordance between clinical progression and MRI activity underscores the need to consider alternative or coexisting neuromuscular pathologies. Comprehensive multidisciplinary evaluation is crucial to avoid misattribution of symptoms solely to MS progression and to guide individualized management strategies.

Same Angle, Different Story: Dual Histopathology of the Cerebellopontine Angle as First Manifestation of NF2-Related Schwannomatosis: A Case Report

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Background

NF2-related schwannomatosis is an autosomal dominant tumor predisposition syndrome caused by pathogenic variants in the NF2 gene (22q12.2) encoding the tumor suppressor merlin. Prevalence is approximately 1 in 60,000, with over 50% of cases arising de novo. It manifests as multiple central nervous system tumors: vestibular schwannomas, meningiomas, and low-grade malignancies such as ependymomas. Patients present with progressive hearing loss, tinnitus, cranial nerve deficits, and cataracts. Vestibular schwannomas frequently localize to the cerebellopontine angle, where mass effect on the brainstem may necessitate surgical intervention.

Case Report

A 32-year-old female with severe intellectual disability, fully dependent on caregivers, presented with progressive motor deterioration manifesting as gait instability and loss of manual dexterity. Molecular analysis confirmed a de novo pathogenic NF2 variant (22q12.2). Cranial computed tomography and magnetic resonance imaging (MRI) demonstrated a large solid-cystic mass in the right cerebellopontine angle with brainstem compression, a contralateral mass at the left cerebellopontine angle, and multiple supratentorial and infratentorial meningiomas. Spinal MRI was unremarkable. The motor decline was consistent with posterior fossa mass effect. Audiometry identified moderate right-sided hearing loss. Given life-threatening brainstem compression, right retrosigmoid craniotomy and tumor resection was performed. Histopathological analysis of two discrete specimens from the cerebellopontine angle yielded schwannoma (WHO grade 1) and fibrous meningioma (WHO grade 1). Postoperatively, the patient developed right facial nerve palsy (House-Brackmann IV) and new onset upper limb tremor with flexion contractures. Inpatient rehabilitation achieved functional improvement in ambulation and daily activities, though residual motor deficits persisted. The contralateral tumor remains under stereotactic radiosurgery surveillance.

Conclusions

Retrieval of two histologically distinct tumor types from a single operative site is rarely reported, offering unique histopathological insight into NF2-related schwannomatosis. Severe cognitive impairment may delay NF2 diagnosis by precluding symptom self-reporting, underscoring the need for clinical vigilance in non-communicative patients with incidental intracranial findings. Bilateral cerebellopontine angle involvement with residual contralateral tumor necessitates lifelong multimodal surveillance.

Second Look Pays Off: SEEG-Guided Reoperation After Failed Temporal Lobe Surgery in a Child With Drug-Resistant Epilepsy

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Background

Epilepsy surgery is an established treatment option for drug-resistant focal epilepsy in children. However, seizure persistence after the first resection remains a significant clinical challenge. Changes in seizure semiology after surgery may indicate an alternative or residual epileptogenic zone. Stereo-electroencephalography (SEEG) plays a crucial role in re-evaluating seizure onset in such complex cases.

Case Report

Male child with drug-resistant focal epilepsy, with seizure onset at 10 months of age following a respiratory tract infection. Pregnancy, delivery, and early development were without pathology. Initial seizures were focal with impaired awareness, characterized by behavioral arrest and tonic motor manifestations, predominantly involving the right side, lasting 15–60 seconds. Seizure frequency increased rapidly, progressing to multiple daily events. Multiple antiseizure medications (valproate, phenobarbital, levetiracetam, carbamazepine, clobazam) failed to achieve seizure control. Phenobarbital was associated with seizure worsening and was discontinued. The epilepsy was classified as drug-resistant early in the disease course. Presurgical evaluation demonstrated focal right frontotemporal seizure onset on video-EEG. Brain MRI revealed subtle cortical abnormalities suggestive of focal cortical dysplasia involving the right superior and transverse temporal gyri, with concordant hypometabolism on FDG-PET. At 2 years of age, the patient underwent right anterior temporal lobe resection guided by intraoperative electrocorticography. Histopathology was non-diagnostic. Postoperatively, seizures persisted and gradually changed in semiology, becoming predominantly nocturnal with hypermotor features. This raised suspicion of an alternative epileptogenic zone not addressed by the resection. At 3 years of age, stereo-electroencephalography demonstrated seizure onset in the right supramarginal gyrus, adjacent to the posterior margin of the prior resection. A targeted reoperation was subsequently performed, resulting in seizure freedom.

Conclusions

Persistent seizures and postoperative changes in seizure semiology should prompt systematic re-evaluation after epilepsy surgery in children. In this case, SEEG enabled precise localization of an alternative epileptogenic zone adjacent to the initial resection, supporting a rational and successful surgical strategy. This emphasizes the value of invasive reevaluation in selected pediatric patients with failed epilepsy surgery.

No funding

Spinal Cordectomy as a Treatment for Recurrent Post-Traumatic Syringomyelia: A Case Report

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Background

Post-traumatic syringomyelia (PTS) is an acquired condition involving a fluid-filled cavity (syrinx) in the spinal cord, due to trauma to the spinal cord. It leads to neuropathic pain, spasticity, and progressive neurological deficits. Management remains challenging with no standardized approach.

Case Report

Case Presentation: A 38-year-old man sustained a spinal fracture in 2022 and initially underwent T4–T8 laminectomy with stabilization. He developed syringomyelia at T1–T2, treated with drainage and temporary neurological improvement. One year later, symptoms recurred with imaging confirming a recurrent syringomyelia at the Th1-Th2 level. Intervention: Due to progressive symptoms and no residual function below T5, a spinal cordectomy was performed at T3 in November 2024. Outcome: At 4-month follow-up, the patient regained full upper limb mobility and reported manageable pain levels.

Conclusions

Cordectomy may be a viable treatment for selected cases of recurrent post-traumatic syringomyelia. This case highlights the importance of individualized treatment plans and structured follow-up in spinal cord injury patients.

The Great Mimicker in Neurology: IgG4-Related Hypertrophic Pachymeningitis

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Background

IgG4-related disease (IgG4-RD) is a rare autoimmune disorder characterized by fibrosis and lymphoplasmacytic infiltrates involving multiple organs. Involvement of the nervous system most commonly presents as pachymeningitis on brain magnetic resonance imaging (MRI), posing a significant diagnostic challenge.

Case Report

A 62-year-old man was urgently admitted to the Neurology Clinic due to diplopia and chronic headache persisting for approximately one year. Neurological examination revealed right abducens nerve palsy. Computed tomography (CT) and MRI of brain demonstrated features of cerebral venous sinus thrombosis as well as smooth and nodular thickening of the dura mater in the parietal and temporal regions, the clivus, and the tentorium cerebelli. Laboratory investigations showed elevated serum IgG4 levels and the presence of pANCA antibodies. During hospitalization, the patient's clinical condition deteriorated, with signs of intracranial hypotension and cerebellar tonsillar herniation through the foramen magnum. Fungal infection and tuberculosis were excluded in the diagnostic workup. Extended evaluation, including chest CT, revealed parenchymal pulmonary consolidations. Lung cryobiopsy proved diagnostically decisive, demonstrating a dense infiltrate of IgG4-positive plasma cells (>10/HPF) with an IgG4+/IgG+ ratio of 55%, thereby confirming the diagnosis of IgG4-related disease. Steroid therapy was initiated with oral prednisone and dexamethasone, resulting in clinical improvement manifested by resolution of headache and oculomotor disturbances. Subsequently, azathioprine therapy was introduced with gradual tapering of steroids. Finally, stabilization and normalization of inflammatory parameters were achieved.

Conclusions

This case highlights the necessity of considering IgG4-related disease in the differential diagnosis of pachymeningitis on brain MRI, particularly when accompanied by multiorgan involvement. Biopsy of the affected organ with histopathological evaluation remains the diagnostic gold standard.

The Psychiatric Masquerade of a Lethal Tumor: Anti-NMDA Receptor Encephalitis Associated with Ovarian Teratoma

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Background

Anti-N-methyl-D-aspartate receptor (anti-NMDAR) encephalitis is a severe autoimmune disorder characterized by a complex neuropsychiatric syndrome. Often triggered by an underlying neoplasm (paraneoplastic syndrome), most commonly an ovarian teratoma, it presents a significant diagnostic challenge. Due to prominent initial behavioral symptoms, over 70% of patients are first seen by psychiatrists and misdiagnosed with primary psychosis. This review analyzes the "red flags" distinguishing autoimmune encephalitis from psychiatric illness, based on a dramatic clinical case.

Case Report

A 23-year-old female with no prior psychiatric history was admitted to the acute psychiatric unit due to new-onset agitation, visual hallucinations, and disorganized speech. Initial treatment with antipsychotics was ineffective. Within 48 hours, she developed generalized tonic-clonic seizures, autonomic instability (fluctuating blood pressure and tachycardia), and oro-facial dyskinesias, necessitating transfer to the Intensive Care Unit and intubation. Brain MRI was unremarkable, but cerebrospinal fluid (CSF) analysis revealed lymphocytic pleocytosis. An EEG showed "extreme delta brush" patterns specific to NMDAR encephalitis. The diagnosis was confirmed by the presence of anti-NMDAR antibodies in both serum and CSF. A subsequent transvaginal ultrasound and pelvic CT revealed a 4 cm dermoid cyst (teratoma) in the right ovary. The patient underwent urgent laparoscopic ovarian cystectomy followed by first-line immunotherapy (IV steroids and immunoglobulins). The psychiatric and neurological symptoms gradually resolved over 4 months.

Conclusions

This case exemplifies the critical need for multidisciplinary vigilance. A review of current literature suggests that anti-NMDAR encephalitis must be included in the differential diagnosis of any young female presenting with acute psychosis, especially when accompanied by neurological soft signs, seizures, or fever (the "flu-like prodrome"). Recent guidelines emphasize that early tumor removal combined with immunotherapy is the strongest predictor of good outcomes. Delaying diagnosis by focusing solely on psychiatric management can result in permanent cognitive deficits or death. Therefore, pelvic imaging should be mandatory in young women presenting with atypical first-episode psychosis.

“Scalpel” Sign in the Diagnosis of Forsal Thoracic Arachnoid Web (DAW)

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Background

Dorsal arachnoid web (DAW) is a rare condition, which occurs due to the presence of a thickened transverse band of arachnoid tissue over the dorsal aspect of a spinal cord. This phenomenon results in disrupting cerebrospinal fluid (CSF) flow, widening of dorsal arachnoid space, and anterior displacement of the thoracic spinal cord. DAW typically occurs in the upper thoracic spine, with a female predominance and age between 40-70 years old. The etiology of DAW remains uncertain, sometimes considered as another variant of arachnoid cyst. There are no clinical symptoms specific only for DAW. Patients may be asymptomatic or report neuropathic back pain, symptoms of compressive myelopathy or radiculopathy, neuropathic back pain, hyperreflexia and others. The suggestive MRI finding is known as the “scalpel” sign. This refers to the anterior displacement of the thoracic cord and creating a larger dorsal CSF space, ultimately resembling the profile of a surgical scalpel on the sagittal T2-weighted images. On MRI, DAW may be connected with spinal cord signal alteration, which refers to presyrinx or syrinx (syringomyelia), as a result of altered CSF flow. DAW itself is not visible on routine MRI imaging. The differential diagnosis list includes ventral cord herniation and arachnoid cyst. Treatment of symptomatic DAW involves surgical resection with the aim to restore normal CSF flow. For asymptomatic patients, conservative treatment is considered.

Case Report

A 32-year-old male, with no prior medical history of trauma or spinal surgery, presented with paroxysmal, girdle pain in the thoracic spine and lower extremities weakness, was referred to our hospital. The second patient was a 67-year-old female with mild, chronic back pain. In both cases, MRI revealed the characteristic “scalpel” sign on sagittal T2-weighted images of the thoracic spine, without abnormal cord signal. The first patient underwent surgical intervention.

Conclusions

Conclusively, the diagnosis of DAW relies on radiological features. The scalpel sign is a characteristic feature of DAW. Early recognition of the characteristic MRI image is crucial for radiologists to formulate the accurate diagnosis and to prevent delays in surgical management.

Neurology & Neurosurgery Session

Coordinators:
Natalia Wolszczak, Nikodem Kapral

Amygdala Volume Changes as a Potential Marker of Multiple Sclerosis Progression: Links to EDSS Scores and PIRA

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Introduction

Brain atrophy has been proposed as a potential marker of long-term disease progression in relapsing–remitting multiple sclerosis (RRMS), although its clinical significance remains incompletely defined. Data on the relationship between volumetric changes of subcortical structures and disability accumulation independent of relapse activity, termed progression independent of relapse activity (PIRA), are limited.

Aim of the study

The aim of this study was to assess the association between changes in neurological disability, measured by the Expanded Disability Status Scale (EDSS), and longitudinal volumetric changes of selected subcortical structures in RRMS patients treated with immune reconstitution therapies (IRT).

Materials and methods

A retrospective analysis of clinical and magnetic resonance imaging (MRI) data was performed in RRMS patients assessed prior to treatment initiation and annually over a three-year follow-up. Volumetric analysis of subcortical structures was conducted using FreeSurfer, including year-to-year changes and individual longitudinal volume trajectories. The study included 52 RRMS patients, of whom 33 were treated with oral cladribine and 19 with alemtuzumab.

Results

Disability accumulation was associated with distinct patterns of subcortical volumetric changes. In year-to-year analyses, EDSS progression correlated positively with increases in amygdala volume ($p < 0.001$) and, to a lesser extent, globus pallidus volume ($p < 0.05$). In contrast, disability progression was associated with thalamic atrophy, particularly pronounced in patients treated with cladribine ($p < 0.01$). Comparison of volumetric changes across periods of EDSS progression, stability, and improvement revealed significant differences in the amygdala, thalamus, and globus pallidus. Notably, among intervals with confirmed EDSS progression, amygdala volume increase was observed exclusively in patients fulfilling PIRA criteria and was absent in relapse-associated worsening.

Conclusions

Amygdala volumetric changes may reflect relapse-independent mechanisms of disease progression and represent a potential biomarker of early progression in RRMS, complementing conventional measures of disease activity. Given the exploratory nature of this study, further prospective investigations are warranted.

Anesthetic Strategy and Functional Outcomes After Mechanical Thrombectomy for Acute Ischemic Stroke

Authors

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Introduction

Mechanical thrombectomy (MT) is an established treatment for patients with acute ischemic stroke (AIS). Despite randomized trials, the optimal anesthetic strategy remains unclear.

Aim of the study

The aim of this study was to analyze the impact of the type of anesthesia on patient prognosis.

Materials and methods

This retrospective observational study included 257 consecutive patients with AIS treated with MT at a single comprehensive stroke center. Patients were treated under either conscious sedation (CS) or general anesthesia (GA). Baseline characteristics, early and long-term outcomes, mortality, and infectious complications were analyzed.

Results

A total of 257 patients were included, of whom 155 (60.3%) underwent MT under CS and 102 (39.7%) under GA. Patients treated under GA presented with more severe strokes at admission. After adjustment for baseline differences, GA was independently associated with lower odds of functional independence at 90 days (OR 0.45, 95% CI 0.21–0.97; p = 0.040) and higher 90-day mortality (OR 2.18, 95% CI 1.10–4.32; p = 0.025). Ordinal logistic regression demonstrated a significant shift toward worse functional outcomes at 90 days in the GA group (common OR 1.82, 95% CI 1.12–2.97; p = 0.015). Pneumonia was significantly more frequent in patients treated under GA (49.0% vs. 26.5%, p < 0.001), whereas the rate of urinary tract infection was similar between groups (17.6% vs. 18.1%, p = 0.93).

Conclusions

GA was independently associated with worse functional outcomes, higher mortality, and a higher rate of pneumonia and overall infectious complications. However, further large randomized trials are needed to define the optimal management.

Asymptomatic Hemorrhagic Transformation After Mechanical Thrombectomy Is Not Benign: Early and Long-Term Outcomes

Authors

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Introduction

The prognostic relevance of asymptomatic hemorrhagic transformation (aHT) after mechanical thrombectomy (MT) for acute ischemic stroke (AIS) remains uncertain and is often considered clinically benign.

Aim of the study

The aim of the study was to evaluate the impact of aHT on early and long-term outcomes after MT.

Materials and methods

This retrospective study included consecutive patients with AIS treated with MT at a single comprehensive stroke center. A follow-up CT scan was performed after 24 hours, and hemorrhagic transformation was assessed using the Heidelberg Bleeding Classification. Patients were monitored during scheduled follow-up visits for 12 months. Associations between aHT, functional outcomes, and mortality were analyzed using multivariable regression models.

Results

Among 363 patients, 237 (65.3%) had no HT, 84 (23.1%) developed aHT, and 35 (9.6%) developed symptomatic HT. Patients with aHT had worse functional outcomes than those without HT. Functional independence (mRS 0–2) at 90 days was achieved in 45.1% of patients without HT versus 23.8% in the aHT group. After adjustment, aHT was independently associated with reduced odds of functional independence at 90 days (OR 0.29, 95% CI 0.15–0.57), a shift toward worse functional outcome at 12 months (common OR 2.11, 95% CI 1.30–3.41), and increased mortality during follow-up (OR 1.64, 95% CI 1.07–2.52). Patients who developed aHT more frequently presented with higher baseline NIHSS scores, while no single baseline clinical or treatment-related variable emerged as a strong independent predictor of aHT.

Conclusions

aHT after MT is associated with worse early and long-term functional outcomes and increased mortality. Further validation in large cohort studies of MT-treated patients is warranted.

Changes in Brain Network Parameters Following Neurosurgical Treatment of Unruptured Intracranial Aneurysms

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Introduction

Neurosurgical treatment of unruptured intracranial aneurysms may induce subtle alterations in brain organization beyond focal vascular pathology. Network-based analyses derived from structural MRI provide a framework for characterizing treatment-related changes in large-scale brain connectivity. However, the effects of surgical clipping on global and regional brain network parameters remain poorly understood.

Aim of the study

To evaluate the impact of the neurosurgical management of unruptured intracranial aneurysms on brain network parameters.

Materials and methods

We retrospectively included 140 patients from two neurosurgical centers, including 56 patients treated with surgical clipping and 84 patients managed conservatively. Clinical data (medication use and comorbidities) were collected, along with MRI performed at 6-month follow-up in the surgical group or at baseline diagnosis in the conservative group. T1-weighted MRI data were processed using FreeSurfer to perform automated cortical segmentation, surface reconstruction, and parcellation based on the Desikan–Killiany atlas, extracting regional cortical volume measures. Structural covariance networks were constructed using regional values residualized for clinical covariates and aneurysm size, and graph-theoretical metrics were computed across a range of network densities.

Results

The mean age of the examined cohort was 61.85 ± 12.45 years, with a predominance of female patients (n = 116, 82.85%). The mean aneurysm size was 5.96 ± 3.34 mm, and the middle cerebral artery was the most frequent location (n = 87, 62.14%). Global efficiency was significantly lower in the clipping group compared with the untreated group (0.17 vs. 0.19; $p < 0.01$), accompanied by a reduction in small-worldness (0.43 vs. 0.46; $p < 0.01$). In contrast, nodal degree was higher in the clipping group within the precentral ($\Delta AUC = -0.06$; $p < 0.01$) and postcentral gyri ($\Delta AUC = -0.05$; $p < 0.01$), while it was lower in the medial and lateral orbitofrontal regions (both $\Delta AUC = 0.08$; $p < 0.01$).

Conclusions

The operated group demonstrates reduced global integration and diminished small-world organization, suggesting less efficient large-scale information transfer. At the regional level, orbitofrontal and anterior frontal regions exhibit reduced centrality (degree, nodal efficiency), indicating loss of hub-like properties. Conversely, increased degree in sensorimotor regions may reflect compensatory reorganization.

Kappa Ree Light Chains – a quantitative alternative to oligoclonal bands in multiple sclerosis

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Introduction

Multiple sclerosis (MS) is a chronic immune-mediated demyelinating disease of the central nervous system characterized by intrathecal immunoglobulin synthesis. Oligoclonal bands (OCB) in cerebrospinal fluid (CSF) have long been used as a diagnostic marker of this process. However, OCB detection is qualitative, requires specialized laboratories, and may delay diagnosis in clinical practice. These limitations led to the inclusion of kappa free light chains of immunoglobulin G (kFLC) as an alternative biomarker of intrathecal immunoglobulin synthesis in the 2024 revision of the McDonald criteria.

Aim of the study

This study aimed to evaluate the diagnostic value of the kFLC index compared with oligoclonal bands in patients with suspected multiple sclerosis.

Materials and methods

This cross-sectional study included 90 patients evaluated at the Clinic for Neurology, Military Medical Academy (MMA) in Belgrade, who underwent lumbar puncture as part of the diagnostic evaluation for demyelinating disease. Patients were divided into two groups: MS (confirmed MS and possible MS, n=35) and controls (n=55). CSF analysis included determination of the kFLC IgG index and detection of OCB (type 2 and type 3). A kFLC index value ≥ 6.1 was considered positive according to the 2024 McDonald criteria. All CSF analyses were performed at the Institute of Biochemistry, MMA. Diagnostic accuracy of kFLC index and OCB was assessed using receiver operating characteristic (ROC) analysis (IBM SPSS v26).

Results

The kFLC index was significantly higher in the MS group compared to controls (median 16.78, IQR 53.35 vs. median 2.58, IQR 5.47; $p < 0.001$). OCB positivity in CSF was more frequent in the MS group than in controls ($p = 0.003$). ROC analysis demonstrated good diagnostic accuracy of the kFLC index in differentiating MS from controls (AUC = 0.78; 95% CI: 0.65–0.91), slightly higher than OCB (AUC = 0.74). In preliminary analysis, a lower kFLC cutoff value of 5.1 showed sensitivity of 80% and specificity of 69% for differentiating MS from controls.

Conclusions

Kappa free light chains in CSF demonstrated diagnostic accuracy comparable to oligoclonal bands in MS. As an objective and quantitative marker with faster availability, the kFLC index may facilitate earlier diagnostic evaluation.These findings support the clinical utility of kFLC as a practical alternative biomarker in MS diagnostics.

Long-Term Outcomes of Myxopapillary Ependymoma Treated With Surgery Alone: A Retrospective Single-Center Study

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Introduction

Myxopapillary ependymoma is a rare primary tumor located in the filum terminale and conus medullaris. It accounts for 1–5% of all spinal canal tumors and about 13% of spinal ependymomas. Until recently it was considered a WHO grade 1 tumor, but under the current (2021) WHO classification it is defined as WHO grade 2, therefore we performed a retrospective assessment of surgically treated patients over a long follow-up period who were not previously recommended any additional (adjuvant) therapy.

Aim of the study

The aim of this study was to evaluate the long-term clinical and oncological outcomes of patients with filum terminale myxopapillary ependymoma treated with surgical resection alone, and to assess whether omission of routine adjuvant therapy is a safe strategy in the context of the WHO 2021 reclassification.

Materials and methods

We performed a retrospective review of medical records of 164 patients operated on for extramedullary spinal canal tumors in the years 2011–2024. We identified 14 cases of filum terminale myxopapillary ependymoma which were analyzed with respect to tumor location, extent of surgical resection, and frequency of disease progression.

Results

Fourteen tumors were resected in 13 patients (6 women; mean age 42 years). The most common presenting symptom, present in all patients, was local back pain; in 4 cases (28%) there was additionally lower-limb weakness and sphincter disturbance. Most lesions were at the L1/L2 level (10/14; 71%). Gross total resection (GTR) was achieved in 13 cases. All patients showed postoperative improvement in pain and lower-limb weakness. In the single case without total resection the tumor was substantially larger, but no progression was observed during 3 years of follow-up. One patient had two simultaneous tumors — one at L1/L2 and a small “drop metastasis” — both were completely removed in two separate procedures. No cases of disease progression were detected during a mean follow-up of 6 years.

Conclusions

A watchful-waiting approach instead of routine adjuvant treatment after resection of these tumors appears safe, even after subtotal resections and in cases with multiple tumors removed completely.

Morphometric analysis of peptide-specific changes in jugular/nodose ganglia during arterial hypertension and aging

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Introduction

The jugular/nodose ganglia (J/NG) complex contains sensory neurons expressing neuropeptides such as CGRP, nNOS, and TTN3, which are essential for vagal signaling. Aging and arterial hypertension may induce structural remodeling of these ganglia and alter the morphology of peptide-expressing neurons. However, the relationship between ganglion morphology, neuronal size, and peptide-specific expression across age and hypertensive states remains poorly defined.

Aim of the study

To evaluate age- and hypertension-related morphological changes in the J/NG complex, focusing on ganglion size, neuronal soma size, neuron density, and peptide-specific neuronal morphology in Wistar–Kyoto (WKY) and spontaneously hypertensive (SHR) rats.

Materials and methods

Cryosections of the J/NG complex were immunohistochemically stained for CGRP, nNOS, TTN3, and PGP9.5. Fluorescent secondary antibodies (Cy3, FITC, A488) were used for visualization by fluorescence microscopy. Ganglion area, neuronal soma area, neuron density, and peptide-specific neuronal morphology were quantified using ImageJ and AxioImage software.

Results

Ganglion size positively correlated with neuron number in young and middle-aged animals, whereas this relationship was absent in aged rats. SHR exhibited increased neuron density during early stages of hypertension, while WKY rats demonstrated age-dependent increases in neuron density. Neuronal soma size increased with age in SHR but remained relatively stable in WKY rats; however, neurons in SHR were consistently smaller than those in WKY rats in young and middle-aged groups. Peptide- and side-specific differences in neuronal morphology were prominent in younger animals but progressively diminished with aging.

Conclusions

Aging and hypertension are associated with distinct, peptide-specific morphological remodeling of the jugular/nodose ganglia. Hypertension primarily affects neuronal size and density at earlier stages, while aging reduces structural and peptide-specific differences, leading to convergence of neuronal morphology in older animals.

Neurotrauma in the Micromobility Era: A Comprehensive Analysis of Paediatric Electric Scooter Injuries

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Introduction

The global proliferation of electric scooters has precipitated an ‘e-merging epidemic’ of micro-mobility-related trauma. The unique biomechanical profile of these devices—characterised by a high centre of gravity and small wheel diameter—facilitates oblique head-to-ground impacts during falls. Despite age-based rental restrictions, paediatric presentations for related neurotrauma are increasing, often manifesting as complex intracranial injuries necessitating neurosurgical intervention.

Aim of the study

To delineate the injury characteristics and lateralisation, imaging findings, and fracture distribution in paediatric patients admitted to the neurosurgical ward following electric scooter-related accidents.

Materials and methods

A retrospective analysis was conducted on 57 paediatric patients (aged 9–18 years) admitted to a tertiary neurotrauma centre, supplemented by a review of 250 emergency department cases. Radiographic studies were evaluated to extract data regarding injury mechanism, lateralisation, and morphology. Trauma severity was quantified using the Rotterdam CT Score and the Abbreviated Injury Scale (AIS) Head.

Results

Within the neurosurgical cohort, traumatic brain injury was documented in 86.0% of patients, with concussion (80.7%) being the most prevalent clinical feature. Cranial fractures occurring in 61.4% were predominantly simple (79.1%). Radiological assessment revealed a Rotterdam Score above 1 in 38.6% of cases. Primary injuries predominantly affected the left side of the cranium (56.4%). Direct impact injuries occurred in 94.5% of cases, while contrecoup injuries (25.5%) significantly correlated with higher AIS Head scores. Intracranial haemorrhage was identified in 20.4% of the cohort. Protective helmet use was significantly associated with lower AIS Head scores ($p=0.003$), reduced incidence of primary loss of consciousness ($p=0.001$), and lower neurosurgical admission rates ($p=0.010$). Furthermore, it correlated with a significantly lower cumulative diagnostic radiation dose ($p=0.012$).

Conclusions

Paediatric e-scooter-related accidents result in high-energy neurotrauma with specific morphological patterns. Helmet use remains the primary modifiable determinant of neurosurgical outcome, significantly mitigating injury severity and the need for hospitalisation. Consequently, low prevalence of helmet compliance remains a significant driver of avoidable neurotrauma, necessitating immediate legislative reform and stricter regulatory enforcement.

Quantitative Evaluation of Hemodynamic and Radiomic Parameters Predictive of Multiple-stage Embolizations in Brain Arteriovenous Malformations

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Introduction

Endovascular embolization, which seems to relatively often require a multiple-stage approach, can be an effective standalone treatment modality for some patients with brain arteriovenous malformations (bAVMs). Although a few angioarchitectural features facilitating complete bAVM obliteration after a single-stage embolization have already been described, the literature is lacking precise prognostic tools.

Aim of the study

To establish hemodynamic and radiomic factors associated with the need for a multiple-stage embolization in bAVMs.

Materials and methods

Twenty-nine consecutive patients undergoing Onyx bAVM embolization with curative intent were included into the study. The quantitative analysis was performed retrospectively, based on pre-embolization digital subtraction angiography (DSA) images. Using our own software, dedicated regions of interest (ROIs) were selected in the proximal segment of the draining vein or the AVM nidus for hemodynamics and radiomics analyses, respectively. Calculated hemodynamic parameters included time to peak, inflow and outflow gradients, full width at half maximum (FWHM) and stasis index. For the radiomics, energy, entropy, homogeneity and contrast were assessed. Incomplete occlusion of the lesion after a single-stage embolization was regarded as equivalent to requiring a multiple-stage approach.

Results

Out of the 29 analyzed patients, 18 required a multiple-stage embolization. As for the hemodynamics, FWHM values were lower in cases requiring multiple-stage treatment (1.788 ± 1.524 vs. 2.637 ± 1.471; p=0.037). In the radiomics analysis, only the higher value of energy was associated with multiple-stage embolization (11.796 ± 1.757 vs. 5.763 ± 1.893; p=0.006). In multivariate logistic regression analysis, higher value of energy (OR: 1.524; 95% CI: 1.106-2.744; p=0.039) remained independently associated with incomplete occlusion after a single-stage embolization.

Conclusions

Quantitative hemodynamics and radiomics might provide a new insight into prediction of the degree of occlusion after a single-stage embolization of bAVMs, serving as an objective and insensitive to inter-observer variation tool in treatment planning. Our study shows associations of lower FWHM and higher value of energy with incomplete occlusion after a single-stage embolization, with higher energy being independently associated.

Unprotected and Under-regulated: A Retrospective Dual-Cohort Analysis of Paediatric Electric Scooter Injuries

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Introduction

The rapid global adoption of stand-up electric scooters has transformed urban transportation but led to an exponential rise in traumatic presentations. While adult injury patterns are increasingly documented, the paediatric population remains under-represented in the literature. Given that children often bypass age restrictions on rental platforms, understanding their specific demographic and safety profile is essential for formulating effective paediatric injury prevention strategies.

Aim of the study

To assess the temporal distribution, triage acuity, general injury characteristics, and helmet utilisation among paediatric electric scooter accident patients to inform public health policy.

Materials and methods

This retrospective study analysed data from 250 consecutive paediatric patients (ages 5–18) presenting to an urban Emergency Department, with additional analysis of a subset of 57 patients admitted to the Neurosurgical Ward. We assessed age-related safety compliance, injury mechanisms, and the impact of headgear on hospitalisation risk.

Results

Adolescent males (68.0%) represent the primary risk group. Accidents peaked during late afternoon and evening hours(16:00–23:00). Triage assessments revealed that the majority of cases were of moderate acuity, with Emergency Severity Index of 3 and 4 accounting for 86.6% of presentations. Solitary falls were the primary trauma mechanism (90.8%), while collisions involved only 9.2% of patients. Helmet compliance was alarmingly low at 26.7% in the emergency department and decreased to 12.3% in the more severely injured neurosurgical ward cohort. The injury burden was substantial: of the main cohort 13.5% of the patients sustained cranial fractures, 13.1% sustained maxillofacial fractures, limb fractures occurred in 30.2% of patients. Statistical analysis confirmed that lack of helmet use was significantly associated with higher triage urgency ($p=0.003$) and the need for neurosurgical admission($p=0.010$). Intoxication was negligible(1.2%), representing a stark deviation from established adult trends.

Conclusions

Paediatric electric scooter injuries primarily affect adolescent males during recreational hours and occur largely in the absence of protective headgear, with negligible alcohol involvement. The correlation between helmet non-compliance and neurosurgical admission underscores an urgent need for mandatory helmet legislation for children, as compliance is proven to significantly improve clinical outcomes and reduce the utilisation of specialised neurosurgical resources.

Obstetrics, Gynecology & Perinatology Case Report Poster Session

Coordinators:
Joanna Wyrzykowska, Małgorzata Michalska

A Bleed Before Birth: A Case of Perinatal Intraventricular Hemorrhage

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Background

While intraventricular hemorrhage (IVH) is a common postnatal complication in preterm neonates, perinatal IVH is extremely rare, affecting 1-5 per 10,000 pregnancies. Perinatal diagnosis is commonly made using MRI, and classification follows the Papile neonatal grading system. Reported maternal and fetal risk factors include hypertensive and coagulation disorders, and fetal COL4A1 gene variants. However, the etiology is unknown in more than 50% of cases. Perinatal IVH carries a high risk for mortality and adverse neurological outcomes such as cerebral palsy, cognitive and motor impairment, and visual dysfunction.

Case Report

A 31-year-old patient, G1P0, was admitted at 31 weeks of gestation due to suspicion of perinatal IVH. Low peak systolic flow (3%) was observed on Doppler USG, and fetal MRI confirmed severe ventriculomegaly with multiple intraventricular clots involving the lateral and third ventricles. Findings were consistent with Grade III IVH. Doppler revealed the middle cerebral artery peak systolic velocity (MCA-PSV) elevated at 1.99 MoM, suggestive of possible fetal anemia secondary to hemorrhage. Serial ultrasounds showed no exacerbation of hemorrhage; however, a small clot on the left anterior horn was observed. The patient underwent whole-exome sequencing and coagulation studies, revealing no abnormalities. Testing for anti–HPA-1 antibodies was negative, ruling out neonatal alloimmune thrombocytopenia. The pregnancy was complicated by class G1 gestational diabetes and hypothyroidism. Given the risk of additional bleeding during vaginal delivery, the newborn boy was delivered via cesarean section at 38 weeks in stable condition. The newborn was subsequently admitted to the neonatal intensive care unit to monitor IVH and posthemorrhagic ventriculomegaly. Serial ultrasounds confirmed bilateral lateral ventricular dilation and mild third ventricle enlargement with no progression of hemorrhage or increase in head circumference. Evaluation with multiple specialties confirmed no additional abnormalities. On the 15th day of life, the infant was discharged with further developmental monitoring and specialty consultations.

Conclusions

Perinatal IVH remains a rare and complex condition with an unknown etiology in most cases, limiting standardized diagnostic and management approaches. This case highlights the importance of timely prenatal detection and a dedicated prenatal IVH classification system to better guide diagnosis, risk stratification, and management in the future.

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

Authors

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Background

Ovarian cancer is one of the most common malignancies among women and a leading cause of gynecologic cancer-related mortality. Most cases are diagnosed at an advanced stage due to nonspecific symptoms and lack of effective screening methods. Although peritoneal dissemination is common in advanced disease, metastasis to the umbilical region is rare and may manifest as a Sister Mary Joseph's nodule. The presence of ovarian cancer within an umbilical hernia sac is exceedingly uncommon and may delay appropriate diagnosis and treatment.

Case Report

A 75-year-old woman with a history of asthma, chronic kidney disease, and hypertension was admitted due to abdominal pain and defecation disorders. Laboratory findings revealed elevated CA-125 (179.2 U/mL) and mildly impaired renal function. Physical examination identified a 7–8 cm umbilical hernia. Imaging studies demonstrated a large pelvic mass with peritoneal involvement and a pathological mass within the umbilical region, suggestive of peritoneal grafts. Ascites and enlarged inguinal lymph nodes were also observed. The patient underwent urgent exploratory laparotomy due to subileus. Surgical management included radical hysterectomy with bilateral adnexectomy, pelvic peritonectomy, omentectomy, rectal shaving, excision of the umbilical tumor, and hernia repair. Due to extensive carcinomatosis, the procedure was primarily palliative. Histopathological examination confirmed ovarian endometrioid adenocarcinoma (G2), FIGO stage IV, with infiltration of the omentum, peritoneum, and uterus. Immunohistochemistry supported the diagnosis. Despite referral for platinum-based chemotherapy, the patient declined further oncologic treatment. Six months later, she was hospitalized with cerebral stroke, and imaging revealed multiple metastases in the lungs and liver. The patient died during hospitalization.

Conclusions

Ovarian cancer presenting within an umbilical hernia is an exceptionally rare and diagnostically challenging manifestation of advanced disease. Such cases require prompt surgical intervention, often for palliative purposes, due to the risk of bowel obstruction. This report highlights the importance of considering malignancy in atypical hernia contents and underscores the need for multidisciplinary management and individualized therapeutic decision-making in advanced ovarian cancer.

Advanced Intracranial Hemorrhage in Fetal Alloimmune Thrombocytopenia – Limitations of Prenatal Management

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Background

Fetal and neonatal alloimmune thrombocytopenia (FNAIT) is a rare condition occurring in approximately 1/800 to 1/2,000 live births, caused by the presence of maternal antibodies directed against fetal platelet antigens. The most serious complication of FNAIT is intracranial hemorrhage, which may already develop in utero and is associated with very high mortality as well as severe, permanent neurological sequelae. Diagnostic evaluation and management of this condition remain non-standardized and are based primarily on clinical experience.

Case Report

A 32-year-old woman, gravida 3 para 2, was admitted to a tertiary referral center at 33+4 weeks of gestation due to diagnosed fetal intraventricular hemorrhage. The maternal general condition at admission and throughout hospitalization until delivery remained good. The pregnancy was additionally complicated by a low-lying placenta, and during its course the patient was hospitalized four times in lower-level referral centers due to recurrent vaginal bleeding. During pregnancy, she received anti-D immunoglobulin as prophylaxis against Rh incompatibility; however, no treatment targeted at platelet alloimmunization, including IVIG therapy, was administered. Fetal assessment revealed high-grade intraventricular hemorrhage – grade IV on the right side and grade III on the left side. Subsequent examinations demonstrated progressive enlargement of the fetal head circumference, corresponding to severe bilateral ventriculomegaly. In view of the presence of intracranial bleeding, diagnostic evaluation for fetal alloimmune thrombocytopenia was performed and confirmed platelet alloimmunization. The pregnancy was terminated by planned cesarean section at 36+4 weeks of gestation, during which ventricular puncture with decompression was performed due to the increased head circumference. A live preterm male neonate was delivered with Apgar scores of 6/6/7/7. In the subsequent course, the neonate died due to neurological complications resulting from prenatal intracranial hemorrhage.

Conclusions

The presented case highlights the diagnostic and therapeutic challenges in fetal alloimmune thrombocytopenia resulting from the lack of screening programs and standardized treatment. The absence of population-level identification of high-risk pregnancies and clearly defined management protocols limits the possibility of early intervention and may contribute to unfavorable outcomes in advanced cases.

Atypical Presentation of 22q11.2 Deletion Syndrome: Severe Fetal Growth Restriction and Polyhydramnios as Predictors of Disease Severity

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Background

While 22q11.2 deletion syndrome (22qDS; DiGeorge Syndrome) is a frequent microdeletion, rarely have the simultaneous prenatal presentation of Tetralogy of Fallot (TOF), severe fetal growth restriction (FGR), and polyhydramnios been reported in fetuses with 22q11.2 deletions. This triad represents a more severe and atypical phenotype, and has been proposed as a significant clinical predictor of the postnatal outcomes for the fetus.

Case Report

We report a 36-year-old (1-0-0) woman in her second pregnancy complicated by severe FGR, TOF and polyhydramnios. Serial Doppler ultrasounds (USG) demonstrated a progressive deterioration in the second trimester with biometric parameters consistent with severe FGR (<3rd percentile), despite preserved placental functions. Cardiac anomalies consistent with TOF were found on USG, and array-CGH analysis was performed, confirming the suspected 22qDS. First-trimester aneuploidy screening had indicated low risk for common trisomies. USG revealed polyhydramnios (MVP maximum vertical pocket 11,8cm), which was managed with therapeutic amnioreduction. The current and previous pregnancies were both complicated by gestational diabetes mellitus G1. The fetus was delivered vaginally at 38 weeks weighing 2280g, and was admitted to the neonatal intensive care unit due to dysmorphic and hypotrophic features, and profound dysphagia along with poor oral intake raised concerns for vagal and glossopharyngeal nerve dysfunction. On the 5th day of life, the neonate was transferred to the pediatric hospital for diagnosis of atypical phenotypic features. Consultations with endocrinology and immunology revealed no abnormalities; TOF was further monitored in cardiology, with serial echocardiography confirming exacerbation of right ventricular outflow tract obstruction, for which propranolol was given. The newborn was discharged in stable condition after a prolonged hospitalization, with the need for close monitoring and further consultations.

Conclusions

The phenotype of 22qDS is so diverse that genetic testing alone cannot adequately predict postnatal functional status or the severity of the manifestations. Consequently, clinicians must rely on USG imaging and biometric parameters to risk-stratify these pregnancies. This case highlights the need for further research into predictors of postnatal outcomes in fetuses with 22qDS to better guide counseling and management, and emphasizes the importance of timely prenatal screenings and cross-specialty consultations.

Can the IDEA Protocol and ENZIAN Score Redefine the Diagnosis of Primary Dysmenorrhea to Secondary Dysmenorrhea due to Adolescent Endometriosis? - A Case Report

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Background

Diagnosing endometriosis in adolescents is a clinical challenge due to the non-specific clinical picture and the high frequency of false negative results of pelvic ultrasound. For this reason, the IDEA protocol can be used. It includes, among other things, checking ovarian mobility, the "sliding sign" and deep infiltrating endometriosis. In combination with the ENZIAN scale, it is a promising tool for ensuring early diagnosis and implementing appropriate treatment.

Case Report

In the presented case, a 14-year-old patient was admitted in February 2025 to the Department of Paediatric and Adolescent Gynaecology at the University Paediatric Hospital in Lublin for diagnosis and treatment of irregular, prolonged and painful (NRS 7/10) menstruation. Morphological tests revealed iron deficiency anaemia, and an transabdominal ultrasound scan of the reproductive organs showed no pathological features. On this basis, a diagnosis of primary dysmenorrhoea was made. In August 2025, the patient was readmitted to the Department due to irregular cycles, headaches, vomiting and neck stiffness. Two consultations were conducted, a head CT scan (no abnormalities) and extensive hormonal diagnostics (including AMH, TSH, pituitary profile). This allowed for the diagnosis of functional hypothalamic-pituitary dysfunction in the patient. In January 2026, the diagnosis was extended, when the patient was readmitted with acute pain in the right lower quadrant of the abdomen (NRS 8/10), unintentional weight loss, headaches and vomiting. Due to the lack of improvement after progestogen therapy, the IDEA protocol was implemented. This examination identified foci of superficial endometriosis in the rectouterine pouch and pathological adhesions (limited mobility of the adnexa). The changes were classified in the ENZIAN system as (u) P1, T2/2, which clearly confirmed pelvic endometriosis. The patient was ultimately diagnosed with secondary dysmenorrhea due to endometriosis. During palpation, a lump was detected in the right breast, which led to the postponement of hormone treatment.

Conclusions

The presented case shows that endometriosis in adolescents may coexist with functional disorders, which makes diagnosis difficult. Implementation of the IDEA protocol and the ENZIAN scale may allow for precise localization of lesions and shortens the time needed for diagnosis.

Coexistence of High-Grade Papillary Thyroid Carcinoma and Undifferentiated Pleomorphic Sarcoma Arising from Bilateral Ovarian Mature Cystic Teratomas: A Case Report

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Background

Malignant transformation in a mature cystic teratoma (MCT) is a rare complication, occurring in approximately 1–2% of cases. While squamous cell carcinoma is the most frequent malignancy, the occurrence of somatic-type tumors such as thyroid carcinomas or sarcomas is exceedingly rare.

Case Report

A 34-year-old female patient presented with large bilateral ovarian masses. Histopathological examination of the right ovary revealed a mature cystic teratoma containing an area of high-grade papillary thyroid carcinoma (PTC), follicular variant, which accounted for approximately 1% of the tumor volume. Immunohistochemical (IHC) staining confirmed the diagnosis (Thyroglobulin+, TTF-1+, PAX8+, CK19+, Ki-67 5%). A 3 cm metastatic deposit of high-grade PTC (tall cell variant) was identified in a left para-renal lymph node, showing an NRAS mutation upon NGS analysis. The left ovary (34 x 29 x 18 cm) contained a mature cystic teratoma with a secondary high-grade undifferentiated pleomorphic sarcoma (FNCLCC G3), involving approximately 20% of the tumor and infiltrating the ovarian capsule. The sarcomatous component showed diffuse CD10 expression and a high mitotic index (50/1.7 mm^2). Genetic testing (NGS sarcoma panel) did not reveal actionable fusions or mutations in this component. The patient underwent comprehensive surgical debulking, including bilateral adnexectomy, omentectomy, and lymph node dissection, followed by chemotherapy. Due to the presence of thyroid carcinoma tissue within the ovary, despite the absence of suspicious lesions in the thyroid gland, a total thyroidectomy was performed to enable subsequent adjuvant radioiodine therapy (^{131}I, 3.7 GBq). Histopathological examination of the thyroid revealed no primary thyroid malignancy. Owing to the coexisting high-grade sarcoma, chemotherapy was prioritized, and radioiodine therapy was administered after completion of sarcoma treatment as part of an individualized therapeutic strategy.

Conclusions

This case highlights the diagnostic and therapeutic complexity of somatic-type secondary malignancies arising in ovarian teratomas. The simultaneous presentation of a high-grade carcinoma and a high-grade sarcoma in bilateral MCTs is an exceptional clinical scenario. It underscores the importance of extensive sampling, molecular diagnostics, and multidisciplinary, individualized treatment planning, including prioritization and sequencing of therapies according to tumor biology and clinical risk.

Fertility Preservation in a Patient with Breast Cancer and Coexisting Endometriosis: a Case Report

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Background

Advances in oncologic therapies have significantly improved survival rates among women of reproductive age, making quality of life after treatment, including fertility preservation, an increasingly important aspect of comprehensive care. The coexistence of endometriosis and previous adnexal surgery may further impair ovarian reserve and significantly reduce reproductive potential. The aim of the study is to present the reproductive outcomes of a multidisciplinary strategy of fertility preservation and post-chemotherapy management in a 39-year-old breast cancer survivor with advanced endometriosis and a significant decrease in ovarian reserve.

Case Report

In 2021, prior to the start of neoadjuvant chemotherapy and subsequent breast preservation surgery, controlled ovarian stimulation was performed, allowing cryopreservation of a single euploid embryo. In 2023, after completing cancer treatment and medical clearance for pregnancy, the patient resumed infertility treatment. Post-chemotherapy examination revealed deep ovarian failure with anti-Mullerian hormone (AMH) levels <0.010 ng/ml, follicle stimulating hormone (FSH) levels up to 109 IU/l, and luteinizing hormone (LH) levels up to 82 mIU/l. An individualized treatment plan was implemented, including repeated cycles of ovarian stimulation and the use of GnRH antagonists to reduce significantly elevated gonadotropin levels. Despite biochemical parameters suggesting ovarian failure after chemotherapy and prior ovarian surgery for endometriosis, repeated and carefully tailored ovarian stimulation protocols enabled further follicular recruitment. This approach led to the cryopreservation of one additional euploid embryo in 2024 and two more in 2025. This case demonstrates that even in cases of extreme ovarian failure after chemotherapy, consistent and adapted reproductive management can still lead to successful embryo development.

Conclusions

Early fertility preservation, combined with consistent personalized post-chemotherapy reproductive management, can provide significant reproductive potential even in patients with severe ovarian failure and complex gynaecological comorbidities.

Prenatal Detection of Bilateral Connatal Cysts with Favorable Neonatal Outcome

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Background

Connatal cysts are benign, developmental cystic structures located at the superolateral angles of the frontal horns, adjacent to the cavum septi pellucidi. They are considered normal variants of brain development and are typically small, symmetric, and clinically insignificant when isolated. However, when prominent, they may be misinterpreted as ventriculomegaly or pathological cystic lesions, leading to diagnostic uncertainty and parental anxiety. We present a case of prenatally detected bilateral connatal cysts with a favorable perinatal and neonatal outcome.

Case Report

A 34-year-old multiparous woman with an otherwise unremarkable medical and obstetric history was referred for further evaluation following a routine third-trimester ultrasound. Imaging revealed bilateral, well-defined, thin-walled, anechoic cystic structures located at the superolateral angles of the frontal horns, adjacent to the cavum septi pellucidi, consistent with connatal cysts. Each cyst measured approximately 2.5 × 1 cm. The surrounding brain parenchyma appeared normal, with no signs of hemorrhage, increased echogenicity, or parenchymal injury. The remainder of the central nervous system anatomy was intact. Fetal growth parameters and Doppler flow indices were within normal limits. Maternal serology demonstrated Parvovirus B19 IgM positivity; however, no sonographic evidence of fetal anemia, hydrops, or infection-related brain changes was observed. The findings favored a diagnosis of benign developmental connatal cysts rather than post-hemorrhagic subependymal cysts, periventricular leukomalacia, or TORCH-associated pathology. The pregnancy was managed conservatively with close prenatal surveillance. Spontaneous labor occurred at term, and vacuum-assisted vaginal delivery was performed due to intrapartum fetal heart rate abnormalities. A female neonate weighing 2945 g was born with Apgar scores of 9 and 9. Postnatal assessment revealed no neurological abnormalities.

Conclusions

This case illustrates that even prominent bilateral connatal cysts may represent a benign developmental variant when classic imaging features are present and the surrounding brain parenchyma is normal. Accurate assessment of cyst location, morphology, symmetry, and associated findings is essential to distinguish connatal cysts from pathological cystic lesions, avoid misdiagnosis, and support appropriate prenatal counseling and conservative management.

Prenatal Diagnosis of Neuromuscular Transmission Disorder: A Case Report

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Background

Congenital myasthenic syndromes (CMS) are a rare, genetically and clinically heterogeneous group of disorders characterized by impaired neuromuscular transmission. Although CMS generally lack specific prenatal manifestations, antenatal signs suggestive of fetal neuromuscular dysfunction may be observed.

Case Report

A 31-year-old patient (G2P1) with pre-pregnancy obesity (BMI 30.1 kg/m2) and undiagnosed gestational diabetes mellitus was admitted to the hospital at 35+4 weeks of gestation due to an abnormal cardiotocography (CTG) tracing exhibiting reduced variability. Ultrasound examination revealed the presence of mild polyhydramnios and absent spontaneous fetal movement, with normal Doppler flow indices. During the early post-admission period, the CTG tracing demonstrated a progressive worsening to silent variability with no accelerations, thereby establishing the criteria for an emergency Cesarean section. A preterm female fetus weighing 2540g (53rd percentile) was delivered in moderate condition (Apgar 4-5-5-5), with normal umbilical cord blood gas parameters. The neonate showed markedly reduced respiratory drive requiring intubation and mechanical ventilation. Physical examination demonstrated generalized hypotonia, low spontaneous activity, hand contractures, bilateral clubfoot, and low-set ears. Subsequent genetic testing identified a 3.8 Mb deletion in the 10q11.22-q11.23 region, encompassing exon 1 of the CHAT gene. Additionally, a homozygous pathogenic variant (c.409G>A; p.Val137Met) was identified in the CHAT gene, encoding choline acetyltransferase. The above-mentioned findings are consistent with autosomal recessive CMS and correlate with the neonate’s clinical presentation.

Conclusions

The coexistence of polyhydramnios, absent spontaneous fetal movement on ultrasound, and reduced/silent variability on CTG may represent an early sign of fetal neuromuscular dysfunction, including CMS. Recognition of this phenotype in the antenatal period should prompt intensified obstetric surveillance and preparedness for immediate neonatal respiratory support at delivery.

Radiation-Induced Angiosarcoma of the Breast: a Case Report

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Background

Radiation-induced angiosarcoma of the breast is a rare but clinically relevant secondary malignancy that occurs as a late complication of radiotherapy, most commonly after breast-conserving treatment. The latency period typically ranges from several years to more than a decade following irradiation. Clinical and imaging findings are often nonspecific and may mimic benign post-radiation changes, making early diagnosis challenging. Mammography and ultrasound are first-line imaging modalities in the evaluation of the treated breast. However, radiation-induced angiosarcoma may present with subtle imaging findings, such as progressive skin thickening without a discrete mass, emphasizing careful imaging assessment and clinical correlation.

Case Report

We report a patient with a history of left breast cancer diagnosed in 2017 and treated with sectoral resection of the breast followed by radiotherapy. Several years later, the patient developed rapidly progressive skin changes and increasing firmness of the left breast. Diagnostic mammography demonstrated diffuse skin thickening with post-therapeutic deformity and fibrotic changes, showing mild progression compared to prior examinations. No focal mass or suspicious calcifications were identified. Ultrasound revealed marked skin thickening in the retroareolar region up to 1.2 cm over an approximately 5 cm area, as well as hyperechogenic skin changes in the upper outer quadrant up to 0.8 cm. Based on imaging findings and clinical presentation, radiation-induced angiosarcoma was suspected (BI-RADS 4). Core needle biopsy confirmed angiosarcoma. Immunohistochemistry demonstrated diffuse positivity for CD31 and ERG, focal CD34 positivity, high proliferative activity (Ki-67 approximately 80%), and negative ER, PR, HER2, and epithelial markers. Contrast-enhanced breast MRI was performed to assess disease extent and demonstrated diffuse edema of the left breast with irregular skin thickening and early patchy skin enhancement. The patient underwent left mastectomy. Final pathology confirmed angiosarcoma of the left breast (pT3N0M0), consistent with a radiation-induced secondary malignancy.

Conclusions

Radiation-induced angiosarcoma of the breast may present with subtle imaging findings limited to progressive skin thickening without a discrete mass. In patients with prior radiotherapy, new or progressive skin changes require careful evaluation and timely biopsy. Correlation of imaging findings with clinical course is essential for early diagnosis.

Rapid Postpartum Progression of Cervical Adenocarcinoma In Situ Diagnosed During Pregnancy: A Case Report

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Background

Adenocarcinoma in situ (AIS) is a premalignant glandular lesion and a precursor of invasive cervical adenocarcinoma, which accounts for approximately 10–25% of cervical cancers. The incidence of cervical adenocarcinoma has been increasing, particularly among women of reproductive age. Management of AIS during pregnancy is challenging, as it requires balancing maternal oncological safety with fetal well-being.

Case Report

A 39 year-old woman, G3P1, was admitted to the hospital due to an abnormal result of a routinely performed cervical cytology exam at 14 weeks gestation. Histopathological evaluation confirmed the presence of AIS with coexisting CIN II. At 17 weeks, pelvic MRI showed no evidence of invasive disease or lymphadenopathy. Thus, the multidisciplinary team, in consultation with the patient, decided on conservative management with close surveillance. At 38+1 weeks, a healthy infant was delivered via elective cesarean section. Five weeks postpartum, colposcopy with cervical biopsies revealed progression to invasive adenocarcinoma (G1). Consequently, the patient underwent cold knife conization procedure with cervical curettage. Definitive histopathological examination of the LEEP specimen confirmed invasive endocervical adenocarcinoma pT1a1 (FIGO IA1, R0), with no evidence of lymphovascular space invasion or perineural spread. Follow-up, CT and MRI of the chest and abdomen revealed an enhancing focal lesion at the anterosuperior margin of the uterus, potentially corresponding to tumor infiltration. As the patient had no further fertility plans, a radical surgery was performed: a total hysterectomy with bilateral salpingectomy using the LRVH technique, along with a sentinel lymph node procedure. On histopathological examination no carcinoma infiltration was observed in the whole specimen. No recurrence was observed at 6-month follow-up.

Conclusions

This case highlights the diagnostic complexity of glandular cervical lesions initially diagnosed as AIS during pregnancy and the potential for rapid postpartum to invasive disease. Conservative management to allow fetal maturity may be appropriate in selected cases, however, early and thorough postpartum reassessment is essential. Management of AIS in pregnancy should involve a multidisciplinary approach, with individualized decision-making that considers oncological risk, gestational age, and the patient’s reproductive plans.

Recurrent Vulvar Squamous Cell Carcinoma with Groin Metastasis: A Case Report

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Background

Recurrence of vulvar squamous cell carcinoma occurs in approximately 12–37% of patients, most commonly within the first two years after primary treatment. Local recurrences are usually managed surgically and are associated with relatively favorable outcomes, while groin and distant recurrences are less common but carry a significantly poorer prognosis. We present a case of recurrent vulvar cancer with subsequent groin lymph node metastasis.

Case Report

A 75-year-old woman was diagnosed with vulvar cancer after experiencing a persistent burning sensation in the vulvar area for over one year. She underwent radical vulvectomy with sentinel lymph node biopsy. Histopathology revealed HPV-independent vulvar squamous cell carcinoma without regional lymph node metastasis. Postoperative follow-up was recommended for oncological surveillance. Three months after surgery, the patient noticed a small, slightly raised lesion on the right labium majus. Biopsy revealed fibrotic tissue covered by keratinizing stratified squamous epithelium with focal atypia, infiltrative growth features, and negative p16 expression. A second radical vulvectomy was performed, and histopathological analysis demonstrated acantholytic dyskeratosis. Subsequent computed tomography detected metastatic involvement of the left inguinal lymph nodes. One year after the initial surgery, a large metastatic tumor was surgically removed from the left groin.

Conclusions

This case demonstrates the aggressive and unpredictable behavior of recurrent vulvar squamous cell carcinoma. Despite initial radical surgery and negative sentinel lymph node biopsy, early recurrence and progression to regional lymph node metastasis occurred, highlighting the complexity of disease behavior. Patients with suspected recurrence require thorough evaluation and prompt intervention, and management should be based on the site and extent of recurrence, with surgery remaining the primary treatment modality for localized disease.

Sacral Neuromodulation for Isolated Adult Nocturnal Enuresis: a Case Report

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Background

Nocturnal enuresis affects 10–15% of children aged 5–12 years. In adults, its prevalence is estimated at approximately 2.0–2.6%. This condition represents a significant clinical and psychosocial burden, and management remains therapeutically challenging. In patients with symptoms refractory to conservative and pharmacological treatment, sacral neuromodulation (SNM) may be considered.

Case Report

We present a case of a 21-year-old female with isolated nocturnal enuresis persisting since childhood. She reported no episodes of daytime urinary incontinence or urgency. No significant daytime lower urinary tract symptoms or pain were noted. Pre-treatment assessment using validated questionnaires (PFIQ, KHQ, PISQ-IR, UDI-6) demonstrated a substantial negative impact on emotional well-being, social functioning, and ability to travel. Physical examination was unremarkable. Imaging studies of the urinary tract revealed no anatomical abnormalities. Previous treatment included pharmacotherapy (solifenacin, desmopressin, mirabegron) without clinical benefit and intravesical botulinum toxin injections with only moderate improvement. Due to failure of prior management, the patient was qualified for sacral neuromodulation. In September 2025, stage I SNM was performed with implantation of a test lead. During the test phase, complete resolution of symptoms was achieved, leading to qualification for stage II treatment. In October 2025, a permanent subcutaneous neuromodulator (InterStim II) was implanted. Approximately two weeks after implantation, recurrence of symptoms was observed. Diagnostic evaluation confirmed lead displacement. In December 2025, the SNM lead was replaced. Subsequent follow-up demonstrated complete symptom resolution. At two months post-revision, the patient remains asymptomatic and reports full satisfaction with the treatment outcome.

Conclusions

Sacral neuromodulation may be an effective treatment option for refractory nocturnal enuresis in young adults. Lead displacement should be considered in cases of early symptom recurrence after implantation and correction of lead position can restore full therapeutic efficacy.

Oncology & Hematology Session

Coordinators:
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Effects of Radioiodine Therapy on Some Parameters of Oxidant–Antioxidant Balance in Patients with Subclinical Hyperthyroidism

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Introduction

In healthy tissues the oxidant-antioxidant balance (or redox homeostasis) is shifted toward antioxidants. However some variables may result in changes of this balance which leads to tissue damage due to oxidative stress. This type of tissue damage is observed in the thyroid gland of patients with subclinical hyperthyroidism.

Aim of the study

In this sudy we aimed to determine the potencial benefit effect of radioiodine therapy (RIT) on the oxidant and antioxidant status in subclinical hyperthyroidism.

Materials and methods

We studied 40 patients with untreated subclinical hyperthyroidism, including 33 females and 7 males, aged 23-78 years old. This group contained of 25 patients with solitary autonomus nodule and 14 patients with multinodular goitre. There were 12 adult volunteers as control group. Firstly, blood tests were performed in patients. All of them had normal levels of serum fT3, fT4, low levels of TSH (<0.1 mU/l) and effective half-life was more than 3 days. Fine needle aspiration biopsy was performed to exclude malignant changes in all nodules. Before radioiodine therapy and 6 months after it we evaluated malondialdehyde (MDA) as a marker of oxiadative stress, glutathione (GSH) and glutathione peroxidase (GPx) activity as a parameters of antixoidant system. Additionally, serum fT4, fT3 and TSH were evaluated before and every 4 weeks up to 12 months after therapy. Thyroid ultrasound and thyroid scan were performed at baseline and at 12 months after RIT. The activity dose was calculated by Marinelli's formula and ranged between 200 and 600 MBq. The absorbed dose ranged between 160 and 280 Gy.

Results

A significant increase in MDA level ($P<0.1$) as well as a significant decrease in GPx activities ($P<0.05$) and GSH level ($P<0.05$) were observed in patients with subclinical hyperthyroidism compared to the control group. After a year of RIT 38 patients were in euthyroidism while 2 required an additional dose. A significant decrease of MDA, significant increase of GSH and non significant increase in GPx activities were observed. Furthermore, the average volume of the thyroid gland was reduced by 45%.

Conclusions

The results confirm the oxidant-antioxidant imbalance in subclinical hyperthyroidism. Radioiodine administration reverses changes in redox homeostasis in those patients, suggesting that RIT may prevent thyroid tissue damage.

First-Line Palliative Chemotherapy In Patients With a Diagnosis Of Epithelioid Sarcoma: The Impact Of Anhtracycline-Based Regimens On Progression-Free Survival

Authors

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Introduction

Epithelioid sarcoma (ES) is a rare, high-grade soft tissue sarcoma with a propensity for distal recurrence and lymph node involvement. While surgical resection is the primary treatment for localised disease, the prognosis for advanced (unresectable/metastatic) ES is poor, and the efficacy of systemic treatment is controversial due to variable chemosensitivity and limited real-world data.

Aim of the study

We aimed to evaluate the efficacy of first-line (1L) palliative chemotherapy (CHT) in adult patients (pts) with advanced ES treated at a national reference sarcoma centre.

Materials and methods

We retrospectively analysed pts with histopathologically confirmed advanced ES who initiated 1L CHT between 1998 and 2025. Kaplan–Meier estimate was used to calculate the progression-free-survival (PFS) from the start of 1L CHT until progression - PD as of RECIST v1.1 criteria.

Results

The analysis included 27 pts (median age 34 years, range 19 - 68 ; 59.3% male) with a median follow-up of 93.1 (95% CI: 29.1 - NA) months (mo)]. 1L CHT comprised mainly anthracycline-based regimens (n=16 (59.3%)) and high-dose ifosfamide (n= 6 (22.2%)). Best responses included partial response (PR) in 0 (0%), stable disease (SD) in 20 (74.1%), and PD in 7 (25.9%), yielding disease control rate (DCR) 74.1%. mPFS for the entire cohort was 6.5 (95% CI: 4.4 - 11.7) mo. Pts receiving anthracycline-based CHT achieved a longer median PFS 8.1 (95% CI: 6.2 - 19) compared to non-anthracycline regimens 3.7 (95% CI: 2.6 - NA) - log-rank p=0.2281994.

Conclusions

In this real-world cohort, ES is characterised by low objective response but high rates of disease stabilisation with 1L CHT. Anthracycline-based regimens provide superior DCR compared to other agents for CHT-naïve pts. The negative prognostic impact of prior perioperative therapy underscores the urgent need for novel targeted strategies in pre-treated populations.

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Information Sources and Decision-Making About Diet After Breast Cancer Diagnosis

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Introduction

Breast cancer diagnosis often motivates patients to reconsider their diet. Understanding where patients seek nutritional information and what drives their dietary choices is essential to guide evidence-based counseling. Literature highlights that guidance from healthcare professionals is often limited, leaving role for dietitians and clinical nutrition specialists.

Aim of the study

This study examined the sources of dietary information and factors influencing decision-making about diet among women after a breast cancer diagnosis.

Materials and methods

An anonymous survey was distributed via social media groups for patients and their relatives. Additionally, a supervising physician invited her patients to participate voluntarily via email. A total of 153 women responded, reporting on the sources of information they consulted and the motivations behind their dietary choices.

Results

The majority of participants reported using the internet and online forums as their primary source for nutritional information, while about half sought guidance from their physicians. Other less popular sources included scientific literature, books, and advice from relatives or acquaintances. Motivations for dietary changes included the belief that diet could improve recovery, enhance well-being, and maintain physical health. Approximately one-quarter of women reported not changing their diet after diagnosis. Among those who did modify their eating habits, many adopted healthier practices, such as increased consumption of vegetables, fish, and whole foods.

Conclusions

Internet and social media forums are the predominant sources of dietary information for breast cancer survivors, followed by physician guidance and literature. Patients' dietary choices are primarily motivated by perceived benefits for health and recovery. The findings also highligh the unmet need for professional guidance: the involvement of dietitians and nutrition specialists is currently underused, suggesting opportunities to support safe, evidence-based dietary changes and informed decision-making.

Long-Term Outcomes Of Second- And Third-Line Palliative Chemotherapy In Patients With Advanced Chondrosarcoma

Authors

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Introduction

Evidence guiding the management of advanced chondrosarcoma (CS) beyond first-line chemotherapy (CHT) is casuistic, with no established standard of care for refractory disease.

Aim of the study

To evaluate the efficacy of second-line (2L) and third-line (3L) CHT in adult patients (pts), characterising outcomes across histological subtypes.

Materials and methods

We retrospectively analysed patients with histopathologically confirmed CS treated over the last 25 years at a national reference centre. Median overall survival (OS) and progression-free survival (PFS) were calculated from surgery: PFS - until progression or death; OS - until death.

Results

In the 2L setting (n=23; median age 42 years, range 22-69), the histological distribution was evenly split between conventional (n=10; 43.5%) and mesenchymal (n=10; 43.5%) subtypes, with fewer dedifferentiated cases (n=3; 13.0%). The most frequently administered regimens were etoposide-ifosfamide (EI; n=8, 34.8%) and anthracycline-platinum combinations (AP3; n=6, 26.1%). Best overall response (as of RECIST 1.1 criteria) in 2L revealed an ORR of 21.7% (n=5 partial responses - PR) and a disease control rate (DCR) of 56.5% (n=5 PR, n=8 stable disease - SD). Progressive disease (PD) was recorded in 34.8% (n=8) of cases. The 6-month (mo) PFS probability for 2L was 25.0% (95% CI 10.7-58.4), dropping to 12.5% (95% CI 3.4-45.7) at 12 mo. Median PFS for pts receiving 2L CHT was 2 months (95% Cl: 1.3 - 9.4). In the 3L setting (n=11; median age 49 years, range 19-75), mesenchymal histology predominated (n=5; 45.5%). Therapy was heterogeneous, with VADRIAC/IE (vincristine, doxorubicin, cyclophosphamide/ifosfamide, etoposide) being the most common regimen (n=3; 27.3%). The 6-month PFS probability in 3L was 28.6% (95% CI 8.9-92.2).

Conclusions

Outcomes in pts with pre-treated advanced CS remain poor, characterised by low PFS rates and a reliance on stabilisation rather than regression. The persistence of mesenchymal subtypes in 2L and 3L of CHT suggests a differential sensitivity profile compared to other CS subtypes. However, the high rate of progression and wide confidence intervals underscore the urgent need for novel, histology-specific therapeutic targets.

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Long-term Outcomes of Multidisciplinary Treatment of Epithelioid Sarcoma Patients

Authors

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Introduction

Introduction: Epithelioid sarcoma (ES) still represents diagnostic challenge as it is a rare subtype of soft tissue sarcoma and multidisciplinary treatment if often not offered outside specialized oncology centers.

Aim of the study

This study aimed to analyze the long-term survival outcomes of patients with ES treated with curative intent.

Materials and methods

Methods: The multidisciplinary treatment outcomes and long-term survival outcomes of patients treated at sarcoma unit for ES were retrospectively analyzed. Relapse-free survival (RFS) and overall survival (OS) were estimated using the Kaplan-Meier method.

Results

Results: 69 patients underwent curative-intent resection of the primary or recurrent tumor and were included in the analysis. Patients' median age was median age, 38 years; 55.1% were males. Median follow-up was 55.9 (95% CI: 50.4 - 68.2) months. Primary tumor (PT) was resected in sarcoma unit in 29 patients and R0 resections were achieved in 15 (51.7%) cases. 40 patients were referred in after undergoing primary resection in regional hospital, and presented with the first or another recurrence of the primary tumor: 23 (57.5%) and 10 (25%), respectively or with scar after primary excision – 7 patients (17.5%). In this group, R0 resection margins were achieved in 19 (74.4%) cases. Median RFS was 31.6 (95% CI: 20.3 - 54), while median OS: 78.5 (95% CI: 70.1 - NA).

Conclusions

Conclusions: ES patients represent a heterogeneous group of patients, with limited access to multidisciplinary treatment when treated at regional hospitals. Treatment at specialized sarcoma centre should be considered in ES patients.

Prevalence and Clinical Course of Parvovirus B19 Infection in Children with Hematologic Diseases: a Single-Center Retrospective Study

Authors

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Introduction

Parvovirus B19 (PVB19) is a highly infectious DNA virus with a strong tropism for erythroid progenitor cells. Although infection is often subclinical in immunocompetent individuals, PVB19 may cause life-threatening complications, such as transient aplastic crisis, particularly in patients with underlying hematologic disorders.

Aim of the study

To assess the prevalence of PVB19 infection among children hospitalized with hematologic diseases and to evaluate the clinical course of active infections.

Materials and methods

A retrospective analysis of clinical data was performed in 103 children hospitalized at the Department of Pediatric Hematology, Oncology, and Transplantology in Lublin between 2023 and 2025, out of a total of 1217 pediatric hospitalizations during the study period. All patients underwent serological testing for anti-PVB19 IgM and IgG antibodies using ELISA. Active infection was defined as an IgM index ≥ 1.1. The analysis included demographic data, laboratory parameters, length of hospitalization, transfusion requirements, and infection-related complications.

Results

IgM-positivity was detected in 13 patients (12.6%). The highest prevalence of active infection was observed in the 4-6-year age group (n=7). Although the initial analysis demonstrated significant differences in IgM-positivity across age groups ($p=0.02$), post hoc Holm correction did not confirm statistical significance, indicating a trend rather than a definitive association. No sex-related differences were observed ($p=0.908$). Clinically, all IgM-positive patients with hereditary spherocytosis (n=3) developed severe anemia (Hb 5.4-7.7 g/dL) requiring red blood cell transfusions. Other common manifestations included fever (n=6), upper respiratory tract infection (n=3), and rash (n=2).

Conclusions

The clinical spectrum of PVB19 infection varied from mild disease to severe hematologic complications and was strongly influenced by the underlying diagnosis. No sex predisposition was identified. A trend toward higher susceptibility in early childhood was observed; however, these findings require confirmation in larger cohorts.

Protein Source Modification After Breast Cancer Diagnosis

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Introduction

Breast cancer is a prevalent malignancy among women and contributes significantly to cancer-related morbidity and mortality in Lithuania. Nutrition plays a key role in recovery and long-term health, and protein source selection may influence both metabolic outcomes, treatment tolerance and overall dietary quality. However, evidence on how breast cancer diagnosis affects protein consumption patterns in Lithuanian women is limited.

Aim of the study

This study aimed to evaluate changes in protein intake and the types of protein sources consumed by women following a breast cancer diagnosis.

Materials and methods

An anonymous survey assessing dietary and lifestyle changes after breast cancer diagnosis was distributed through social media groups for patients and their relatives. Additionally, a supervising physician invited her patients to participate voluntarily via email. A total of 153 women responded, reporting on their consumption of animal-based and plant-based protein sources, including red meat, poultry, fish, eggs, dairy, and legumes, before and after diagnosis.

Results

Following diagnosis, participants reported a shift toward higher-quality protein sources. Consumption of red and processed meats decreased substantially, while intake of fish and eggs increased significantly. Use of legumes, an important and literature-recommended alternative protein source, also increased, though only modestly. Many women incorporated more plant-based protein sources overall, although adoption of vegetarian or vegan diets was rare. Cooking methods shifted toward boiling, stewing, and baking, while fried and highly processed protein-rich foods were consumed less frequently. Overall diet quality improved, with a higher proportion of women rating their protein intake as healthy compared with pre-diagnosis levels.

Conclusions

Breast cancer diagnosis was associated with favourable changes in protein consumption, including reduced red meat intake, increased consumption of fish and eggs, and modestly higher intake of legumes. These findings highlight the importance of promoting both animal and plant-based protein sources, as part of evidence-based nutritional guidance for cancer recovery. Increasing consumption of less commonly chosen protein-rich foods, such as legumes, could further enhance dietary quality among breast cancer survivors.

Quality of Life in Patients After Treatment for Differentiated Thyroid Cancer – A Survey Study

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Introduction

Differentiated thyroid cancer, despite its favorable prognosis, may lead to chronic psychosocial burden and numerous treatment-related side effects. There is a lack of studies systematically documenting quality of life (QoL) in this patient population, which limits the ability to plan individualized care.

Aim of the study

The aim of the study was to evaluate QoL in patients after treatment for differentiated thyroid cancer at the Clinic of Oncological Endocrinology and Nuclear Medicine, National Cancer Institute in Warsaw, and to identify psychosocial and clinical factors influencing QoL.

Materials and methods

The study included 112 patients (97 women, 15 men; mean age 53.2 years, median 52, range 23–79). Papillary thyroid cancer predominated (84.8%). Total thyroidectomy was performed in 92% of patients, 71.6% received radioactive iodine therapy, and 77.7% were on hormonal therapy. QoL was assessed using a proprietary questionnaire covering interpersonal relationships, professional functioning, daily activity, and mental health, along with recording treatment-related side effects. Statistical analyses included Student's t-test, Mann–Whitney U test, and Spearman rank correlation coefficients.

Results

The most common factors reducing QoL were fear of recurrence (78.6%), concern about the future (72.3%), sadness/depression (68.8%), and low self-esteem (67%). The most frequent treatment-related side effects were fatigue (71.4%), weight gain (58.9%), voice disturbances after thyroidectomy (58.3%), and oral dryness after radioactive iodine therapy (71.8% vs 19.4%). Women reported higher levels of anxiety and more frequent weight gain than men. Younger patients (<50 years) expressed greater concerns regarding fertility, while older patients more frequently reported feeling a burden to their families. A moderate negative correlation was observed between time since diagnosis and anxiety level ($\rho = -0.42$). Only 18% of patients utilized psychological support.

Conclusions

The study demonstrates a significant reduction in QoL in patients after treatment for differentiated thyroid cancer, highlighting the chronic nature of anxiety and the impact of treatment-related side effects. The results indicate that systematic monitoring of QoL should be an integral component of ongoing oncological care, enabling targeted psycho-oncological and rehabilitative interventions tailored to the specific needs of patients.

None

Surgical Complications Following Chondrosarcoma Resection: Morbidity Profile And Surival Analysis Of 205 Patients Treated At a National Reference Centre

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Introduction

Chondrosarcoma (CS) is characterised by resistance to systemic therapy; consequently, surgical resection is the mainstay of treatment. However, the aggressive local therapy carries a risk of perioperative complications, rarely described in literature.

Aim of the study

To characterise the incidence and severity of post-operative complications after CS resection in adult patients (pts) using the Clavien-Dindo (CD) classification.

Materials and methods

We performed a retrospective, single-centre analysis of pts undergoing surgical resection for histologically confirmed CS (1998–2025) at the national reference centre. Survival was estimated utilising the Kaplan–Meier analysis with log-rank tests by histological grade. Morbidity was captured as the highest observed CD grade.

Results

Two hundred and five CS pts were included (median age 51.84 years; 114/205 male - 55.6%). Conventional CS predominated (134/205 - 65.4%), with dedifferentiated CS 21/205 (10.2%) and mesenchymal CS 12/205 (5.9%). Tumours were graded as G1 83/205 (40.5%), G2 65/205 (31.7%), G3 38/205 (18.5%) and Gx 13/205 (6.3%). R0 resection was achieved in 132/205 (64.4%), R1 in 45/205 (22.0%) and R2 in 19/205 (9.3%). At cohort level, median relapse-free survival (RFS) was 41.8 months (mo; 5-year 45.2%) and median overall survival (OS) was 103.6 mo (5-year 65.2%). Both RFS and OS were significantly associated with histological grade (log-rank $p < 0.001$), with G3 and Gx demonstrating markedly poorer outcomes. Post-operative morbidity was frequent but usually non-fatal: 41.0% had no recorded complications, while CD Grade II was most common (28.3%), and high-burden events requiring surgery under general anaesthesia (CD IIIB) occurred in 13.2%. A single fatal (CD V) event was recorded (0.5%).

Conclusions

Whilst operative intervention carries a significant risk of non-lethal morbidity, the safety profile of radical resection in specialist centres is well-established. Survival is predominantly influenced by histological grade, thus treatment should prioritise the achievement of clear margins while concurrently anticipating and managing surgical risks.

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The Synthesis and Anticancer Activity of Novel Aryl-/Heteroarylpiperazine Derivatives of 1,7-diethyl-8,9-diphenyl-4-azatricyclo[5.2.1.0 2,6]dec-8-ene-3,5,10-trione

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Introduction

Despite advances in cancer therapy, treatment efficacy remains limited by drug resistance and systemic toxicity, highlighting the need for novel anticancer agents. Dicarboximides are heterocyclic scaffolds with documented cytotoxic properties, while piperazine is a privileged pharmacophore widely used in medicinal chemistry. Hybridization of biologically active motifs represents a rational strategy to enhance anticancer potency and optimize pharmacological properties; however, systematic evaluation of dicarboximide–piperazine hybrids remains limited.

Aim of the study

This study aimed to design and synthesize novel aryl- and heteroarylpiperazine derivatives of 1,7-diethyl-8,9-diphenyl-4-azatricyclo[5.2.1.0^2,6]dec-8-ene-3,5,10-trione and evaluate their in vitro anticancer activity.

Materials and methods

Six derivatives (BK117.1–BK117.6) were synthesized and structurally characterized. Cytotoxicity was assessed using MTT and SRB assays in hematological and solid tumor cell lines (including A549, MDA-MB-231, PC3, and others), with HaCaT keratinocytes as a non-malignant reference. Selected compounds were further evaluated for apoptosis induction and cell cycle distribution by flow cytometry.

Results

Compounds BK117.1–BK117.3 exhibited the highest antiproliferative activity, with IC values below 10 µM in several cancer cell lines, particularly A549. These derivatives induced G1 phase arrest in PC3 cells and promoted apoptosis in sensitive models. In contrast, BK117.4 and BK117.5 showed markedly reduced cytotoxic activity.

Conclusions

Dicarboximide–piperazine hybrids demonstrate structure-dependent anticancer activity in vitro. The most active derivatives represent promising scaffolds for further optimization and development of novel anticancer agents.

The Role of MicroRNAs in the Pathogenesis of Pancreatic Neuroendocrine Tumors

Authors

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Introduction

Pancreatic neuroendocrine tumors (pNETs) are rare neoplasms, accounting for approximately 1–2% of all pancreatic malignancies. Well-differentiated, low-grade pNETs retain neuroendocrine differentiation and regulatory signaling, which is associated with favorable prognosis and 5-year survival rates approaching 90%, whereas high-grade or poorly differentiated pNETs are characterized by profound dysregulation of neuroendocrine signaling and activation of pro-oncogenic pathways, with 5-year survival rates frequently below 40%.

Aim of the study

Studies on the relationship between the occurrence of pNETS and microRNAs of patients serum may allow us to find miRNAs as biomarkers for assessing risk and predicting the pathogenesis of tumor. MicroRNAs play a regulatory role by the regulation of the expression of many mRNA genes. In our study, we analyzed a panel of microRNAs relevant to pNETs pathogenesis. The aim of the study was to identify microRNAs that differentiate pancreatic neuroendocrine tumors and are associated with their pathogenesis and progression.

Materials and methods

The study group included 16 patients (11 men, 5 women, age range 29-74, median 55,5) treated for PNETs, diagnosed at the Department of Oncology, Pomeranian Medical University in Szczecin. The study was conducted by collecting serum samples from patients diagnosed with PNETs and from 10 patients in the control group (6 men, 4 women, age range 41-83, median 60). In 7 cases, the tumor was located in the head of the pancreas; in 2 cases in the body of the pancreas; and in 7 cases, in the tail of the pancreas. The median of size of tumor was 21,5 mm (10-60 mm). Total RNA of serum of each patient and healthy individuals, was analysed with Agilent miRNA microarray comprising 2549 human miRNA probes , and the SureScan Microarray Scanner used to scan array slides.

Results

In serum samples, we identified 51 miRNAs that were statistically (p-value <0,05) different. 19 miRNAs showed decreased expression and 32 showed increased expression. 38 microRNAs exhibited a FC>2. Functional analysis identified several microRNAs involved in signalling pathways associated with disease pathogenesis, including hsa-miR-3135b (p-value= 0,007, FC= 5,26), hsa-miR-765 (p-value= 0,007, FC= 3,7), hsa-miR-4499 (p-value= 0,008, FC= 4,3).

Conclusions

Orthopaedics, Traumatology & Physiotherapy Session

Coordinators:
Aleksandra Biegańska, Sonia Garcarz

AI Use in Patient Self-Diagnosis in Orthopaedics and It's Accuracy

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Introduction

In 2022 Open AI released ChatGPT, a Large Language Model trained on data that included medical textbooks, articles and patient stories. Millions of people have since used it to self-diagnose before deciding to visit a medical professional. Usually the accuracy is limited due to inaccuracy of patient descriptions and non-specificity of signs, orthopaedic problems are unique in their nature - they are easy to localize and can be precisely described by a person with no prior medical training - a member of the general population. These qualities make them an outstanding target for self-diagnosis using AI chatbots. These however are not fullproof, which could cause patients to disregard their symptoms.

Aim of the study

The study aimed to find how patients interacted with AI chatbots while self-diagnosing before visiting the doctor, and their perception of the diagnosis' accuracy depending on whether or not they used AI chatbots as a tool.

Materials and methods

We've created a questionnaire consisting of 13 questions: first three are asked about sex, age and education, fourth question asks about the onset of the illness according to AO foundation guidelines in differentiating between acute and chronic illnesses. Questions 5-7 ask about sources used, categorizing participants into research and control groups. Question 7-13 ask about the influence the AI diagnosis had on the participant, their comparison to the doctor's diagnosis, what tools were they going to use to learn more about their diagnosis and whether they trust the doctor more or the AI in terms of diagnosis.

Results

Less than half of participants admitted to using AI in self diagnosis, most of which use multiple sources during self-diagnosis. The patient group using AI was on average more satisfied with self-diagnosis, and reported it fitting the severity of the doctor's diagnosis more often when compared to patients self-diagnosing using more traditional sources.

Conclusions

AI chatbots remain a useful and approachable tool in patient self-diagnosis, helping in decision-making. They are able to answer patients' questions exhaustively, looking through many sources and proposing multiple possible outcomes. Their accuracy and perceived reliability remains limited mainly due to the lack of information, sourcing it only from patient's descriptions, and possibly from photos.

Analysis of Risk Factors for Musculoskeletal Overuse Injuries In Recreational Runners

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Introduction

Overuse injuries represent a significant challenge in sports medicine, affecting training continuity and the health of recreational runners. Understanding these injuries requires a multifactorial approach that accounts for training parameters, sexual dimorphism, and specific biomechanical markers.

Aim of the study

The objective of this study was a multifactorial analysis of musculoskeletal injury risk factors, with a particular focus on training load, gender differences, and objective parameters of postural stability and movement quality.

Materials and methods

The study included 146 recreational runners (94 females, 52 males). Data regarding injury history, training frequency, and 10 km personal bests were analyzed. Functional assessment was performed using the Functional Movement Screen (FMS) protocol, while postural stability (Stability Index) was evaluated using the Biodex Balance System. Statistical analysis included the Shapiro-Wilk test, Student's t-test, and the chi-square test. Injury risk was assessed using a logistic regression model (OR).

Results

The analysis identified a training "sweet spot" at 5–6 sessions per week. Exceeding this threshold was associated with a sharp spike in injury rates: transitioning from 6 to 7 sessions per week (zero recovery days) markedly increased the risk of injury ($p < 0.001$). At a volume of 8 sessions per week, performance regression and significantly higher Stability Index scores - indicating poorer postural control - were observed ($p = 0.028$). Injured individuals scored significantly lower in the FMS test (mean 14.2 vs 16.8 points; $p = 0.012$). Female sex was identified as an independent risk factor. When comparing groups with identical training volumes, women exhibited higher injury rates (e.g., at 5 sessions/week: 56% vs 42%, $p = 0.042$; at 6 sessions/week: 78% vs 56%, $p = 0.038$). Subgroup analysis within the female population excluded the influence of hormonal contraception or pregnancy history ($p > 0.05$), suggesting that the higher risk of overuse injuries stems from biomechanical differences rather than hormonal status.

Conclusions

A lack of completely recovery days increases the injury risk and leads to physiological regression and impaired postural stability in recreational runners. Women exhibit lower tolerance for high training volumes than men, a factor that seems to be independent of hormonal status. An FMS score below 15 points and higher Stability Index scores (diminished postural balance) serve as effective predictors of injury risk in recreational runners.

Beyond BMI: Association of Physical Performance, Muscle Strength and Cognitive Status with Fracture Risk in Older Adults

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Introduction

Fracture management in older adults is complex, presenting increased risk of complications and less favourable rehabilitation outcomes. Recognising and reducing fracture risk is therefore important. Body mass index (BMI) is commonly used in fracture risk assessment but does not reflect balance and muscle strength, known modifiable mediators of fall-related fractures. The contribution of various measures to fracture occurrence remains debated.

Aim of the study

The aim of the study is to assess the association of measures of functional status, strength and balance with fractures, alongside BMI, in older adults.

Materials and methods

The study is observational, with a cross-sectional design. It includes 552 older adults, aged 60 years and above, admitted to the Department of Geriatrics in Lodz, Poland. The main variables studied are presence of fractures, age, sex, BMI, Hand Grip Strength (HGS), Tinetti, Short Physical Performance Battery (SPPB) and Mini Mental State Examination (MMSE) tests. Descriptive statistics were performed to describe the population. Associations were analysed using univariate and multivariable logistic regression. Statistical analysis was performed using Statistica 13.3.

Results

Patients with fractures were older ($p=0.001$) and demonstrated lower BMI ($p=0.005$), reduced calf circumference ($p<0.001$) and poorer physical and cognitive test scores (left HGS: $p=0.024$; SPPB total: $p= 0.002$; Tinetti Sum: $p<0.001$; MMSE: $p<0.001$). While lower BMI was associated with fractures after adjustment for age and sex (N=317; OR(95%CI) = 0.94 (0.89, 0.99), $p=0.026$), only lower Tinetti Sum (OR(95%CI)=0.70(0.50, 0.98), $p=0.039$) and lower left HGS (OR(95%CI)=0.69(0.49, 0.97), $p=0.035$) were independently associated with fractures in the fully adjusted model (N=62; Covariates: sex, age, BMI, left HGS, Tinetti, SPPB chair stand, MMSE).

Conclusions

This study demonstrates a significant independent association between fractures and functional tests of strength, balance and mobility in older adults, while BMI did not remain statistically significant in the fully adjusted model. Assessment of these parameters may therefore complement anthropometric measures in orthopaedic fracture risk stratification. An important limitation is the small number of fracture patients (N=8) in the full model. The findings require confirmation through longitudinal studies.

Does Implant Design Influence Gait and Patient-Reported Outcomes After Total Knee Arthroplasty? A Prospective IMU-Based Study

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Introduction

Total knee arthroplasty (TKA) effectively improves pain and function in patients with advanced knee osteoarthritis. However, it remains unclear whether contemporary implant designs translate into measurable differences in routine gait performance.

Aim of the study

To compare gait performance and patient-reported outcomes between medial congruent and posterior-stabilized TKA designs during the first postoperative year.

Materials and methods

This prospective observational study included a consecutive series of 93 patients undergoing primary TKA for osteoarthritis (posterior-stabilized, n = 56; medial congruent, n = 37). All surgeries were performed at the level III academic hospital by the same experienced surgical team using standard midline incision and medial parapatellar arthrotomy. All patients followed the same rehabilitation protocol. Spatiotemporal gait analysis was performed using a waist-mounted inertial measurement unit (Baiobit, Rivelo, BTS Bioengineering, Italy) during self-selected level walking preoperatively and at 12 months postoperatively. Primary outcomes were gait speed and double support time; cadence was analyzed exploratorily. Patient-reported outcomes included KOOS total and FJS-12. Statistical significance was set at $p < 0.05$.

Results

Baseline characteristics were comparable between groups (all $p > 0.05$). Both groups improved significantly over time (all $p < 0.05$). Gait speed increased from 0.77 ± 0.18 to 0.93 ± 0.12 m/s in the posterior-stabilized group and from 0.81 ± 0.16 to 0.96 ± 0.14 m/s in the medial congruent group. Double support time decreased from 41.6 ± 7.8% to 25.2 ± 4.4% and from 38.6 ± 8.4% to 23.7 ± 3.9%, respectively. At 12 months, between-group differences in gait speed and double support time were not significant (both $p > 0.05$). KOOS total and FJS-12 were comparable between groups at 12 months.

Conclusions

Medial congruent and posterior-stabilized designs demonstrated similar early functional recovery after TKA. In this real-world walking assessment, implant subtype did not appear to meaningfully influence gait performance or patient-reported outcomes during the first postoperative year.

Impact of 2% Lidocaine Iontophoresis on Pain and Function in Mild to Moderate Carpal Tunnel Syndrome

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Introduction

Carpal tunnel syndrome (CTS) is the most prevalent peripheral nerve entrapment, characterized by median nerve compression within the carpal canal. It affects 7–16% of the adult population, with higher incidence in women, particularly during pregnancy, menopause, or due to occupational factors involving repetitive hand movements and vibration. Common symptoms include parenthesis, pain, and functional impairment, significantly reducing patient's quality of life. While various conservative and surgical treatments exist, finding non-invasive methods for effective symptom management remains a priority.

Aim of the study

This study aimed to evaluate the effectiveness of iontophoresis using a 2% lidocaine solution in alleviating pain and improving functional comfort in patients diagnosed with mild to moderate CTS.

Materials and methods

The study initially included 22 female patients (mean age 46.2 years) with clinically and electromyographically (EMG) confirmed unilateral CTS (Grade I/II severity). Participants underwent 10 sessions of iontophoresis (15 minutes each) with 2% lidocaine hydrochloride. The anode was placed on the palmar side and the cathode on the dorsal side of the wrist. Treatment effectiveness was assessed using the Boston Carpal Tunnel Questionnaire (BCTQ), which includes the Symptom Severity Scale (SSS) and the Functional Status Scale (FSS). Measurements were taken at baseline (T1), the final day of treatment (T2), and at 1-month (T3) and 3-month (T4) follow-ups.

Results

Statistical analysis showed a significant reduction in symptoms immediately following treatment. The mean SSS score decreased from 27.09 at baseline to 14.90 at T2. This improvement was largely maintained at T3 (15.95) but showed a gradual increase by T4 (21.77), though it remained below baseline levels. Similarly, FSS scores improved from 17.00 (T1) to 11.00 (T2) and remained stable at T3 (11.32) before rising slightly at T4 (14.55).

Conclusions

Iontophoresis with 2% lidocaine is an effective non-invasive method for the temporary reduction of pain and functional impairment in mild to moderate CTS. While the treatment significantly improves quality of life, the effects plateau at one month and begin to diminish by three months, suggesting that the procedure should be repeated periodically or integrated into a multimodal therapeutic approach for sustained relief.

Tendon Transfer for Radial Nerve Injury in Combat Trauma Regardless of Bone Union: A Retrospective Comparative Study

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Introduction

Polystructural limb injuries with major vessel and nerve damage comprise 80% of combat trauma cases. Humeral injuries comprise about 16.9% of the total structure of modern warfare wounds. Notably, radial nerve injury occurs in 20% of humeral fractures. Radial nerve palsy causes loss of wrist and finger extension and thumb abduction, significantly impairing grip. Successful hand function recovery is achieved in only 32%-59% of cases following timely autoneuroplasty or nerve transfer. Combat trauma factors such as massive soft tissue and bone defects, infectious complications (osteomyelitis), and impaired bone regeneration often make nerve surgery impossible or delay it. Furthermore, denervation beyond 6 months causes 60% muscle atrophy and leads to joint contractures, making prolonged waiting periods critical. Tendon transfer is an effective method for restoring hand function when nerve recovery is hopeless. Timely tendon transfer—without waiting for nerve regeneration or bone union—emerges as an optimal strategy for preserving the functional capacity of the hand.

Aim of the study

To justify tendon transfer for hand recovery in combat-related upper limb trauma with radial nerve injury, regardless of fracture consolidation.

Materials and methods

The study involved ten patients with gunshot humeral fractures and radial nerve injuries. Patients were divided into two groups: Group I (n=5) with consolidated fractures and Group II (n=5) with pseudoarthrosis. All patients underwent Merle d'Aubigné tendon transfer followed by a standardized rehabilitation protocol. Statistical analysis was performed using the Mann-Whitney U-test.

Results

At the 6-month follow-up, the median wrist extension (with fingers flexed/extended) was 55°/20° in Group I and 50°/20° in Group II ($p = 0.59$; $p = 0.82$). The range of finger extension in the neutral wrist position reached 170° and 165°, respectively ($p = 0.20$). Thumb movements (extension/abduction) were 60°/40° in Group I and 60°/45° in Group II ($p = 0.73$; $p = 0.06$). In both groups, hand function recovered to "good" and "excellent" levels, with no statistically significant difference between the groups ($p > 0.05$).

Conclusions

Tendon transfer for radial nerve palsy in combat trauma should proceed without waiting for bone consolidation or nerve repair. This strategy optimizes functional recovery and rehabilitation. Comparable outcomes across study groups prove that impaired humeral consolidation is not a contraindication for successful tendon transfer.

Transcutaneous Electrical Nerve Stimulation in Lower Limb Pain of Ischemic and Neuropathic Origin

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Introduction

Transcutaneous electrical nerve stimulation (TENS) is a non-pharmacological analgesic method based on gate control theory and endogenous opioid release. There are limited high-quality studies evaluating whether TENS reduces neuropathic pain and ischemic lower limb pain.

Aim of the study

To evaluate the analgesic effect of active versus sham TENS in patients with lower limb pain of ischemic and neuropathic origin.

Materials and methods

This prospective randomized pilot study included hospitalized patients with lower limb ischemia (Fontaine ≥IIb), NRS ≥4 and ≥18 yers old. Patients with hemodynamic instability, implanted electronic devices, active infection at electrode site, recent anesthesia, pregnancy or prior TENS therapy were excluded. Written informed consent was obtained from all participants. All patients fulfilled DN4 criteria for neuropathic pain. In the active group, stimulation was initiated at 150 Hz, pulse duration 100 microseconds and intensity 1 mA, then gradually increased until strong but comfortable paresthesia was achieved.In the sham group, stimulation was set at 150 Hz, 100 microseconds and 1 mA and was not further increased. Each session took 30 minutes.Pain intensity (NRS) and vital signs were assessed before and after a 30-minute session. Analgesic use 72 h before and after therapy was recorded.

Results

Thirteen patients were analyzed (7 active, 6 sham). In the active group, 85.7% were men and 14.3% women; in the sham group, 83.3% were men and 16.7% women. Mean BMI was 27.1 kg/m² in the active group and 28.0 kg/m² in the sham group. Lower limb amputation (toe or lower leg) was present in 3 patients (42.9%) in the active group and 4 (66.7%) in the sham group. In the active group, mean NRS reduction was 1.57 points (median 2), and 57.1% achieved ≥2-point improvement. In the sham group, mean reduction was 0.83 points (median 1), and 16.7% achieved ≥2-point improvement. The between-group mean difference was 0.74 points (median difference 1) and did not reach statistical significance (p=0.18). No significant changes in heart rate or respiratory rate were observed. Analgesic use within 72 h did not decrease.

Conclusions

In patients with lower limb pain of ischemic and neuropathic origin, TENS was associated with short-term pain reduction. Although greater improvement was observed in the active group, the study was underpowered to confirm superiority over sham stimulation. Larger randomized studies are warranted.

Funding: The purchase of equipment and study implementation were funded by the Medical University of Warsaw Student Minigrant awarded in 2024.

Whom to Refer to a Pediatric Orthopedist: Assessment of Appropriateness of 800 Referrals to Pediatric Orthopedic Clinic

Authors

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Introduction

Musculoskeletal issues in children are a common cause of primary care consultations and a significant source of referrals to pediatric orthopedic clinics. High number of redundant referrals can be challenging for rational allocation of resources and managing specialist waiting times.

Aim of the study

The aim of the study was to analyze the appropriateness of the referrals to the outpatient pediatric orthopedic clinic. Our goal was to develop the recommendations to differentiate between conditions requiring specialist intervention and those manageable in primary healthcare.

Materials and methods

A prospective analysis was conducted on 800 consecutive referrals of patients under the age of 18 presenting to the pediatric orthopedic clinic between February 2024 and November 2025. The exclusion criteria included patients referred from other specialist clinics or with acute trauma. The main evaluated parameters were: the reason and the priority (urgent/elective) of the referral, the final diagnosis and the necessity for subsequent diagnostic imaging and treatment.

Results

The study group consisted of 422 (52.8%) boys and 378 (47.2%) girls. The median age was 9 years 9 months (9.9; range 0.1–17.11). Urgent referrals accounted for 22.0%. The most prevalent reasons for referral were foot problems (flat feet/valgus; 17.0%), postural concerns (13.9%), knee pain (12.6%) and gait assessment (12.3%). The cases classified as the developmental/ normal variants represented 24.3% (194/800). These patients were significantly younger, with a mean age of 4,0 vs 10,7 years in the remaining group. The developmental variants rarely required a further healthcare attention: diagnostic imaging was performed in only 6/194 (3.1%) vs 329/606 (54.3%) in the other group, the treatment in 1/194 (0.5%) vs 189/606 (31.2%), and follow-up in 9/194 (4.6%) vs 235/606 (38.8%) cases. Interestingly, 7.7% of referrals within this group were marked as urgent, what states for 8.5% of all urgent cases.

Conclusions

1. Approximately 1/4 of initial pediatric orthopedic referrals concerned developmental variants or normal findings that required no subsequent tests or treatment. 2. 1/5 of urgent referrals involved developmental variants, suggesting a need to standardize urgency criteria. 3. The findings support the necessity of establishing clinical guidelines with developmental variants and clear referral criteria for primary care physicians

Pediatrics & Neonatology Session

Coordinators:
Melanie Pui Fen Nguyen, Aleksandra Grotkowska

Beyond Adiposity: Zinc-α2-Glycoprotein as a Potential Marker of Cardiometabolic Alterations in Obese Adolescents

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Introduction

The global rise in pediatric obesity represents a major public health challenge due to its association with early cardiovascular and metabolic disturbances. Zinc-α2-glycoprotein (ZAG) is a lipid-mobilizing adipokine implicated in adipose tissue regulation and insulin sensitivity, with anti-inflammatory properties. The role of ZAG in childhood obesity has not been fully elucidated, especially among adolescent cohort.

Aim of the study

The primary aim of this study is to investigate whether the levels of ZAG can be used as a predictive or monitoring biomarker of the severity of adolescent obesity and possible cardiometabolic complications including dyslipidaemia elevated blood pressure in the adolescent cohort.

Materials and methods

This cross-sectional study included a group of 78 adolescent patients, including 60 obese patients, and the control group consisted of 18 patients with normal body weight. We analysed anthropometric data and biochemical parameters, including serum ZAG levels, and lipid profile as well as systolic blood pressure, diastolic blood pressure.

Results

Circulating ZAG levels were significantly lower in adolescents with obesity compared to controls ($p < 0.001$). ZAG concentrations did not differ between sexes within the same obesity category. In the obese group, ZAG showed a strong negative correlation with BMI ($r = -0.91$, $p < 0.001$). An inverse correlation was observed between ZAG and systolic blood pressure ($r = -0.26$, $p < 0.05$) was found in the obese cohort. In our cohort, serum ZAG concentrations showed a modest positive correlation with HDL-cholesterol, while no significant associations were found with diastolic blood pressure or other lipid fractions.

Conclusions

Lower circulating ZAG concentrations are strongly associated with adiposity in entire cohort and modestly associated with systolic blood pressure in obese adolescents. These findings support a potential role of ZAG as a sensitive molecular biomarker that can be useful in ambulatory care settings for early detection of cardiometabolic risk before the onset of clinical symptoms.

Characteristics of the Patients in the Early, Asymptomatic Stages of Type 1 Diabetes

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Introduction

Type 1 diabetes (T1D) is a chronic autoimmune condition where the immune system destroys β-cells in the pancreas, leading to little or no insulin production. Early-stage T1D is defined as being positive for at least two islet autoantibodies. Characteristics of patients in the early, asymptomatic stages may help with screening and accelerate diagnosis. This could improve the prognosis and influence the course of treatment.

Aim of the study

The goal of the research was to compare and characterize the patients in the early, asymptomatic stages of T1D with emphasis on differences in laboratory test results and sociodemographic differences.

Materials and methods

The screening involved 20 000 children. Blood samples were collected and tested for autoantibodies against pancreatic islet β-cells: IAA, GADA, IA-2A and ZnT8A. If two or more types of autoantibodies were present, the diagnosis of early-stage T1D was made. Parents also filled out questionnaires which included sociodemographic data like: age, sex, height, weight, first-degree family history status of T1D, parents' education. Diagnosed children underwent other tests: OGTT, HbA1c, C-peptide, TSH, fT4, aTPO, ATG (antithyroglobulin antibody), TGA (coeliac disease- associated transglutaminase autoantibodies). Of the 20 000 screened children, 86 (0,43%) had at least two positive autoantibodies.

Results

68 children (31 males) participated in further evaluation with the mean age 9,9 years. A family history of T1D was reported in 25 cases. 16,2% of children had intolerance of glucose in OGTT (Stage 2 T1D), 8,8% T1D and 8,8% had increased HbA1c levels. Elevated levels of aTPO and/or ATG and TGA had 26,5% and 7,4% of patients respectively. At least one parent of 87,9% of the participating patients had attained higher education.

Conclusions

Screening programs contribute to earlier diagnosis of T1D and comorbidities and allow for timely initiation of appropriate care. Patients with early-stage T1D are at increased risk of autoimmune thyroid disorders and coeliac disease. Therefore simultaneous screening for autoimmune thyroid diseases and coeliac disease during T1D screening programs should be recommended, as it may enable earlier detection and timely management of these frequently coexisting conditions. The high proportion of parents with higher education may reflect differences in health awareness, highlighting the need for broader diabetes education and improved screening outreach to families with lower educational levels.

Esophageal Atresia in Newborns: Retrospective Analysis with Insights from Neonatal and Surgical Practice

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Introduction

Esophageal atresia (EA) is a congenital defect, often coexisting with tracheo-esophageal fistula (TEF) and other anomalies. The condition affects 1 in 2500-4500 neonates. Patients with EA often present with excessive salivation, which, combined with difficult orogastric tube placement, leads to diagnosis. Treatment involves surgical correction of EA and TEF. To minimize the risk of long-term complications, newborns should be treated in highly specialized centres.

Aim of the study

The aim of this study was to analyse cases of newborns with EA, present the variation in clinical condition depending on coexisting anomalies and indicate the necessity of cooperation between neonatologists and surgeons.

Materials and methods

Authors analysed medical records of patients with EA, born and treated in the period 2023–2025 in a tertiary care centre. The information included: sex, prenatal and postnatal symptoms, course of pregnancy and delivery, children's clinical condition after birth, type of esophageal atresia, presence of additional anomalies, surgeries, postoperative complications and deaths.

Results

Of the 14 analysed patients, 7 were delivered in our centre. Two infants were born vaginally, 12 required cesarean section. Eleven children were in good condition at birth. Two out of 3 neonates, who required cardiopulmonary resuscitation, died on the 1st day of life. EA was diagnosed prenatally in 4 cases, postnatally in 10. The presence of TEF was found in 13 patients; coexisting anomalies occurred in 8. All children presented typical symptoms of EA. With the exception of 2 neonates, who died on the day of birth, the remaining 12 were scheduled for surgery. Eleven patients underwent the EA correction within the first 3 days of life. One infant was operated on relatively late (63rd day) and required multiple surgeries, due to the poor condition. Postoperative complications occurred in 11 neonates; in 1 case, the postoperative period was uneventful. Two children required reoperation. With the exception of 1 patient, who was hospitalized for over 4 months, the remaining 11 were discharged home in good general condition, on average on the 18th day of life.

Conclusions

In neonates with EA, the clinical condition is associated not only with the presence of the defect, but also with coexisting congenital anomalies. To ensure the best possible care, cooperation between a neonatologist and surgeon is required. This analysis has shown that if the surgery and postoperative period go well, the prognosis is favourable.

Exploring Patterns of Palmar Hyperlinearity in Indian Children with Atopic Dermatitis and Ichthyosis Vulgaris

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Introduction

Atopic Dermatitis (AD) and Ichthyosis Vulgaris (IV) are common pediatric dermatoses associated with epidermal barrier dysfunction and significant quality-of-life impact. Palmar Hyperlinearity, a visible clinical marker of barrier abnormality and filaggrin deficiency, manifests in distinct morphological patterns such as fine linear markings, cross-hatching, perpendicular ridges, and diamond-shaped configurations. However, the pattern-based diagnostic and phenotypic relevance of Palmar Hyperlinearity remains under-explored in children from Northwestern India. This study, now published in a PubMed-indexed MEDLINE journal, addresses this gap.

Aim of the study

To categorize patterns of Palmar Hyperlinearity in children (<18 years) with Atopic Dermatitis and/or Ichthyosis Vulgaris and to evaluate their correlation with underlying disease phenotypes.

Materials and methods

A hospital-based cross-sectional study was conducted at a tertiary care center in Northwestern India. Children aged less than 18 years with clinically confirmed AD, IV, or both were enrolled. Palmar photographs were assessed for five predefined Hyperlinearity patterns and classified as Hyperlinear or Non-Hyperlinear. Associations between Palm Patterns and disease groups were analyzed using chi-square tests, and inter-rater reliability was assessed using Fleiss' kappa statistic.

Results

Among 206 participants, 121 (58.7%) demonstrated Hyperlinear palms. Extensive Cross-hatch was the most common pattern and was predominantly associated with isolated AD. Thick Perpendicular lines were most frequently observed in IV-only cases, while Prominent Diamond patterns were strongly associated with coexistent AD and IV. Palm pattern distribution showed a statistically significant association with disease type ($p < 0.001$). Inter-observer agreement was substantial (Fleiss $\kappa = 0.62$).

Conclusions

Distinct patterns of Palmar Hyperlinearity are associated with specific pediatric dermatoses, supporting their role as phenotypic markers of epidermal barrier dysfunction. Palm Pattern recognition represents a reproducible, low-cost clinical adjunct that may aid early diagnosis and disease stratification of AD and IV, particularly in resource-limited settings of Northwestern India where genetic testing is not readily available. Limitations include the cross-sectional design and lack of genetic correlation; however, the findings provide a framework for larger multicentric and longitudinal studies to validate regional applicability and prognostic utility.

None

Indications for Endotracheal Intubation in Neonates

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Introduction

Endotracheal intubation and mechanical ventilation in neonates remains an essential life-saving tool in many indications, especially in preterm births. Despite the high risk of complications, this procedure remains necessary in various cases of respiratory failure.

Aim of the study

The aim of this study was to analyse the causes of endotracheal intubation in neonates, based on gestational age at birth.

Materials and methods

We analysed 260 cases of newborns requiring endotracheal intubation and mechanical ventilation, with particular attention to the timing of intubation, its duration, and the distribution of key clinical indications. The main analysed indications were: infant respiratory distress syndrome (IRDS), general anaesthesia for surgery, congenital defects, infections, meconium aspiration syndrome (MAS), gastrointestinal disorders and perinatal asphyxia.

Results

The longest average duration of intubation was observed in the group of neonates born before 32 weeks of gestation. Among all the groups, the shortest mean intubation time (3.2 days) was recorded in neonates intubated for surgical anaesthesia. The longest periods were noted in neonates with MAS and digestive system disorders, averaging 12.6 and 13.8 days, respectively. Comparable intubation durations were observed in neonates with congenital anomalies, infections, and birth asphyxia. In infants with IRDS, the mean duration of intubation was 9.5 days, with a median of 3 days.

Conclusions

Endotracheal intubation remains a fundamental life-saving procedure in neonatal care. Some of the indications highlighted strong association between gestational age at birth and the need for ventilatory support. Multiple indications were evenly distributed across gestational age groups, suggesting the multifactorial etiologies and variable clinical courses, regardless of maturity. Most intubations occurred within the first 24 hours of life, indicating that this period is critical.

Is the Prevalence of the Exacerbations of the Chronic Pancreatitis Related to the Infectious Season?

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Introduction

Chronic Pancreatitis (CP) is of a rare occurrence in childhood. The etiology of CP in children is varied and includes anatomic anomalies, gene mutations and others. Some of the most common causes of the exacerbations of CP in children are: infections, dietary errors and stomach trauma. It is commonly thought that the exacerbations of the CP most often occur during the infectious seasons (during the winter or autumn months).

Aim of the study

The aim of this study was to investigate if the prevalence of the exacerbations of the CP is correlated with the infectious season.

Materials and methods

586 children with CP (aged: 0.2-18 years; mean 8.7 years; F-310, M-276) hospitalized between 1998-2025 were enrolled into the study. The diagnosis of CP was established according to INSPIRE recommendations. Clinical and epidemiological data were recorded and analyzed. All patients were screened for mutations in the high-risk genes associated with CP. All children had preceding imaging studies. The total number of the exacerbations was analyzed in all children and divided according to the months. The data was statistically analyzed ($p<0.05$).

Results

In 586 children there were 2116 exacerbations noted. The exacerbations occurred most commonly in March (201), December (198) and July (189). All the data is presented below. Month The number of exacerbations (Percents) January 154 (7.3%) February 169 (8%) March 201 (9.5%) April 163 (7,8%) May 161 (7,6%) June 173 (8,2%) July 189 (8,9%) August 169 (8%) September 171 (8,1%) October 180 (8,5%) November 188 (8,9%) December 198 (9,3%) There was no statistically significant monthly variation in exacerbations (NS). Gene mutations were found in 350 children (60%). Anatomic anomalies of pancreatic duct were diagnosed in 95 patients (16.2%). Idiopathic CP was diagnosed in 38 children (6.5%).

Conclusions

1 The exacerbations of the CP are not related to the infectious season 2 The most common etiologic factors of CP in children are gene mutations and anatomic anomalies of pancreatic duct.

Prevalence Assessment of Prediabetes in Children and Adolescents Presenting for Primary Diagnosis of Obesity.

Authors

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Introduction

Obesity may affect up to one in five children in Poland and represents a growing global public health concern. Its clinical relevance stems from numerous complications, including type 2 diabetes, cardiovascular disease, reduced quality of life, and shortened life expectancy. The strong association between childhood and adult obesity underscores the necessity of early intervention.

Aim of the study

The aim of this study was to evaluate the prevalence of prediabetes among pediatric patients admitted to a tertiary-reference Pediatric Diabetology Clinical Center in Poland for the initial diagnosis of obesity.

Materials and methods

We conducted a retrospective analysis of medical records of pediatric patients admitted for the initial diagnosis of obesity between 2020 and 2025. Exclusion criteria included type 1 or type 2 diabetes and conditions potentially affecting glycemia, such as acute infection, medications influencing glucose metabolism, genetic syndromes predisposing to obesity, and prior obesity treatment. Obesity was defined as BMI z-score >2SD for age and sex; prediabetes was defined as impaired fasting glucose and/or impaired glucose tolerance (IFG/IGT).

Results

A total of 691 patients were initially identified, of whom 300 met the inclusion criteria and were included in the final analysis. Prediabetes (IFG/IGT) was diagnosed in 82 participants (27,33%). We found no differences between the groups (IFG/IGT vs non-IFG/IGT) in terms of patient age, sex distribution, BMI z-score or blood pressure. Patients in the IFG/IGT group had significantly higher HbA1c levels (5,6% vs 5,3%; p<0,001) and HOMA-IR (5,04 vs 3,32, p<0,001). The IFG/IGT group had significantly higher glucose levels during the oral glucose tolerance test at fasting (93,65mg/dL vs 88,00 mg/dl; p<0,001) and at 60' (146,00mg/dl vs 124,45mg/dl; p<0,001); 90' (154mg/dl vs 115mg/dl; p<0,001), and 120' (140mg/dl vs 109,5mg/dl, p<0,001) as well as higher insulin concentrations at fasting (22,15 mcU/ml vs 15,59 mcU/ml; p<0,001), at 90' (110,5 mcU/ml vs 72 mcU/ml; p=0,031) and 120' (135,8 mcU/ml vs 74,94 mcU/ml; p<0,001). We also found statistically significant elevation of white blood cells (7,37x10^3 cells/µL vs 6,94 x10^3 cells/µL; p=0,007) and the number of platelets (316x10^3/µL vs 298,5x10^3/µL; p=0,020). In this group more participants had also anti-ZnT8 autoantibodies (3 vs 0; p=0,028).

Conclusions

Almost one-third of children hospitalized for primary obesity had prediabetes; early detection allows early pharmacologic intervention to prevent complications.

Pediatrics Case Report Poster Session

Coordinators:
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Ecmo As a Life-Saving Therapy in a Neonate with Congenital Chylothorax and Noonan Syndrome: a Case Report.

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Background

Congenital chylothorax is a rare but severe cause of pleural effusion in the neonate and may result in respiratory failure and persistent pulmonary hypertension. The condition is often associated with lymphatic abnormalities and may occur in the context of underlying genetic syndromes, including Noonan syndrome. Management of refractory cases remains challenging, and extracorporeal membrane oxygenation (ECMO) may be required as a life-saving supportive therapy.

Case Report

We present the case of a critically ill neonate with congenital chylothorax complicated by persistent pulmonary hypertension and severe respiratory failure. The patient developed progressive hypoxemia and hemodynamic instability shortly after birth, requiring invasive mechanical ventilation and inotropic support. Despite maximal conventional intensive care, the clinical condition deteriorated. Due to refractory respiratory and circulatory failure, a mobile extracorporeal membrane oxygenation team from Karolinska University Hospital was deployed, and veno-arterial ECMO was initiated on site as a life-saving intervention, followed by transport of the patient on ECMO support to Sweden. Stabilization of oxygenation and cardiovascular function was achieved, allowing further diagnostic evaluation. Subsequent genetic testing established the diagnosis of Noonan syndrome, providing a unifying explanation for the clinical presentation.

Conclusions

This case illustrates the complex interplay between congenital chylothorax, persistent pulmonary hypertension, and Noonan syndrome in a critically ill neonate and highlights the role of ECMO as an effective rescue therapy when conventional treatment fails. Early recognition of severe neonatal conditions, timely referral to specialized centers, and close multidisciplinary collaboration, including cross-border cooperation, can be decisive for survival. In such critically ill neonates, extracorporeal membrane oxygenation serves as a vital bridge to stabilization and subsequent targeted management.

Acute Myocardial Ischemia in a Newborn - a Case Report

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Background

The estimated incidence of myocardial infarction in term neonates is approximately 1 in 5,000. Mortality varies between 40-50%, due to diagnostic challenges of non-specific symptoms, such as sudden clinical deterioration and cardiac arrest. The etiology and clinical presentation differ across age groups, particularly in neonates. Diagnostic similarities include recognition based on electrocardiogram (ECG) changes, elevated cardiac troponins and imaging findings. Currently, there are no established guidelines for newborns to facilitate rapid diagnosis and initiation of targeted treatment. Short-term complications include arrhythmia and cardiogenic shock, which without proper management can lead to cardiovascular failure.

Case Report

A 4-hour old female neonate aspirated milk during feeding. The patient experienced sudden cardiopulmonary arrest requiring resuscitation. Intubation, mechanical ventilation and therapeutic hypothermia were used to improve her clinical condition. Acute respiratory failure led to relative myocardial ischemia, with symptoms of myocardial necrosis revealed in further monitoring. ECG and echocardiography (ECHO) confirmed ischemic changes in the heart muscle, and their repetition allowed for precise monitoring of the infant's therapeutic process. Cardioprotective pharmacotherapy was initiated, including lisinopril, spironolactone and acetylsalicylic acid. The patient remains under cardiological care. At 6 months of age, cardiac magnetic resonance imaging (CMRI), ECG and ECHO confirmed a stable clinical condition. Currently, the patient continues cardioprotective treatment and is developing normally.

Conclusions

Diagnosing myocardial infarction in newborns requires distinguishing from congenital heart defects, infections and hypoxia. Since ECG and ECHO may initially fail to reveal significant abnormalities in the early stages of the disease, immediate initiation of circulatory support is crucial to minimize the myocardium damage. The limited sensitivity of these screening methods may delay both recognition and intervention. Early diagnosis combined with dedicated screening allows for the adequate implementation of cardioprotective therapy. This approach significantly improves the prognosis for neonatal myocardial infarction. However, there is still an urgent need to develop standard guidelines to improve the diagnosis and treatment of this rare and life-threatening disease in such young patients.

From Seizure Onset to Prenatal Suspicion: How Early Detection of Tuberous Sclerosis Complex is Changing Clinical Pathways – a Comparative Case Report

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Background

Tuberous sclerosis complex (TSC) is a multisystem genetic disorder in which neurological involvement, particularly epilepsy, largely determines long-term outcomes. While diagnosis was traditionally made after seizure onset, advances in prenatal imaging now allow earlier suspicion, most commonly via detection of cardiac rhabdomyomas. These developments have the potential to shift clinical management from reactive to proactive, influencing early monitoring and intervention strategies.

Case Report

Two pediatric cases are presented to illustrate how the timing of diagnosis affects clinical pathways and follow-up. The first patient, born in 2012, developed seizures at six weeks of age, prompting neurological evaluation. Cranial ultrasound revealed focal hyperechogenic lesions, while cardiac imaging confirmed intracardiac tumors. TSC was diagnosed after symptom onset, and management—including seizure control and monitoring—was initiated reactively. The second patient, born in 2024, was suspected prenatally based on the detection of cardiac tumors on fetal ultrasound. Postnatal echocardiography confirmed rhabdomyomas, while brain MRI revealed multiple cortical and subcortical lesions. Early diagnosis enabled immediate postnatal neurological assessment, close EEG surveillance, and proactive planning for potential seizure management prior to symptom onset.

Conclusions

These cases highlight how prenatal suspicion of TSC fundamentally changes clinical management and follow-up. Early identification enables structured monitoring, anticipatory intervention, and potentially improved neurological outcomes, in contrast to the reactive approach required for postnatal diagnosis. Although advances in prenatal imaging have enabled this shift, the key clinical benefit results from earlier and more structured monitoring and treatment, highlighting the importance of a proactive rather than reactive approach in TSC.

Giant Cardiac Rhabdomyoma in a Preterm Infant Successfully Treated with Low-Dose Everolimus: Case Report

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Background

Cardiac rhabdomyomas (CRs) are the most common primary cardiac tumors in children and are frequently associated with spontaneous regression. However, in neonates—particularly preterm infants—large or strategically located tumors may lead to severe hemodynamic compromise. Surgical resection remains the standard treatment for symptomatic cases, but complete excision can be difficult or impossible when tumors are multifocal or diffusely infiltrate the myocardium. In such situations, pharmacological therapy with mTOR inhibitors, such as everolimus, has emerged as a potential alternative.

Case Report

We report the case of a preterm neonate with a giant left ventricular rhabdomyoma causing significant mitral regurgitation and progressive clinical deterioration. Due to diffuse myocardial infiltration, complete surgical resection was not feasible. Given the high surgical risk, low-dose everolimus therapy (0.25 mg twice weekly) was initiated. The treatment led to rapid clinical stabilization and marked tumor regression, with tumor size decreasing from 3.79 × 2.0 cm to 2.7 × 0.7 cm within six weeks. Follow-up echocardiography demonstrated improved left ventricular systolic function and a significant reduction in mitral valve insufficiency.

Conclusions

This case highlights that low-dose everolimus can be an effective and well-tolerated therapeutic option for symptomatic neonatal cardiac rhabdomyomas when complete surgical resection is not possible. Everolimus may represent a valuable alternative for high-risk or unresectable tumors, potentially reducing tumor burden and improving cardiac function in vulnerable neonatal patients.

Immunological Disharmony - Haemoptysis due to Mould-Triggered Hypersensitivity Pneumonitis from a Contaminated Trumpet in a 17-year-old Professional Musician

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Background

Hypersensitivity pneumonitis (HP) is an immune-mediated interstitial lung disease driven by repeated inhalation of organic antigens. Haemoptysis is an atypical presenting feature and may divert evaluation towards infection or haemorrhage syndromes, delaying recognition of an exposure-driven condition.In adolescents with atopic comorbidity, identifying the relevant aeroallergen exposure is central to diagnosis and—crucially—treatment through allergen avoidance.

Case Report

A 17-year-old professional trumpet player with established atopic disease and asthma (on regular controller therapy) was admitted for evaluation of recurrent haemoptysis (four episodes over several months). He was clinically stable and afebrile; routine blood tests, including haemoglobin and coagulation indices, were within reference ranges. Chest CT demonstrated right middle-lobe ground-glass change with apparent endobronchial material. After multidisciplinary radiology–pulmonology review, diffuse alveolar haemorrhage was considered unlikely, and HP was included among leading diagnoses. Flexible bronchoscopy demonstrated a dark clot near the right main bronchus, blood-tinged secretions, erythematous bronchial mucosa with small mucosal elevations, and a polypoid-appearing lesion in RB6; bronchoalveolar lavage was performed and the lesion was biopsied, with transient procedure-related bleeding controlled endoscopically. Given the strong suspicion of an inhalational trigger relevant to allergic airway/lung disease, targeted environmental sampling was undertaken: a swab from the trumpet cultured Purpureocillium lilacinum (mould).Importantly, exposure mitigation was followed by clinical resolution: on follow-up the patient had replaced his trumpet and instituted regular disinfection with isopropyl alcohol, after which haemoptysis ceased.

Conclusions

This case highlights a modifiable, occupation-related aeroallergen source in plain sight: a mould-contaminated wind instrument acting as a reservoir for repeated antigen exposure and an HP-like presentation with haemoptysis.The key message is practical—when HP is suspected, meticulous exposure history should extend to musical instruments and other personal equipment. Wind instruments are a plausible but under-recognised source of high-intensity, repetitive aeroallergen exposure due to internal moisture retention and biofilm formation. Targeted sampling plus allergen avoidance may be both diagnostic and therapeutic.

Intrapericardial Fibrinolysis in Purulent Pericarditis of Rare Bacterial Etiology

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Background

Purulent pericarditis is a rare but life-threatening form of pericardial inflammation, accounting for less than 1% of all pericarditis cases. It is associated with high mortality (up to 40%) and a significant risk of constrictive pericarditis, occurring in up to 30% of patients. Although Staphylococcus aureus and Streptococcus pneumoniae remain the most common pathogens, rare bacterial etiologies should also be considered. Early diagnosis, prompt drainage, targeted antibiotic therapy, and prevention of fibrin organization are crucial to avoid serious complications.

Case Report

The first patient, a 19-month-old boy, was admitted due to a deteriorating condition in the course of generalized infection. Imaging revealed a large pericardial effusion with fibrin strands. Microbiological analysis of pericardial fluid and blood cultures confirmed Neisseria meningitidis serogroup B. Despite initial improvement under antibiotic therapy, recurrent effusion with echocardiographic signs of constrictive physiology developed. Two intrapericardial administrations of alteplase resulted in the effective evacuation of 130 ml of fluid and resolution of symptoms. Follow-up echocardiographic examination showed no evidence of constriction. The second patient, a previously healthy 5-year-old girl, presented with tamponade requiring urgent pericardial drainage. Persistent thick fibrin deposits forming a shell around the left ventricle prompted intrapericardial fibrinolysis with urokinase and a total drainage of 300 ml of fluid. Progressive fragmentation and complete resolution of fibrin strands were observed. Extensive microbiological testing ultimately revealed acute Mycoplasma pneumoniae infection. Targeted antibiotic therapy led to clinical recovery, normalization of inflammatory markers, and no residual pericardial dysfunction. In both cases, fibrinolysis was well tolerated, without bleeding or procedural complications, and prevented progression to constrictive pericarditis.

Conclusions

In this case series, we present effective use of intrapericardial fibrinolysis as adjunctive therapy in pediatric purulent pericarditis complicated by fibrin deposition and early echocardiographic constrictive features. When combined with prompt drainage and targeted antibiotic therapy, it may prevent progression to constrictive pericarditis and reduce the need for surgical pericardiectomy.

Juvenile Xanthogranuloma Beyond the Skin: A Neonatal Case Following Maternal COVID-19 Infection

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Background

Juvenile Xanthogranuloma (JXG) is a rare benign disorder deriving from histiocytic cells presenting as yellow-brown cutaneous lesions. Visceral involvement is rare and usually not associated with neonatal presentation; however, with severe manifestations and requires aggressive therapeutic strategies. The pathogenesis of JXG is not completely understood. Recent studies have shown evidence of systemic inflammatory responses caused by viral infections such as SARS-CoV-2 and their effects on the proliferation of histiocytic cells. The case study reports a newborn presenting with severe systemic JXG diagnosed prenatally and its temporal association with maternal COVID-19 and its possible pathogenetic link.

Case Report

A male neonate was born at 36 weeks of gestation through cesarean section due to evidence of intrauterine asphyxia. The pregnancy was uncomplicated until the 34th week, at which time the mother tested positive for SARS-CoV-2. Fetal ultrasonography had shown edema. The infant had severe ascites and respiratory distress. Hydrocele was also observed. Imaging had confirmed extensive intra-abdominal fluid collection, peritoneal thickening, and a mass in the tail of the pancreas. Ascites was not resolved by repeated drainage procedures. The infant underwent exploratory laparotomy. Findings included peritoneal nodules and fibrotic changes. Histopathological examination of the lesions was consistent with histiocytic infiltration of Juvenile Xanthogranuloma type. The infant was transferred for chemotherapy. At three years of age, the child is cognitively normal with no evidence of recurrence.

Conclusions

The effects of maternal SARS-CoV-2 on fetal development are not clear. The presented case confirms the possibility of correlation between SARS-CoV-2 infection and Juvenile Xantogranuloma. Further research and analysis of reports of newborns exposed to this infection during gestation is necessary.

Late-developing Supernumerary Teeth in Adolescence Revealing TNXB-Related Classical-Like Ehlers–Danlos Syndrome: a Pediatric Case Report

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Background

Supernumerary teeth are uncommon, with reported prevalence ranging from 0.04% to 2.29%, and multiple supernumerary teeth are more frequently associated with syndromic than non-syndromic contexts. Distomolars that appear over time on serial panoramic radiographs are clinically important because they can serve as a trigger for systemic evaluation. Reports linking Ehlers-Danlos syndromes to supernumerary teeth remain limited, and genetically confirmed cases are rarely described for TNXB-related classical-like Ehlers-Danlos syndrome (cl-EDS).

Case Report

A late-adolescent male underwent prolonged orthodontic treatment for severe Class II malocclusion with deep overbite, crowding, and maxillary constriction. Baseline panoramic imaging showed normal eruption and no supernumerary teeth. During orthodontic follow-up, repeat orthopantomograms documented new supernumerary molars, namely bilateral maxillary distomolars and a right mandibular distomolar distal to the third molars, which were not present on the initial radiographs. Clinical assessment identified generalized joint hypermobility (Beighton score 8/9), hyperextensible thin translucent skin, and easy bruising, without reported atrophic scarring. Given the combination of late-developing multiple distomolars and connective tissue features, the patient was referred for genetics. Next-generation sequencing using a connective tissue multi-gene panel of about 70 genes identified TNXB variants consistent with tenascin-X related cl-EDS. Orthodontic correction was completed with stable alignment and retention. A staged exodontic plan was adopted; extraction of tooth 28 was uncomplicated with no postoperative bleeding or delayed socket healing, and further extractions with ongoing monitoring were planned.

Conclusions

Multiple distomolars emerging on serial imaging should be treated as a red flag rather than an incidental finding, and a clear radiographic timeline should be documented to support escalation of care. When late-developing supernumerary molars coexist with hypermobility and skin fragility, targeted connective tissue screening and referral for genetic evaluation are warranted, since dental findings may be the diagnostic gateway to definitive cl-EDS confirmation. This case adds to the limited literature on oral manifestations of TNXB-related cl-EDS and supports multidisciplinary orthodontic, surgical, and genetics coordination for counselling and long-term surveillance.

Pediatric Hypersensitivity Pneumonitis: a Diagnostic Challenge

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Background

Hypersensitivity pneumonitis (HP) is a rare immune-mediated pediatric interstitial lung disease, often misdiagnosed because of nonspecific clinical and radiologic features. We report a case initially mistaken for miliary tuberculosis.

Case Report

A 12-year-old girl presented with a 3-month history of progressive dyspnea, cough, low-grade fever, reduced exercise tolerance, and weight loss. She was hypoxemic (SpO 88%) with bilateral crepitations; laboratory tests showed elevated serum IgG and LDH, chest radiography demonstrated diffuse nodular infiltrates suggestive of miliary tuberculosis. Despite a negative tuberculin test, antituberculosis treatment was empirically initiated after bronchoscopy and respiratory tract sampling. After three weeks, the treatment was discontinued due to drug-induced liver injury and negative microbiology. Subsequent chest CT showed extensive bilateral ground-glass opacities and centrilobular nodules. Lung biopsy revealed interstitial infiltration with macrophages, lymphocytes, plasma cells, eosinophils, multinucleated giant cells, and small granulomas, confirming HP. Environmental history revealed exposure to household mold, parrots, and intensive incense burning, particularly in the patient's bedroom. The patient received one month of systemic prednisolone and was advised to avoid all triggers. Her symptoms were resolved within months. The earlier signs of pulmonary restriction were no longer present, and radiological findings were normalized.

Conclusions

This case highlights the diagnostic complexity of pediatric hypersensitivity pneumonitis (HP) and emphasizes the importance of considering environmental lung disease once infection, asthma, and other pulmonary conditions have been excluded. A detailed and systematic exposure history is essential, as identification and elimination of household antigens resulted in sustained clinical and radiological improvement in our patient. The diagnosis can often be established based on typical symptoms, thorough clinical history, and timely high-resolution CT findings, making invasive procedures such as lung biopsy unnecessary in many cases. In the acute stage, prompt removal of the triggering antigen may be sufficient to achieve recovery.

Pediatric Acute Megakaryoblastic Leukemia Associated with GATA2 Mutation and Monosomy 7: A Case Report

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Background

Acute megakaryoblastic leukemia (AMKL) is an uncommon and aggressive hematologic malignancy. The presence of genetic mutations increase the complexity of AMKL significantly. Among these, individuals with monosomy 7 represent a high-risk subset linked to increased chemoresistance and worse prognosis. We report the case of a 10-year-old patient who had AMKL coupled with monosomy 7 and familial GATA2 deficiency. The case emphasizes the difficulties in diagnosis and treatment, as well as the vital need for prompt hematopoietic stem cell transplantation (HSCT) and early genetic screening.

Case Report

A 10-year-old boy admitted to hospital due to persistent abnormal blood counts. During primary physical examination, patient presented with signs of easy bruising and pancytopenia. AMKL was diagnosed with the use of a bone marrow biopsy and immunophenotyping. Genetic tests identified a GATA2 mutation and monosomy 7. Two induction cycles with daunorubicin and cytarabine were administered but it failed to remove residual illness. The patient subsequently developed a pneumonia caused by a fungal infection. Liver toxicity and increased minimal residual disease (MRD) caused a delay in HSCT. Azacitidine and venetoclax stabilized the illness, hence enabling for effective haploidentical HSCT. With full donor chimerism, the patient experienced total remission.

Conclusions

This case underscores the necessity of early molecular diagnosis in pediatric AMKL. Identifying GATA2 mutations and monosomy 7 early can help guide risk stratification and the timing of HSCT. Improving the outcomes for high-risk patients requires multimodal therapy, which uses targeted medicines and infection control

Post-traumatic Nasal Septum Abscess Complicated by Septal Cartilage Destruction in a Teenager – a Case Report

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Background

Nasal septum abscess (NSA) is a rare condition with prevalence lesser than 1% among children after nasal trauma, usually affecting young boys. Post-traumatic NSA is the most common cause, while other include NSA secondary to sinusitis or dental infections. In its natural course NSA develops as an infectious progression of a hematoma localized under the mucopericondrium. Hematomas form perfect conditions for bacterial growth, primarily Staphylococcus aureus. Through a combination of factors, such as ischemic injury, cathepsin D, as well as the presence of bacteria and their collagenases-induced cartilaginous destruction can occur. Furthermore, NSA can lead to other, potentially life-threatening complications, such as cavernous sinus thrombosis, meningitis, intra-cranial abscess.

Case Report

We present a case of a 17-year-old boy who referred to the emergency room complaining of persistent rhinitis associated with significant nasal swelling and obstruction causing difficulty breathing – symptoms intensifying with the last 2 weeks. On physical examination both nasal cavities were completely blocked by swollen, reddened mucous of the nasal septum, with fluctuating symptom. There were no signs of neurologic or vision impairment. CT was performed showing comminuted fracture of the nasal bones, massive mucosal oedema in the nasal cavity, with distended septum. He was qualified for immediate surgical drainage due to the suspected septal hematoma or abscess. During surgery a massive abscess was drained, and a complete nasal septum cartilage destruction was stated. A teflon drain was left in the abscess cavity along with nasal tamponade of doxycycline-soaked merocele. Amoxicillin-clavulanate was administered empirically. Microbiological examination determined the etiology of NSA as Escherichia coli. Patient was discharged home in good general condition the following week. The reconstruction is planned to prevent 'saddle-nose' formation.

Conclusions

NSA is a rare, but potentially life-threating condition, that needs to be considered in the assessment of patients after facial trauma, especially in children. Its adequate treatment is crucial in omitting systemic, cranial or orbital complications. Furthermore, the destruction of the nasal cartilage leads to severe cosmetic deformations of the face, so in such cases the need for reconstruction should always be discussed.

Schimke Immuno-osseous Dysplasia as an Example of Rapidly Progressive Chronic Kidney Disease Based on the Case of a 6-Year-Old Girl

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Background

Schimke immuno-osseous dysplasia (SIOD) is a rare, genetically determined disorder classified among monogenic causes of nephrotic syndrome in children. It is characterized by severe, progressive nephropathy, most often presenting as steroid-resistant nephrotic syndrome, leading to early renal failure and associated with poor prognosis. The clinical presentation of SIOD is multisystemic and includes growth impairment with marked disproportionate short stature, skeletal and joint abnormalities and hyperpigmented skin macules on the trunk. A key feature of the syndrome is immunological dysfunction, particularly lymphopenia, predisposing patients to recurrent and severe infections. In some cases, vascular complications, including ischemic strokes, have also been reported. Approximately half of patients harbor mutations in the SMARCAL1 gene, which encodes a protein involved in chromatin remodeling.

Case Report

We present the case of a nearly 6-year-old girl admitted due to the first episode of nephrotic syndrome with massive proteinuria, hypoalbuminemia, severe hyperlipidemia, arterial hypertension, and worsening renal function. Despite intensive steroid therapy, supportive treatment, remission was not achieved. Kidney biopsy revealed chronic glomerulopathy with extensive focal segmental glomerulosclerosis. The disease course was complicated by numerous infections (including EBV, bacterial and fungal infections), hematological disorders, gastrointestinal bleeding, and fluid overload with pericardial effusion. Due to rapid progression to end-stage renal disease, the patient was qualified for chronic hemodialysis. Genetic testing identified one pathogenic and one potentially pathogenic variant in the SMARCAL1 gene, confirming the diagnosis of SIOD. Given the genetic background of the disease, further intensive immunosuppressive therapy was discontinued. The patient remains under the care of a nephrology unit, undergoing hemodialysis while awaiting kidney transplantation.

Conclusions

This case highlights the importance of early genetic diagnostics in children with early-onset, steroid-resistant nephrotic syndrome and focal segmental glomerulosclerosis. Identification of a monogenic disorder allows avoidance of ineffective and burdensome immunosuppressive therapy, facilitates timely initiation of renal replacement therapy, and enables appropriate planning of multidisciplinary care and qualification for kidney transplantation.

Staphylococcal Scalded Skin Syndrome in a Newborn - A Case Report

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Background

Staphylococcal Scalded Skin Syndrome (SSSS, 4S syndrome) is a severe form of generalised bullous and exfoliative dermatitis. The disease is caused by epidermolytic toxin- producing Staphylococcus aureus. This dermatosis mainly affects infants and children under 5 years of age. Early recognition and prompt initiation of appropriate therapy are essential to prevent life-threatening complications. Treatment is based on parenteral antibiotic therapy, mainly penicillinase-resistant penicillines and cephalosporins as well as maintaining water-electrolyte balance.

Case Report

We present the case of a 17-day-old male newborn admitted to hospital due to inflammatory skin lesions in the periumbilical region. On admission, a tender erythematous lesion with separation of the epidermis at the edges of the wound in the umbilical area and the lower left abdomen was observed. Empirical intravenous antibiotic therapy with ampicillin and gentamicin was initiated following microbiological sampling. Despite treatment, rapid progression of exfoliative lesions occurred within 24 hours, as the lesions evolved into an epidermal loss covering the chest, hands and feet. Erythematous-oozing lesions also appeared and later evolved into scabs. The clinical suspicion of SSSS was raised and the antibiotic therapy was changed for cloxacillin. Blood inflammatory markers remained negative, while culture taken from the navel revealed the growth of methicillin-sensitive Staphylococcus aureus (MSSA). The patient was transferred to the Neonatal Intensive Care Unit (NICU) due to severe pain and rapidly spreading skin involvement. Supportive treatment included intravenous fluid therapy, advanced wound care, and intensified analgesic management. Clinical improvement was observed from the fourth day of targeted therapy. On the 29th day of life, the newborn was discharged home in good general condition with a complete re-epithelialization and no scar formation.

Conclusions

SSSS remains a potentially life-threatening condition in neonates and requires immediate medical assistance despite generally favorable prognosis. This case highlights the importance of early clinical recognition, prompt microbiological diagnostics, rapid initiation of targeted antibiotic therapy, and multidisciplinary intensive supportive care to achieve successful outcomes.

Supernumerary Teeth in a Patient with Somatotropic Hypopituitarism: a Case Report

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Background

Somatotropin-deficient hypopituitarism (SNP) is insufficient secretion of growth hormone leading to growth disorders. Endocrine disorders can disrupt odontogenesis, resulting in abnormalities in both the number and morphology of teeth. Supernumerary teeth are a very rare abnormality in this group of patients. The aim of this study is to describe the clinical case of a patient with short stature who was diagnosed with somatotropin pituitary insufficiency and found to have supernumerary teeth and odontogenic cysts in the maxilla in the area of the central permanent incisors.

Case Report

An 8-year-old girl was referred to the Department of Paediatric Dentistry at the Medical University of Warsaw due to delayed eruption of permanent maxillary incisors. The patient is very short, reports no medical conditions. Her facial features included a receding upper lip and a protruding lower lip. An intraoral examination revealed a shallow vestibule, crossbite, and mixed dentition with delayed teething. The intraoral examination did not reveal the presence of supernumerary teeth. The patient was referred for radiological examination. The CBCT examination report shows teeth in the replacement phase. Teeth 14-24 are in the initial stage of root formation - only the crowns are developed. Above the central incisor crowns in the maxilla, there are shell-like, transparent incisor crowns - forming, hypoplastic supernumerary teeth or deciduous teeth that have undergone significant resorption. The patient was referred to an endocrinologist for diagnosis of growth disorder and to the Dentistry Department of the Children's Health Centre (CZD) for removal of supernumerary teeth and excision of odontogenic cysts. Somatotropic hypopituitarism with growth deficiency was diagnosed and growth hormone therapy was initiated. Under general anaesthesia, supernumerary teeth 11' and 21' were removed with simultaneous enucleation of the accompanying rudimentary cysts, and deciduous teeth with pulp necrosis were extracted. Histopathological examination confirmed the radiological diagnosis of two rudimentary cysts.

Conclusions

The case described indicates the need for an interdisciplinary approach to the patient, taking into account comprehensive diagnostics and care, not only dental, which was the purpose of the visit, but also general medical care related to the observed short stature. Previous paediatric and dental consultations did not result in the implementation of extended diagnostics, including imaging tests.

Therapeutic Chalanges of Tuberculosis in a Patient with Juvenile Idiopathic Arthritis

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Background

Tuberculosis (TB) is caused by Mycobacterium tuberculosis and may disseminate to multiple organs. Juvenile idiopathic arthritis (JIA) is defined as chronic arthritis with onset before age 16. Biologic therapy and methotrexate (MTX) used for JIA are immunosuppressive (IS) and increase TB risk. In active TB, biologic therapy should be stopped and standard Isoniazid (H), Rifampicin (R), Pyrazinamide (Z), Ethambutol (E) treatment started.

Case Report

A 7-year-old girl was hospitalized with dry cough, fever and chest X-ray (CXR) changes. She has had JIA for 4 years and achieved clinical remission on MTX and biologic therapy. CXR showed focal infiltrates of typical pulmonary TB. Gastric aspirate and interferon gamma release assay were positive. Xpert MTB/RIF detected M. tuberculosis, with no R resistance. Microbiological culture grew M. tuberculosis. Active TB was diagnosed. JIA treatment was stopped and standard HREZ therapy was started. After 3 weeks, symptomatic hepatitis developed and H was stopped due to suspected drug-induced hepatotoxicity (DIH). With no CXR improvement, levofloxacin was added (REZ-Lfx). After 2 months, DIH resolved and HZER was reintroduced. Follow-up cultures were negative and CXR improved. HR continued as outpatient care under specialist supervision. After 8 months, chest computed tomography (CT) showed right-sided foci and consolidation suggesting active TB. Therefore, HR was extended. However, DIH recurred. Upper abdominal ultrasound (US) showed splenic calcifications and calcified mesenteric lymph nodes. Disseminated TB was diagnosed. Therapy was changed to RE. JIA worsened and analgesics were given. After 18 months, chest CT still suggested active TB. Therefore, RE therapy was continued. Due to progressive JIA and insufficient response to prior treatment, MTX was initiated. JIA remained active with recurrent flares. After 33 months, chest CT and upper abdominal US showed no active TB. The reintroduction of biologic therapy was considered. R prophylaxis was continued to prevent TB reactivation, with regular follow-up testing.

Conclusions

This case shows that IS therapy for JIA increased the risk of TB. Stopping IS therapy and prolonged, tailored TB treatment were key to a good outcome. The course was complicated by DIH, treatment changes, and the need to balance TB control with JIA care. Long-term follow-up is needed to prevent TB relapse and allow safe resumption of biologic therapy.

Pharmacy Session

Coordinators:
Zuzanna Trąbińska, Anna Nguyen

Aralia Spinosa L. (Araliaceae) Hairy Root Cultures as a Biotechnological Platform for Producing Araloside A and Dehydrotriferulic Acid for Phytotherapy Research in Atopic Dermatitis

Authors

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Introduction

Atopic dermatitis (AD) is a chronic inflammatory skin disorder characterized by impaired barrier function and dysregulated immune responses. Keratinocytes contribute to AD-associated inflammation by releasing cytokines such as IL-6 and CXCL-8. In traditional herbal practice, Aralia spinosa L. has been used for skin-related ailments and inflammatory conditions. Hairy root cultures provide a reproducible in vitro platform for standardized biomass and bioactive extracts for phytotherapy.

Aim of the study

To establish and characterize A. spinosa hairy root cultures as a reproducible biotechnological source of extracts enriched in araloside A and dehydrotriferulic acid (dhTFA), and to determine their cytocompatibility and ability to modulate inflammatory responses in an AD-like keratinocyte model.

Materials and methods

Transformed A. spinosa roots were cultivated in liquid cultures and key parameters (culture medium, sucrose level, initial pH and inoculum density) were optimized to support biomass formation and targeted metabolite production. The presence and relative abundance of araloside A and dhTFA in root extracts were verified using UHPLC-DAD-ESI-MS^3. Growth kinetics were assessed to define an optimal harvest window for obtaining standardized extract batches. Cytocompatibility was evaluated with the MTT assay in two human skin cell lines (HaCaT keratinocytes and NHDF dermal fibroblasts). For AD-like screening, HaCaT cells were stimulated with TNF-α and IFN-γ and treated with non-cytotoxic extract concentrations; IL-6 and CXCL-8 secretion was quantified by ELISA.

Results

Optimization of culture conditions and kinetic profiling enabled production of hairy root biomass and standardized extracts containing the targeted metabolites. The extracts were non-cytotoxic in both HaCaT and NHDF cell lines within the tested concentration range. In the TNF-α/IFN-γ–stimulated keratinocyte model, treatment with the extracts resulted in modulated IL-6 and CXCL-8 secretion relative to stimulated controls

Conclusions

A. spinosa hairy roots provide a robust platform for generating standardized extracts enriched in araloside A and dhTFA. The observed cytocompatibility in skin cell lines and the modulation of IL-6 and CXCL-8 secretion in an AD-like keratinocyte model support further exploration of these extracts as sources of new candidates relevant to AD research.

Assessment of the Usefulness and Clarity of Postoperative Educational Materials for Parents Regarding Pharmacotherapy After Selected Otorhinolaryngological Procedures: an Anonymous Questionnaire Study Supported by Eye-Tracking Analysis.

Authors

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Introduction

Proper preparation, dosing, and storage of medications after otorhinolaryngological procedures in children are crucial for safe recovery. Educational materials (e.g., guides), especially those containing visual elements (e.g., pictograms and tables), may support caregivers in following postoperative recommendations.

Aim of the study

To assess the usefulness and clarity of a guide presenting basic principles of medication administration after tonsillectomy, adenotonsillectomy, and/or ear drainage, using an anonymous questionnaire study supported by eye-tracking analysis.

Materials and methods

An anonymous questionnaire study was conducted among respondents (N = 39), including evaluation of the educational materials using a Likert scale (1–5) and assessment of pictogram comprehensibility (1–5). Internal consistency of the pictogram scale was assessed using Cronbach's alpha. Additionally, an eye-tracking study was performed in 15 respondents, including general parameters of visual activity such as the number of samples, fixations, and saccades. The study received approval from the bioethics committee.

Results

Respondents rated the materials as highly useful and easy to understand. The statement regarding completeness of information achieved a mean score of 4.68 ± 0.62, and content-supporting elements were rated very highly: text formatting 4.86 ± 0.35, dosing tables 4.81 ± 0.40, and pictograms 4.67 ± 0.62. Overall pictogram ratings were very high (mean 4.80 ± 0.30), and the scale demonstrated high reliability (Cronbach's alpha = 0.914). In the eye-tracking study, the mean number of samples was 103,664 ± 22,450, the number of fixations was 57,241 ± 20,534, and the number of saccades was 6,650 ± 1,537, indicating substantial visual activity while reviewing the guide content and individual variability in perception and information-processing strategies.

Conclusions

The analyzed material was assessed as clear and highly useful. The results showed that pictograms and tables provide important support in understanding postoperative recommendations. Eye-tracking data confirm active processing of the content by users, supporting the use of clear visual elements in the education of patients and caregivers.

Complexes UP and DOWN: An Evaluation of the Molecular Docking Method for Predicting Binding Poses in β-Cyclodextrin Complexes

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Introduction

Molecular docking is the key method for predicting complex structures, especially when experimental data is unavailable. β-cyclodextrin (β-CD) is widely used due to its ability to form inclusion complexes with molecules, including poorly water soluble active pharmaceutical ingredients (APIs). Multiple hydroxyl groups allow β-CD to adopt conformations which vary in stability. Although molecular docking is increasingly applied to CD host systems, most docking software was developed for proteins which raises concerns about reliability and highlights the need for validation of this approach.

Aim of the study

The aim of this study was to validate molecular docking for predicting the structure of inclusion complexes with β-CD and guests containing para substituted benzene rings. Different substituents allow distinction between the two sides of the guest molecule, identification of UP and DOWN poses and comparison with crystal complexes.

Materials and methods

β-CD complexes deposited in the Cambridge Crystallographic Data Centre (CCDC) containing a para-substituted benzene ring as the guest were selected. 20 complexes were separated into host and guest components and prepared for cross-docking. Each guest was docked into all conformations of β-CDs generating up to 200 poses per ligand from which the 20 with lowest docking score were retained. The complexes were classified as UP when the guest orientation matched the crystal structure or DOWN when rotated by 180 degrees toward the opposite β-CD rim. For each guest one UP and one DOWN complex with the lowest docking score were selected for further optimization, using DFT methods with dispersion correction and thermodynamic analysis. Complexes from the CCDC were optimized using the same initial settings allowing comparison of Gibbs Free energy and geometry.

Results

Both UP and DOWN complexes were obtained using molecular docking. In several cases similar binding affinities were observed despite differences in guest orientation between UP and DOWN poses. Docking scores and stable binding poses varied depending on the β-CD conformation used as the host.

Conclusions

The origin and conformation of β-CD significantly influence formed complexes. Molecular docking can be applied to β-CD inclusion complexes, but requires validation due to various β-CD conformations. Proper selection of the host conformation could be essential for accurate prediction of guest orientation and binding affinity.

This study was supported by the Medical University of Warsaw (grant number: 16/F/MG/N/25).

Conformational Analysis of Gabapentin Using Molecular Modeling Approaches

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Introduction

Gabapentin is a widely used antiepileptic drug that is also prescribed for neuropathic pain and other neurological conditions. Due to its flexible chemical structure, it can adopt multiple conformations. However, previous studies have not fully characterized its conformational landscape. Understanding these conformational preferences is important for better interpretation of its physicochemical properties.

Aim of the study

The aim of this study was to investigate the conformational landscape of gabapentin in order to identify its most stable conformations and evaluate factors influencing their stability.

Materials and methods

Conformational analysis was performed using molecular modeling approaches combining molecular mechanics and quantum chemical methods. Initial conformational exploration was carried out using force-field calculations implemented in the Forcite program. Selected conformers, including literature-reported and newly identified structures, were subsequently optimized using quantum chemical approaches (DFT and MP2) with implicit solvation models to approximate different environments. Structural and thermodynamic parameters were analyzed comparatively.

Results

The analysis confirmed that gabapentin preferentially adopts a zwitterionic form, which is energetically more stable than the neutral molecule. Several previously unreported conformations with lower energy than those described in earlier studies were identified. These structures differed mainly in the spatial orientation of functional groups, which significantly affected stability. The results also showed that factors such as solvent effects influence conformational preferences.

Conclusions

This study identified previously unreported low-energy conformations of gabapentin that appear to be more stable than those emphasized in earlier literature. These findings expand current understanding of gabapentin’s conformational landscape. They also highlight the importance of comprehensive conformational analysis for reliable characterization of flexible pharmaceutical molecules and their physicochemical behaviour.

Design and Preclinical Evaluation of a Folate-Targeted Graphene Oxide-Decorated PLGA Nanoplatform for Paclitaxel Delivery in Triple-Negative Breast Cancer

Authors

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Introduction

Triple-negative breast cancer (TNBC) is an aggressive subtype of breast cancer lacking estrogen, progesterone, and HER2 receptors, resulting in limited targeted therapeutic options and necessitating systemic chemotherapy. Paclitaxel (PTX) remains a cornerstone of TNBC treatment but is constrained by poor solubility, non-specific biodistribution, and systemic toxicity. Targeted nanopharmaceutical systems have the potential to enhance drug delivery efficiency and therapeutic selectivity. Folate receptor overexpression in TNBC cells enables receptor-mediated targeting, while graphene oxide (GO) offers a high surface area and bio-interactive properties that may improve intracellular drug delivery.

Aim of the study

To develop and evaluate a folate-targeted, graphene oxide-decorated PLGA nanoparticle system for enhanced paclitaxel delivery in TNBC.

Materials and methods

PTX-loaded PLGA nanoparticles were prepared by emulsification-solvent evaporation. GO was synthesized using a modified Hummers' method and characterized by FTIR, XRD, and SEM. A folate-chitosan conjugate was confirmed by FTIR and ^{1}H-NMR. Nanoparticles were coated with folate-chitosan and decorated with GO. Particle size, polydispersity index (PDI), and zeta potential were measured by DLS. Drug loading and release were quantified by HPLC. Cytotoxicity was assessed in MDA-MB-231 TNBC and MCF-10A normal cells. Apoptosis and cell-cycle distribution were analyzed by flow cytometry. Protein expression of cleaved Caspase-3, Bax, and STAT3 was evaluated by Western blotting.

Results

PTX-loaded PLGA nanoparticles showed a mean size of 198.4 ± 6.7 nm, PDI 0.14 ± 0.02, and zeta potential −21.6 ± 1.9 mV. Following folate-chitosan coating and GO decoration, particle size increased to 247.9 ± 8.3 nm, PDI remained <0.20, and surface charge shifted to +18.3 ± 2.1 mV, confirming successful functionalization. Encapsulation efficiency was 80%. Sustained PTX release was observed (65% over 72 h). The targeted GO-decorated nanoplatform significantly reduced TNBC cell viability compared with free PTX and non-targeted nanoparticles, with lower toxicity in MCF-10A cells. Flow cytometry revealed increased apoptosis and G2/M arrest. Western blotting demonstrated upregulation of cleaved Caspase-3 and Bax and downregulation of STAT3.

Conclusions

This folate-targeted, GO-decorated PLGA nanoplatform exhibits controlled physicochemical properties, sustained drug release, and enhanced preclinical efficacy against TNBC, supporting its potential as a targeted paclitaxel delivery system.

Hidden Drug-Related Problems in Hospitalized Patients with Chronic Kidney Disease: A PAIR-Based Analysis from a Tertiary Cardiology Center

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Introduction

Chronic kidney disease (CKD) is common among hospitalized cardiology patients and significantly affects the safety and effectiveness of pharmacotherapy. The Pharmacotherapy Assessment in Chronic Renal Disease (PAIR) tool enables systematic identification of drug-related problems (DRP) specific to impaired renal function.

Aim of the study

The aim of this study was to assess the prevalence and types of PAIR-defined DRP in patients with CKD hospitalized in a tertiary university hospital.

Materials and methods

We conducted a retrospective analysis of consecutive adult patients with documented CKD admitted to the cardiology ward of University Clinical Center of the Medical University of Warsaw (UCK WUM). Data were collected prospectively using a structured questionnaire and verified based on discharge documentation. The study was submitted to the bioethics committee. Demographics, comorbidities, selected laboratory parameters, and complete medication lists at discharge, including over-the-counter drugs and supplements, were recorded. PAIR criteria were applied independently by two researchers to identify DRP related to renal function.

Results

The final dataset included 57 patients with available eGFR (median 31 ml/min/1.73 m², IQR 20–39), predominantly older individuals with advanced cardiovascular disease and high multimorbidity. Polypharmacy was common (median 10 medications per patient). At least one PAIR-defined pharmacotherapy issue was identified in the majority of patients, with multiple findings observed in a substantial proportion. The most frequent categories included dosing regimens of renally eliminated drugs requiring adjustment, use of medicines with altered safety or effectiveness in advanced CKD, high-risk combinations for hyperkalemia, prolonged proton pump inhibitor therapy without documented reassessment, and variability in the implementation of renoprotective treatment.

Conclusions

In this single-center cohort of cardiology patients with CKD, application of the PAIR criteria revealed a considerable numer of pharmacotherapy aspects potentially requiring individualized reassessment. The most common issues involved renally eliminated medicines, hyperkalemia-prone combinations, and underuse of evidence-based renoprotective therapies. Systematic medication review using tools such as PAIR may support clinical decision-making and contribute to further optimization of pharmacotherapy in this high-risk population.

Integrated Molecular and Functional Analysis of Hop Ethanolic Extract in Caco-2 Cells: Insights into Inflammation, Barrier Function, and Transport

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Introduction

Hop (Humulus lupulus L.) is widely used in brewing and traditional medicine, yet the biological activity of complete hop extracts, rather than isolated constituents, remains insufficiently characterized. In particular, their integrated effects on intestinal inflammation, epithelial barrier integrity, and compound transport require clarification. Natural adjuvant therapies are of interest because their complex mixtures of bioactive compounds may act synergistically, while being widely available and generally affordable

Aim of the study

The study aimed to comprehensively characterize a full hop ethanolic extract (HLE) by integrating chemical profiling with functional evaluation of its anti-inflammatory effects, impact on intestinal barrier function, and transepithelial transport in a Caco-2 cell model.

Materials and methods

HLE was chemically characterized using untargeted HPLC–MS analysis. Its biological effects were assessed in IL-1β-stimulated Caco-2 cell cultures. Inflammatory responses were evaluated by measuring IL-6 and IL-8 secretion after removal of pyrogens from the extractsolution by ultrafiltration. In addition, in a model of the intestinal epithelial lining, barrier integrity was assessed using transepithelial electrical resistance (TEER), and the transport and metabolism of extract-derived compounds across the epithelial monolayer was analyzed by HPLC–MS.

Results

HLE reduced IL-6 secretion in a concentration-dependent manner and significantly decreased IL-8 levels in inflamed Caco-2 cells. The extract also mitigated IL-1β-induced epithelial barrier disruption, as demonstrated by partial recovery of TEER values. Transport analysis revealed selective permeability of medium-sized bitter acid derivatives and other phenolic constituents across the intestinal epithelial monolayer. Moreover, new compounds were found, providing evidence of intracellular metabolic transformation during passage across the epithelial monolayer.

Conclusions

The integrated molecular and functional analysis demonstrates that full hop ethanolic extract exerts anti-inflammatory effects, supports intestinal barrier integrity, and undergoes selective transepithelial transport with evidence of intracellular metabolic transformation of bioactive compounds. These findings support the relevance of whole hop extracts as multifunctional intestinal modulators and highlight the importance of studying complex botanical mixtures rather than isolated compounds alone.

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Novel Calcium Phosphate Materials Enriched in Copper (II) Ions

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Introduction

Calcium phosphates (CaPs) are widely investigated biomaterials for bone tissue engineering due to their excellent biocompatibility, bioactivity, and chemical similarity to the mineral phase of bone. Ionic substitution in CaPs enables tailoring of their biological and physicochemical properties. Among various dopants, copper ions (Cu^2) have attracted increasing attention because of their antibacterial, proangiogenic, and osteogenic potential, making them promising additives for bone-regenerative biomaterials.

Aim of the study

The aim of this study was to synthesize and characterize novel CaPs materials in the form of brushite doped with different concentrations of copper(II) ions and to evaluate their structural, morphological, and ion-release behavior for potential application in bone tissue engineering.

Materials and methods

Copper-doped calcium phosphate materials were synthesized using a wet chemical precipitation method with varying Cu^2 concentrations. Structural and chemical characterization was performed using powder X-ray diffraction (PXRD), Fourier-transform infrared spectroscopy (FTIR), and Raman spectroscopy. Morphology and microstructure were analyzed by scanning electron microscopy (SEM), while elemental composition was determined using atomic spectrometry analysis (F-AAS). The ion-release behavior was evaluated in model aqueous media under in vitro conditions.

Results

PXRD analysis confirmed the formation of brushite as the main crystalline phase in all samples, with no secondary phases detected within the applied copper concentration range. Spectroscopic studies (FTIR and Raman) indicated preservation of the characteristic phosphate framework, with minor spectral changes suggesting successful incorporation of copper ions into the structure. SEM observations revealed plate-like crystal morphology, with variations in crystal size and surface texture depending on copper content. Elemental analysis confirmed the presence of Cu^2 in the synthesized materials. Preliminary ion-release studies indicated relatively rapid and concentration-dependent copper ion release, particularly during the initial immersion period.

Conclusions

Copper-doped brushite materials were successfully synthesized and demonstrated stable phase composition, tunable morphology, and favorable ion-release characteristics. These findings suggest that such materials may serve as promising candidates for bioactive bone-regenerative biomaterials with potential antibacterial and proangiogenic functionality.

Studies were supported by the National Science Center (Opus UMO-2023/51/B/NZ7/00555)

Pharmacological Inhibition of EZH2 Impairs DNA Damage Repair Mechanisms and Overcomes Temozolomide Resistance in Glioblastoma

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Introduction

Temozolomide (TMZ) resistance is a major challenge in glioblastoma (GBM) therapy and is strongly linked to sustained DNA damage repair mechanisms. Histone methyltransferase EZH2 has been implicated in GBM biological aggressiveness and poor clinical outcomes, yet its role in TMZ resistance remains incompletely understood.

Aim of the study

This study aimed to elucidate the role of EZH2 in the acquisition of temozolomide resistance via modulation of DNA damage repair pathways.

Materials and methods

TMZ-resistant derivatives of U251 and T98G GBM cell lines were generated by continuous culturing with gradually increasing TMZ concentrations up to 400 µM for 4weeks. EZH2 activity was modulated using the EZH2 methyltransferase inhibitor EPZ-6438 (5 µM) or the EZH2 degrader MS1943 (4 µM). EZH2 and H3K27me3 protein levels were assessed by Western blotting. The expression of DNA repair genes (RAD51, BRCA1, ATM, MRE11A, PRKDC) and apoptosis-related genes (BAX, BCL2) was measured by qRT-PCR. Genotoxicity was evaluated by γH2AX (pH2AX) expression and by the alkaline version of the comet assay. Apoptosis and cytotoxicity were quantified using caspase-3 activity and LDH release assays, respectively. Long-term clonogenic survival was assessed using colony formation assays. Clinical relevance was validated by bioinformatic analysis of TCGA and CGGA transcriptomic datasets.

Results

TMZ-resistant GBM cells exhibited an upregulation of EZH2 at mRNA and protein levels with increased H3K27me3 mark. In patient cohorts, high EZH2 expression was enriched in MGMT-unmethylated tumors and positively correlated with TMZ IC50. Transcriptomic profiling revealed strong enrichment of homologous recombination, DNA replication and double-strand break repair pathways in EZH2-high tumors. EZH2 inhibition sensitized GBM cells to TMZ, increasing caspase-3 activity, LDH release and suppressing clonogenic growth. This was accompanied by downregulation of RAD51, BRCA1, ATM, MRE11A and upregulation of PRKDC and γH2AX, indicating impaired DNA repair, that shifted the BAX/BCL2 ratio toward apoptosis.

Conclusions

EZH2 promotes DNA damage repair-mediated TMZ resistance in GBM. Inhibition of EZH2 disrupts this adaptive program and enhances the efficacy of alkylating chemotherapy, supporting combined EZH2-targeted and TMZ treatment in GBM treatment.

The project was funded by grant no. 564/1-000-00/564-20-078, UMED Grants 2024, allocated by Medical University of Lodz

Synthesis and Optimization of Sulfoximine-Modified Phenylalanine Analogues via the Strecker Reaction

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Introduction

The Strecker reaction is a classical multicomponent approach for the synthesis of α-amino acids and remains a valuable tool for the preparation of both natural and non-natural amino acid derivatives. Its simplicity, versatility, and broad substrate scope make it particularly attractive for applications in medicinal chemistry and peptide design. Studies performed in the our research group resulted in the development of a modified Strecker-based synthetic strategy employing sulfoximines for the efficient synthesis of non-natural amino acids with potentially advantageous physicochemical properties. Aromatic amino acids, such as phenylalanine (Phe) and tyrosine (Tyr), play a crucial role at the N-terminal of many biologically active peptides, including antibacterial peptides. Structural modifications of these residues may significantly influence peptide stability, membrane interactions, and biological activity.

Aim of the study

The aim of this study was to synthesize a series of non-natural phenylalanine analogues using the Strecker reaction and to optimize the reaction conditions in order to achieve the highest possible yields. An additional objective was to evaluate the applicability of various sulfoximines for the preparation of structurally diverse phenylalanine analogues as potential building blocks for peptide synthesis.

Materials and methods

The synthesis of phenylalanine analogues was carried out using the Strecker reaction, employing aromatic aldehydes, trimethylsilyl cyanide, and selected sulfoximines as the amine component resulting α-aminonitrile. Reaction progress was monitored by thin-layer chromatography (TLC) and liquid chromatography–mass spectrometry (LCMS). The structures of the obtained compounds were confirmed using nuclear magnetic resonance (NMR) spectroscopy and mass spectrometry.

Results

The optimized synthetic protocol enabled the preparation of sulfoximine-based phenylalanine analogues. The use of different sulfoximines proved to be an effective strategy for introducing structural diversity within the amino acid side chain, allowing fine-tuning of the obtained derivatives.

Conclusions

The presented results demonstrate that the Strecker reaction involving sulfoximines is a viable and efficient method for the synthesis of non-natural phenylalanine analogues. These compounds may serve as valuable building blocks for future studies on the impact of N-terminal modifications on the biological activity of peptides containing phenylalanine, particularly those exhibiting antibacterial activity.

PhD Session

Coordinators:
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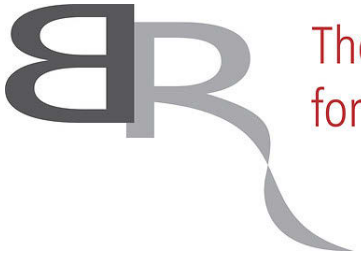
Patronage



The National Centre
for Research and Development

Detection of OPMD-related Changes in the Oral Mucosa Using Conventional and Fluorescent Screening Methods

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Introduction

Oral cancer is a major global health problem with rising incidence in younger populations. Oral potentially malignant disorder (OPMD)-related changes often precede malignant transformation and are frequently asymptomatic, underscoring the need for systematic oral mucosal screening

Aim of the study

This study aimed to assess the prevalence and clinical characteristics of OPMD-related changes, compare the diagnostic performance of conventional oral examination (COE) and fluorescence-based screening, and analyze associations with selected risk factors

Materials and methods

A cross-sectional observational study was conducted among 223 patients attending the Department of Periodontology and Oral Diseases. All participants underwent COE followed by fluorescence-based assessment using Oralitest. Demographic data, behavioral risk factors, and oral hygiene parameters were collected. OPMD-related changes in prevalence, localization, and clinical presentation were recorded. Statistical analyses included chi-square tests, McNemar's test, Cohen's kappa coefficient, and odds ratio estimation ($\alpha = 0.05$)

Results

OPMD-related changes were identified in 43 patients, yielding a prevalence of 19,3% (95% CI: 12.5–22.3%). All changes were observed both in COE and subsequently on the basis of fluorescence. The most common noted changes was white patch (n=26), submucosal fibrosis (n=6), dye patch (n=6), white-red patch (n=3), red patch (n=2); located mostly on buccal mucosa (n=27). 18 patients underwent histopathological examination; pathological findings were observed in 12 cases.One epithelial dysplasia was detected.No significant sex-related differences were observed (p=0.797). OPMD prevalence increased significantly with age, reaching 24.4% in patients over 60 years. Poor oral hygiene was significantly associated with OPMD-related changes and nearly tripled the risk (OR=2.55, p=0.039). Smoking and alcohol consumption were not independent predictors in this cohort. No significant difference was found between COE and fluorescence-based screening (McNemar test, p=0.134), with almost perfect agreement between methods (Cohen's κ=0.93)

Conclusions

Conventional and fluorescence-based oral examinations showed comparable effectiveness in detecting OPMD-related changes. OPMD prevalence was moderate, with lesions most commonly located on the buccal mucosa, tongue, and lips.Poor oral hygiene and older age were identified as the main risk factors. Fluorescence-based screening may support early identification of patients during routine dental visits

Effects of Curcumin-poly(sodium 4-styrenesulfonate) Conjugates on Blood Coagulation and Platelet Function.

Authors

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Introduction

Currently used antithrombotic drugs are associated with a clinically significant bleeding risk, motivating the search for newer, safer alternatives. Some evidence suggests curcumin possesses mild antithrombotic properties but suffers from poor solubility and bioavailability. Poly(sodium 4-styrenesulfonate) (PSSNa) is a sulfonated polymer that can act as a carrier and modifier of the biological activity of hydrophobic low-molecular-weight compounds. Structurally related sulfonated polymers have been reported to exhibit anticoagulant properties.

Aim of the study

The aim of the study was to synthesize curcumin-PSSNa conjugates and evaluate their anticoagulant and antiplatelet properties in vitro.

Materials and methods

Six compounds were studied, comprising PSSNa chains of defined length (DP of 11-47), with or without curcumin. Anticoagulant activity was evaluated by activated partial thromboplastin time (aPTT) and prothrombin time (PT) assays in rat plasma, while antiplatelet effects were measured by collagen-induced impedance aggregometry in whole rat blood, at concentrations of 10, 50, and 100 µg/mL. Thrombus formation under flow was assessed using the Total Thrombus Formation Analysis System (T-TAS, AR-chip) at 25 and 50 µg/mL. All procedures were approved by the Local Ethics Committee (No. 01/2025).

Results

All compounds prolonged aPTT and PT in a concentration-dependent manner, with activity increasing with PSSNa chain length. At the highest concentration, median aPTT ranged from 39.3 s to 300 s, and PT ranged from 13.55 s to 23.30 s, compared to 19.4 s and 11.60 s in the control group, respectively ($p < 0.05$). Medium-length curcumin-PSSNa conjugates produced stronger anticoagulant effects than corresponding PSSNa chains, except for PT measured at 10 µg/mL. Unconjugated curcumin showed no effect on aPTT, most likely due to low solubility. Both conjugated and unconjugated medium-length PSSNa chains exhibited comparable inhibition of collagen-induced platelet aggregation and thrombus formation in the T-TAS assay.

Conclusions

Curcumin-PSSNa conjugates demonstrated superior anticoagulant activity compared to the corresponding PSSNa chains. In contrast, no difference was observed in collagen-induced platelet aggregation or T-TAS AR-chip thrombus formation. These findings suggest that conjugation of curcumin with PSSNa enhances the anticoagulant effects of this formulation, while maintaining the platelet activity profile of the free polymer.

Factors Associated with Stigma Toward People Living with HIV Among Students in Medical Fields: a Multicenter Study in Poland

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Introduction

People living with HIV (PLWH) face stigmatization from healthcare workers. Attitudes toward PLWH are formed already during medical school education.

Aim of the study

The aim of this study was to measure knowledge and attitudes toward HIV among students of various medical fields.

Materials and methods

A cross-sectional online survey was developed and distributed to students in several medical universities in Poland. The data was collected between November 4 and December 18, 2025. The questionnaire included sociodemographic data, participants' experiences, and a multi-section test with point-based scoring. The test assessed knowledge about HIV prevention, concerns and additional precautions related to caring for PLWH, and the presence of stigma towards PLWH and other key populations. Higher section scores indicated greater knowledge and awareness. Based on a univariate analysis factors influencing higher scores were selected and then used in a Poisson regression.

Results

A total of 706 implemented surveys from 10 universities were collected. The median age of participants was 22 years. Most participants were women (73.10%), studied medicine (50.4%), had no contact with PLWH in the year preceding the study (75.4%), and had never been tested for HIV (64.8%). Poisson regression showed that men ($p=0.006$), medical students ($p<0.001$), and participants with recent contact with PLWH ($p<0.001$) achieved higher prevention knowledge scores. Participants with recent contact with PLWH ($p=0.003$) and those who had been tested for HIV ($p=0.044$) were less concerned when treating PLWH. Medical students ($p=0.027$) declared using fewer additional precautions when treating PLWH. Women ($p<0.001$) and those who had been tested for HIV ($p<0.001$) presented less stigma toward PLWH. Participants who had been tested for HIV ($p=0.009$) presented less stigma toward other key populations. Medical students during infectious disease classes showed greater stigmatization toward PLWH ($p=<0.001$) and toward other key populations ($p=0.001$) compared to students before the classes. Medical students surveyed during ($p=0.024$) and after ($p=0.014$) infectious disease classes demonstrated higher prevention knowledge than those before the classes.

Conclusions

Prejudice towards PLWH is present among students in medical fields. University-level education is key to reducing future stigma among healthcare workers.

No funding

Forecasting ICU Acute Kidney Injury with Actionable Lead Time Using Interpretable Machine Learning: Development and Multi-Center Validation

Authors

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Introduction

Acute kidney injury (AKI) is frequent in the intensive care unit (ICU) and is often detected after substantial physiologic deterioration, reducing opportunities for timely prevention. There is a need for dynamic, interpretable prediction tools that provide actionable lead time and maintain performance despite changing ICU case-mix over time and across institutions.

Aim of the study

To develop an interpretable, continuously updatable early warning score (EWS) to predict incident AKI within the next 24 hours in adult ICU patients, and to evaluate its transportability across (i) a pandemic-era temporal shift and (ii) an external geographic cohort.

Materials and methods

We conducted a retrospective, multicenter cohort study using adult ICU stays from the MIMIC-IV database and the eICU Collaborative Research Database (eICU-CRD). The primary outcome was incident AKI (KDIGO stage 1–3). Gradient-boosted decision trees (XGBoost) were trained using 10-fold cross-validation. Candidate predictors were prespecified from the literature, and the final model used 61 routinely available EHR variables selected via SHAP-based ranking, spanning demographics and comorbidities, laboratory measures, vital-sign dynamics, and ICU therapies/procedures. Prespecified validation included (i) temporal validation during the COVID-19 era and (ii) geographic validation in eICU Northeast hospitals.

Results

The development cohort included 51,833 ICU stays; the temporal and geographic validation cohorts included 3,346 and 2,993 stays, respectively. Discrimination was high in internal validation (AUC 0.88, 95% CI 0.84–0.90) and remained robust under temporal (AUC 0.84, 95% CI 0.80–0.87) and geographic transport (AUC 0.82, 95% CI 0.81–0.84). At a prespecified operating threshold, sensitivity/specificity were 0.76/0.79 in temporal validation and 0.73/0.86 in geographic validation. Decision-curve analysis demonstrated net benefit across clinically relevant thresholds. The most influential predictors captured physiologic trajectories and renal risk signals, including mean arterial pressure dynamics, urine output, creatinine and BUN trends, and oxygenation dynamics (SpO).

Conclusions

A routinely updated, explainable EHR-based EWS can predict ICU AKI up to 24 hours in advance with stable performance across meaningful temporal and geographic shifts. These findings support future real-time implementation to enable earlier assessment and mitigation of AKI risk.

Generative Echocardiography from ECG and Clinical Context: Uncertainty-Aware Synthesis of a Full 9-view Echo Study

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Introduction

Echocardiography visualizes cardiac structure and mechanics but is limited by equipment and operator availability. ECG is ubiquitous and inexpensive, yet it does not directly quantify mechanics. Which echo-derived phenotypes are inferable from ECG plus routine clinical context—and when models must abstain due to ambiguity—remains unclear.

Aim of the study

To develop and validate an uncertainty-aware video generation model that maps 12-lead ECG and structured clinical variables to a synthetic cine nine-view echo study and quantifies transferability boundaries across rhythms and disease categories.

Materials and methods

We use three multi-institutional cohorts from North America with a matched subset of ~40k paired ECG–echo encounters. A conditional generative model synthesizes temporally coherent cine sequences for nine standard views. Echo videos are de-identified, temporally standardized, and resized to 256×256 with intensity normalization and view-specific spatial cropping; ECG signals are denoised, resampled to a common rate, and standardized per lead before encoding. We learn a discrete video representation via Vector Quantised Variational AutoEncoder (VQ-VAE) tokenization and train a masked token prediction model conditioned on ECG embeddings, structured clinical variables, and a view identifier token, then decode predicted tokens into cine sequences. For uncertainty-aware synthesis, we enable selective generation (abstention) when uncertainty exceeds calibrated thresholds. We use patient-level splits with cross-site external validation, and we report both image/video similarity (SSIM, FVD).

Results

We curated a matched paired cohort of ECG–echo encounters, and completed a reproducible preprocessing pipeline. The view identifier achieved 88% accuracy, enabling automated nine-view alignment. On the held-out test set, the model generated temporally coherent cine sequences for all nine views. Generated–real similarity was SSIM 0.75 and video realism FVD 85.01.

Conclusions

We show that a standard 12-lead ECG—augmented with routine clinical context—can be transformed into a realistic, temporally coherent, full nine-view cine echocardiography study. This opens a new direction for “echo-from-ECG” modeling that can scale cardiac phenotyping and education, accelerate hypothesis generation, and broaden access to echo-like visualization where scanners or expertise are limited. To maximize real-world impact and reproducibility, our model and training pipeline are open source and will be freely accessible to the community.

Liver Transplantation in Patients with Kidney Failure – Retrospective Analysis of The Effectiveness of Intraoperative Dialysis Using the SLED Method.

Authors

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Introduction

Liver transplantation (LTx) represents ultimate treatment for end-stage liver disease, and is associated with hemodynamic instability, electrolytes and acid-base abnormalities and coagulopathy. Patients with chronic kidney disease and acute kidney injury (AKI) face particularly high risks during transplantation procedure. AKI affects up to 90% of liver transplant candidates, with 10-20% requiring kidney replacement therapy before surgery. Intraoperative kidney replacement therapy (IOKRT) includes optimization of acid-base balance, and electrolyte management to prevent complications such as postreperfusion syndrome (PRS) during the graft reperfusion, which occurring up to 31% of patients and characterized by severe arterial pressure decrease.

Aim of the study

Sustained low-efficiency dialysis (SLED) bridges the gap between continuous and intermittent modalities, delivering hemodynamic stability comparable to continuous renal replacement therapy (CRRT) alongside the efficiency of intermittent hemodialysis. By combining SLED hemodynamic stability and the single-pass batch mobility it allows intraoperatively mitigates life-threatening complications during liver transplantation. Previous studies have demonstrated that IOKRT is safe and feasible in patients with high MELD scores, with lower-than-expected rates of PRS.

Materials and methods

We performed the retrospective analysis of IOKRT during LTx performed in University Hospital in 01.2023-06.2025. A total of 99 IOKRT procedures were analysed. All IOKRT were conducted using slow low efficiency dialysis with single-pass batch dialysis system. Instead of anticoagulation regular flushes of 100 mL saline every 30 to 60 minutes were used.

Results

Among 768 patients who received Ltx in 01.2023-06.2025 in our center, 99 required IOKRT (12.9%). In 40 patients (40.4%) LTx was a re-transplantation procedure. 43 patients (43.4%) required RRT before LTx whereas 81 (81.8%) required continuation of RRT after operation. No significant others adverse effects associated with IOKRT were observed other than dialysis circuit clotting – 6 out of 99 procedures (6.1%). The mean age was 48.9 years, GFR on admission was 53.7 ml/min/1,73m2, preoperative GFR was 38.3 ml/min/1,73m2. The mean MELD-Na score was 30.5. Postreperfusion syndrome occurred in 23.2% of patients. At discharge, mean GFR improved to 69 ml/min/1,73m2.

Conclusions

SLED is a safe and effective technique of IORRT which can enable sicker recipients, including those with prior CKD to undergo the live-saving procedure of LTx.

Resurgence of Pertussis in Poland. Evidence From the Polish Nationwide General Hospital Morbidity Study, 2010-2024.

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Introduction

Pertussis (whooping cough) is a globally distributed respiratory tract infection that affects individuals across all age groups, with the most severe outcomes observed in infants and young children. Despite high vaccine coverage and a traditionally cyclical pattern, the COVID-19 pandemic disrupted pertussis epidemiology, resulting in a subsequent global resurgence. Hospitalization may serve as a proxy for disease severity, enabling estimation of burden, identification of epidemiologic shifts, and assessment of the impact of prevention.

Aim of the study

This study aimed to analyze the epidemiological trends of pertussis-related hospitalizations in Poland (2010-2024).

Materials and methods

We conducted a retrospective study of all pertussis-related hospitalizations using data obtained from the Nationwide General Hospital Morbidity Study. Three study periods were defined: pre-pandemic (2010-2019), pandemic (2020-2023), and post-pandemic (2024 - the resurgence of pertussis).

Results

Between 2010 and 2024, a total of 17,132 pertussis-related hospitalizations were recorded; 88.8% (n=15,206) occurred in children. Females predominated among pediatric (51.3%) and adult (59.1%) patients. In children, the median age was 5.0 years (IQR 1-12), and the mean was 6.6 (SD 5.6), compared with 45 years in adults (IQR 29-65), with a mean of 46.7 (SD 20.9). Across the study period, 0.6% (n=104) of patients required ICU admission, and 20 in-hospital deaths occurred (0.1%), including one pediatric case. The hospitalization rate fell from 3.1 per 100,000 population in the pre-COVID period (range 1.7-5.3) to 0.8 during COVID-19, then surged to 11.1 in 2024, the highest level observed. Children aged 1-5 years remained the largest group across the three periods (35.5%, 46.8%, and 25.2%, respectively). However, the age distribution shifted, with the proportion of hospitalized infants rising from 9.6% to 16.5%, reaching 24.4% in 2024. Seasonal analysis showed a marked change in hospitalization patterns. Whereas pre-pandemic (2010-2019) and pandemic (2020-2023) peaks occurred in autumn and winter (Q1 and Q4), an atypical surge was observed in 2024, with cases moving to Q3 and peaking in August.

Conclusions

The post-pandemic resurgence of pertussis in Poland highlights the need to strengthen immunization across all age groups, with particular emphasis on protecting infants through increased uptake of maternal vaccination.

Solid-State Structure and Physicochemical Characterization of the Hydrocortisone–β-Cyclodextrin Inclusion Complex

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Introduction

Hydrocortisone (HC) is a commonly used anti-inflammatory and immunosuppressive medication prescribed for a wide range of conditions. Although it is clinically well established, one of its main limitations is poor water solubility that leads to poor bioavailability and limits the drug's effectiveness. One strategy to improve the solubility of poorly water-soluble drugs is the use of cyclodextrins (CDs) - molecules capable of “encapsulating” drug molecules. This can enhance drug dissolution, stability and overall performance. Although HC has previously been combined with β-CD, the exact structural arrangement and organization of this complex have not been fully clarified. A better understanding of how these two molecules interact at the structural level may help in designing improved formulations with enhanced physicochemical properties and potentially better clinical performance

Aim of the study

This study aimed to obtain and comprehensively characterize the HC–β-CD inclusion complex in the solid state, determine its crystal structure and stoichiometry and evaluate the molecular organization and energetic stability of guest orientations.

Materials and methods

The complex was prepared by slow cooling of an equimolar aqueous solution of HC and β-CD. Structural and physicochemical characterization included SCXRD, PXRD, FT-IR spectroscopy, cryo-SEM, DSC-TGA, solid-state ^{13}C CP MAS NMR and periodic DFT calculations.

Results

SCXRD provided direct evidence of HC encapsulation within the β-CD cavity. Positional disorder of the guest was observed, corresponding to two alternative orientations. PXRD confirmed formation of a new crystalline phase distinct from the parent compounds and their physical mixture. FT-IR spectra showed band shifts and broadening consistent with host–guest interactions. DSC-TGA analysis revealed near disappearance of the characteristic HC melting endotherm and reduced dehydration mass loss, indicating loss of crystallinity and molecular dispersion within the β-CD cavity. Solid-state ^{13}C NMR demonstrated signal broadening consistent with altered local environments. DFT calculations showed that the two guest orientations differ by <5 kcal/mol, confirming their energetic accessibility and explaining the observed disorder.

Conclusions

The results confirm successful formation of the inclusion complex in the solid state and demonstrate structural incorporation of HC within the β-CD cavity. These findings provide insight into complex's organization and support the development of improved CD-based formulations.

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Stage-Dependent Alterations in Plasma Estrogen Metabolites in Parkinson's Disease

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Introduction

Parkinson's disease (PD) lacks validated, non-invasive biomarkers that reflect disease severity and progression. Estrogens are involved in dopaminergic neurobiology, neuroinflammation and oxidative stress regulation, yet comprehensive analyses of circulating estrogen metabolites across clinical stages of PD are limited.

Aim of the study

To characterize plasma estrogen metabolite profiles across Hoehn–Yahr (HY) stages in Parkinson's disease and to evaluate their association with disease severity and oxidative stress.

Materials and methods

In this cross-sectional study, 63 patients with idiopathic PD without comorbidities and 16 healthy controls were enrolled. Patients were stratified according to HY stage (HY1–HY3). Twelve estrogen metabolites were quantified in plasma using targeted LC–MS/MS. Plasma hydrogen peroxide (HO) was measured as a marker of oxidative stress. Group differences were assessed using Kruskal–Wallis tests with Dunn's post hoc analysis and false discovery rate correction. Associations with disease severity were evaluated using Spearman correlations. Multivariate patterns were explored using linear discriminant analysis (LDA) and PERMANOVA.

Results

All twelve estrogen metabolites differed significantly across HY stages after FDR correction (all $p_FDR \leq 0.015$). Parent estrogens and major metabolites, including 17α-estradiol, 17β-estradiol, estrone and estriol, showed the largest effect sizes and significant associations with HY stage. Several metabolites were already altered at HY stage 1 compared with controls. Multivariate analyses demonstrated clear stage-dependent separation of metabolite profiles. Plasma HO levels increased significantly with advancing disease severity, reaching the highest values at HY stage 3.

Conclusions

Plasma estrogen metabolite profiles exhibit coherent, severity-dependent alterations across Hoehn–Yahr stages in Parkinson's disease and are accompanied by increasing oxidative stress. These findings suggest that comprehensive estrogen metabolite profiling may represent a promising, non-invasive approach for disease stratification and progression assessment in PD.

This work was supported by the statutory funds of the Medical University of Gdansk ST46.

Synthesis and Physicochemical characterization of cobalt containing β-tricalcium phosphate: a potential bone substitute with enhanced bioactivity

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Introduction

Calcium phosphate ceramics are widely investigated as bone regeneration materials due to their similarity to the mineral phase of hard tissues and inherent osteoconductivity. Among them, β-tricalcium phosphate β-TCP: $Ca_3(PO_4)_2$ is particularly attractive for applications requiring controlled resorption, as it can be gradually replaced by newly formed bone.

Aim of the study

The aim of this study was to synthesize cobalt-doped β-TCP powders (Co substitution levels: x = 0.05, 0.1, 0.2, 0.4) via wet-chemical method and characterize their physicochemical properties (FTIR, Raman, PXRD, AAS, SEM) along with in vitro cytotoxicity (NRU, MTT), evaluating potential as bioactive bone substitutes.

Materials and methods

The materials were synthesized via a wet-chemical route under controlled pH and temperature conditions. The powders were characterized by FTIR and Raman spectroscopy to confirm their chemical identity. Powder X-ray diffraction (PXRD) was used to determine crystalline phases, with particular attention to the formation of phases related to cobalt incorporation during synthesis. The elemental composition, including cobalt content, was measured by atomic absorption spectroscopy (AAS). Particle morphology and elemental distribution were studied using scanning electron microscopy (SEM). NRU and MTT tests were additionally carried out to assess the in vitro safety of these materials for biomedical use.

Results

The wet synthesis method yielded homogeneous powders with high chemical purity. Across the investigated cobalt concentration range, the materials remain predominantly β-TCP, with cobalt incorporated into the crystal lattice rather than forming separate phases. The presence of cobalt within the investigated concentration range led to measurable modifications of the β-TCP crystal structure. Importantly, both the cobalt incorporation and the resulting structural changes did not induce cytotoxic effects, as confirmed by the performed cytotoxicity assays.

Conclusions

The presented results confirm the efficacy of the applied wet-chemical synthesis in producing high-purity, homogeneous β-TCP powders doped with cobalt. This approach not only allows for reliable physicochemical modification of the material but also introduces potential biological activity without compromising in-vitro safety. Consequently, the study brings us closer to developing biomaterials with dual functionality: acting as resorbable bone-substitute scaffolds while simultaneously serving as active platforms capable of supporting regenerative processes.

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Rheumatology & Autoimmunity Session

Coordinators:
Marcin Sota, Tomasz Mękarski

Assessment of Soluble NKG2D Ligands As Immune Biomarkers in Multiple Sclerosis

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Introduction

Multiple sclerosis (MS) is a chronic immune-mediated disease of the central nervous system (CNS) characterized by inflammatory demyelination and progressive axonal damage. Early diagnosis and monitoring of disease activity remain major clinical challenges, highlighting the need for reliable and minimally invasive biomarkers. Neurofilament light chain (NfL) has emerged as a robust marker of neuroaxonal injury; however, additional immune-related biomarkers reflecting disease-associated immune activation are still being investigated. The NKG2D-NKG2D ligand (NKG2DL) pathway has previously been implicated in autoimmune and neuroinflammatory conditions, suggesting potential relevance in MS.

Aim of the study

The aim of this study was to evaluate soluble NKG2D ligands (MHC class I chain-related proteins A and B - MICA, MICB, and UL16 binding protein 4 - ULBP4) in serum and cerebrospinal fluid (CSF) of patients with MS and individuals at increased risk of MS, and to compare their potential biomarker value with NfL.

Materials and methods

Serum and CSF samples were collected from patients with newly diagnosed relapsing-remitting MS, individuals with multifocal demyelinating CNS lesions under observation for possible MS (pre-MS), and neurological controls with non-inflammatory neurological conditions. Concentrations of soluble NKG2DLs and NfL were measured using immunoassays. Associations between serum and CSF concentrations were analyzed to assess the ability of peripheral measurements to reflect intrathecal processes.

Results

Serum and CSF levels of soluble MICA, MICB, and ULBP4 did not differ significantly between MS patients, pre-MS individuals and controls, and no meaningful correlations between serum and CSF concentrations of these ligands were observed. In contrast, NfL concentrations were significantly elevated in MS patients compared with pre-MS individuals and controls in both serum and CSF. A strong correlation between serum and CSF NfL levels was demonstrated.

Conclusions

Soluble NKG2D ligands may not appear to provide diagnostic or monitoring value as circulating biomarkers in MS. NfL remained a sensitive indicator of axonal damage and disease activity and may serve as a useful peripheral biomarker for early risk assessment and disease monitoring in demyelinating disorders.

Association of Salivary Gland Ultrasonography with Histological and Immunological Parameters in Sjögren's Disease: Relevance to Classification Criteria

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Introduction

Salivary gland ultrasonography (SGUS) is an established diagnostic tool in primary Sjögren's disease (SjD). According to the OMERACT consensus, it uses a semi-quantitative 0–4 scale reflecting progressive structural abnormalities. However, its relationship with histological and immune activity remains unclear and has not yet been included as part of the SjD classification criteria.

Aim of the study

To determine whether SGUS severity reflects histological and immunological activity in SjD.

Materials and methods

The study included 43 SjD patients (mean age 49.98 ± 13.75 ys; 40 females/3 males; median disease duration 8 ys). Diagnosis included minor salivary gland biopsy with focus score (FS) assessment (1 focus = ≥50 mononuclear cells/4 mm²). Anti-Ro (Ro52, Ro60) and anti-La antibodies (chemiluminescence method;CLIA). SGUS grade (0–4), and FS were analyzed both as a continuous variable and after stratification (0, 1, 2–3, 4–6). Spearman correlation assessed associations between SGUS and continuous variables (age, FS, C3, C4 components of complement, γ-globulins, IgG, IgG4). Differences in SGUS across FS categories were evaluated using the Kruskal–Wallis test. Laboratory parameters were compared across SGUS categories using ANOVA with Tukey post-hoc testing. Associations between high SGUS (≥3) and categorical variables (autoantibodies, Schirmer's test, ocular staining score-OSS) were analyzed using chi-square or Fisher's exact tests.

Results

SGUS positively correlated with FS ($r=0.40$, $p=0.008$), although differences across FS categories were not significant ($p=0.0648$) despite an increasing positive trend. SGUS inversely correlated with C4 ($r=-0.38$, $p=0.01$), and C4 levels were significantly lower in patients with SGUS ≥3 vs SGUS=1 ($p=0.026$). A trend toward higher γ-globulins was observed with increasing SGUS score ($p=0.057$), with no associations for C3, total IgG. SGUS showed a weak negative correlation with age ($r=-0.30$, $p=0.047$), without significant age differences across SGUS categories. SGUS was not associated with Schirmer's test results or OSS. High SGUS (≥3) was more frequent in patients with strong anti-Ro52 Abs positivity (Fisher $p=0.02$), with no significant associations for anti-Ro60 or anti-La Abs.

Conclusions

SGUS correlates with histological inflammation and systemic immune activation, particularly complement consumption. Although not fully reflecting FS categories, higher SGUS grades identify a more pronounced immunological phenotype, contributing to debate on its role in SjD classification criteria.

Effectiveness of Biologic Therapy in Elderly With Severe, Uncontrolled Asthma.

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Introduction

Treatment with biologic agents is the standard of care in patients with severe, uncontrolled asthma. However, evidence regarding the effectiveness of such therapy in the elderly remains limited.

Aim of the study

To analyse and compare the effectiveness of biologic treatment in patients over 65 years of age versus younger adults with severe, uncontrolled asthma.

Materials and methods

This retrospective cohort study was performed at the Department of Internal Diseases, Pulmonology and Allergology, Medical Univeristy of Warsaw. All patients were qualified for and treated within the national drug programme for severe asthma. Elderly patients were defined as 65 or more years old. Data were analysed using the Chisquare test and the Mann–Whitney U test.

Results

A total of 160 patients currently receiving biologic therapy were included into analysis: F 111 / M 49; median age 55 years (IQR 44–63) with a median asthma duration of 20 years (IQR 10–30). Among them, 37 patients (23%) were older than 65 years. Elderly patients had more comorbidities (malignancies, ischemic heart disease, arterial hypertension, osteoporosis, hyperlipidemia, and cardiac arrhythmias), higher BMI (29.6 vs 25.4, $p = 0.0024$), and lower spirometry values (FEV 1.6 L vs 2.45 L, $p < 0.001$). Asthma control at baseline was also worse in the elderly (ACQ 3.5 vs 3.2, $p = 0.026$). Despite these differences, the response to biologic therapy was comparable between elderly and younger patients with asthma. There were no significant differences in the proportion of responders, the number of patients achieving clinical asthma remission, or the reduction in asthma exacerbations.

Conclusions

Elderly patients with severe asthma present with a higher burden of comorbidities and poorer baseline asthma control compared with younger adults. Nevertheless, they respond to biologic therapy equally well. Therefore, biologic treatment should be considered an effective and beneficial therapeutic option for this patient group.

Gut Microbiome Modulation in Obesity

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Introduction

Obesity is a condition characterized by excess weight relative to height, primarily due to the accumulation of adipose tissue, and is widely recognized as the pandemic of the 21st century. Significant alterations in the gut microbiota exist in overweight or obese patients, leading to the hypothesis that manipulating these microorganisms can influence body weight.

Aim of the study

The aim of this meta-analysis is to investigate the effect of gut microbiota modulation treatments on Body Mass Index in overweight or obese patients compared to a control group.

Materials and methods

Rigorous inclusion and exclusion criteria were applied. Only randomized controlled trials published within the last 5 years and including overweight or obese patients were selected. Studies conducted on animal models, pediatric populations, or pregnant/breastfeeding women were excluded. Additionally, studies involving bariatric surgery, oncological or psychiatric pathologies, as well as specific dietary interventions, were ruled out. This meta-analysis of 10 studies includes 820 patients, 425 of whom received modulation treatment and 395 a placebo.

Results

The effect on weight loss is statistically significant and of modest magnitude (MD = -0.21; 95% CI [-0.37; -0.06]; p=0.013). The absence of heterogeneity (I^2 = 0%; p=0.472) and publication bias (Egger's test, p=0.730) confirms the robustness and consistency of the results across all analyzed studies.

Conclusions

This meta-analysis provides an up-to-date synthesis of the impact of gut microbiota modulation in overweight or obese patients. The statistical significance of the results, supported by the lack of heterogeneity and publication bias, attests to the study's methodological reliability. These findings reinforce the quality of the analysis and open new research perspectives for obesity management.

Regional Brain Atrophy Patterns in Relapsing–Remitting Multiple Sclerosis Treated with Immune Reconstitution Therapies: A 3-Year Follow-Up Study

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Introduction

Immune reconstitution therapies (IRTs) represent a highly effective treatment strategy for multiple sclerosis (MS), capable of inducing long-term disease remission after short-term administration. IRTs include partially selective therapies, such as oral cladribine (CLAD), and non-selective therapies, such as alemtuzumab (ALEM). While their efficacy in reducing relapse activity and disability progression has been demonstrated in clinical trials and real world evidence (RWE) studies, data regarding their impact on neurodegenerative processes and regional brain atrophy remain limited.

Aim of the study

The aim of the study was to assess the effect of IRTs on the extent and regional pattern of brain atrophy in patients with relapsing–remitting MS (RRMS) over a 3-year follow-up period.

Materials and methods

RRMS patients treated with CLAD or ALEM were included in the study. Demographic, clinical, and magnetic resonance imaging (MRI) data were collected at four time points: prior to treatment initiation and at 1, 2, and 3 years post-treatment. Volumetric MRI analyses were performed using FreeSurfer software. Global and regional brain volume changes were assessed by calculating percentage volume differences between consecutive time points. Volumetric outcomes were compared between treatment groups.

Results

Initially, 48 patients treated with CLAD and 19 patients treated with ALEM were included in the study. After 3 years of follow-up, statistically significant differences between treatment groups were observed in hippocampal ($p < 0.01$) and amygdala ($p < 0.01$) volume changes. Progressive atrophy of the ventral diencephalon was detected in both groups. No significant global white or grey matter volume loss was observed. Notably, an increase in thalamic volume was identified during follow-up.

Conclusions

IRT treatment was associated with a stabilization of neurodegenerative processes in RRMS patients. The observed preservation and regional volume increases, particularly within the thalamus and hippocampus, suggest a potential neuroprotective effect of IRTs. These findings warrant further prospective studies to elucidate the long-term impact of immune reconstitution therapies on brain atrophy trajectories in MS.

The Impact of C5 Inhibition On Graft Survival In Patients With Post-transplant Atypical Hemolytic Uremic Syndrome: A Comparative Analysis.

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Introduction

Kidney transplantation (KTx) complicated by atypical Hemolytic Uremic Syndrome (aHUS) leads to a high risk of graft loss. This condition poses a critical therapeutic challenge, as uncontrolled complement activation manifesting as thrombotic microangiopathy (TMA) can rapidly destroy the renal allograft.

Aim of the study

The aim of this study was to evaluate the efficacy of C5 complement inhibition as rescue therapy in kidney transplant recipients diagnosed with atypical Hemolytic Uremic Syndrome (aHUS) post-transplantation, in comparison to a historical untreated control group.

Materials and methods

We retrospectively analysed 12 kidney transplant recipients with confirmed aHUS. Diagnosis was established based on clinical presentation, histological evidence of TMA in renal biopsy, and genetic screening. The Study Group (n=7) included patients diagnosed with aHUS after transplantation who received C5 inhibition (initiated with eculizumab) as rescue therapy. The Control Group included historical patients with aHUS diagnosed after transplantation who did not receive C5 inhibition and received standard supportive care. We assessed graft survival as the primary endpoint.

Results

The clinical presentation at onset was severe in both cohorts, with the majority of patients requiring hemodialysis due to acute graft dysfunction. In the Control Group, outcomes were uniformly poor; all patients experienced rapid graft loss, consistent with uncontrolled complement activation. In contrast, in the Study Group (n=7), treatment with C5 inhibition resulted in significantly improved outcomes compared to the historical control. 43% (3/7) of treated patients retained long-term graft function. Among grafts retained in the Study Group, the mean estimated Glomerular Filtration Rate (eGFR) was 31 ml/min/1.73m² at six months post-transplant.

Conclusions

This study demonstrates that the absence of C5 inhibition in post-transplant aHUS is associated with poor graft outcomes. Rescue therapy with C5 inhibition was the only effective intervention, preserving renal function in over 40% of high-risk patients. Prognosis depends on the reversibility of ischemic damage at the time of intervention. These findings underscore the necessity of prompt diagnosis and immediate initiation of complement blockade to optimise transplant outcomes.

Therapeutic Plasma Exchange in Acute and Acute-on-Chronic Liver Failure: Preliminary Results from a Tertiary Transplant Centre

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Introduction

Acute liver failure (ALF) and acute-on-chronic liver failure (ACLF) are characterized by systemic inflammation, multi-organ dysfunction, and high short-term mortality, reaching up to 80% in advanced ACLF. Liver transplantation remains the only definitive therapy. Therapeutic plasma exchange (TPE) has emerged as a liver support strategy through removal of inflammatory mediators and replacement of plasma components. Randomized and observational studies suggest biochemical, hemodynamic, and survival benefits, particularly in ALF; however, real-world data in critically ill transplant candidates remain limited.

Aim of the study

To evaluate hemodynamic and biochemical effects of TPE and assess short-term outcomes in patients with ALF and ACLF.

Materials and methods

This single-center retrospective cohort study was conducted in a tertiary academic intensive care unit between January and December 2025. Thirty-two consecutive patients with ALF or ACLF underwent 46 TPE sessions. Analysis was performed per patient, based on the first TPE session. The primary endpoint was hemodynamic response defined as ≥20% reduction in norepinephrine equivalent (NEE). Secondary endpoints included changes in biochemical, coagulation, and inflammatory parameters. Paired comparisons were performed using the Wilcoxon signed-rank test. The study was approved by the local bioethics committee.

Results

In preliminary analyses, patients presented with advanced multi-organ failure (median SOFA 16; MELD-Na 38). Thirty-day mortality was 44% and 60-day mortality 56%; 84% underwent liver transplantation. Hemodynamic response occurred in 59% of patients. After TPE, significant reductions were observed in ammonia (173164 µg/dL, p=0.001), bilirubin (6.74.7 mg/dL, p<0.001), ALT (37621054 U/L, p<0.001), AST (47731794 U/L, p<0.001), INR (4.371.42, p<0.001), lactate (6.35.4 mmol/L, p=0.030), inflammatory markers, and NEE (0.220.12, p=0.032).

Conclusions

In this cohort of critically ill ALF and ACLF patients, TPE was associated with short-term biochemical and hemodynamic improvement, consistent with previous reports. These findings suggest a potential supportive role of TPE in selected high-risk patients. Prospective studies with detailed baseline characterization are needed to identify predictors of response and refine patient selection strategies.

Surgery Case Report Poster Session

Coordinators:
Marta Szostek, Mila Lecluyse,
Aleksandra Świeca

High Risk, High Reward: Robot-Assisted Nephron-Sparing Resection of Four Tumors in a Solitary Kidney With Severe Complications and Renal Recovery

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Background

Nephron-sparing surgery for multifocal renal tumours in a solitary kidney is technically demanding. The operative goal is complete excision with maximal parenchymal preservation and meticulous reconstruction, while minimising ischaemia-related injury and anticipating complications associated with prolonged complex surgery.

Case Report

A 74-year-old man with a right solitary kidney (previous contralateral nephrectomy) presented with four renal masses suspicious for malignancy (cT1bN0M0; largest lesion 4.5 cm). Robot-assisted partial nephrectomy was performed with intraoperative ultrasound guidance. Enucleoresection of all four lesions (two anterior, one posterior lower pole, one perihilar) was achieved. Tumour beds were coagulated and reconstructed with a two-layer renorrhaphy using haemostatic clips and topical haemostatic agent. Operative time was 280min, estimated blood loss 300 mL, and continuous warm ischaemia time was 88 minutes. Final pathology demonstrated multifocal oncocytoma, pT1a(m).Postoperatively, the patient developed prolonged delayed emergence requiring ICU admission, attributed to impaired metabolism of anaesthetic agents after exclusion of acute intracranial pathology on imaging. The subsequent course was complicated by hypoxaemia with pleural effusions and radiologic features consistent with pulmonary infection; pulmonary embolism was excluded. Acute kidney injury occurred, requiring temporary haemodialysis. Preoperative creatinine was 1.13 mg/dL (eGFR 67 mL/min/1.73 m²). Renal function recovered with restoration of diuresis; at 2-week follow-up after discharge creatinine was 1.72 mg/dL (eGFR 52) without ongoing renal replacement therapy. The patient was discharged on postoperative day 18.

Conclusions

Robot-assisted partial nephrectomy can enable definitive nephron-sparing treatment of multifocal tumours in a solitary kidney, but major perioperative complications may occur, particularly following prolonged continuous warm ischaemia. This case highlights that coordinated multidisciplinary management can support recovery from severe complications, preserve renal function, and avoid long-term dialysis.

A Case Report of Glomus Caroticum Tumor

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Background

Carotid body tumors (CBTs), also known as glomus caroticum tumors, are rare, slow growing, hypervascular neuroendocrine neoplasms arising at the carotid artery bifurcation. Although usually benign, their proximity to major cervical vessels and cranial nerves makes management challenging, especially in large tumors associated with compressive symptoms and increased surgical morbidity. This case report presents a rare giant Shamblin type III carotid body tumor and discusses its surgical management and outcomes.

Case Report

A 65-year-old woman was admitted with a painless, progressively enlarging right-sided neck mass accompanied by dysphagia and episodic presyncope for three years. Physical examination revealed a non-pulsatile mass measuring up to 8 cm. Computed tomography angiography demonstrated an 8 × 5 cm hypervascular tumor at the bifurcation of the right common carotid artery. Surgical excision with en bloc resection of the common, internal, and external carotid arteries was performed, followed by vascular reconstruction using a polytetrafluoroethylene graft. Cranial nerves were identified and preserved. Postoperatively, the patient developed dysphagia and vocal changes due to vagal nerve injury, which were managed conservatively.

Conclusions

Giant carotid body tumors represent a significant surgical challenge due to their size and anatomical complexity. Early diagnosis and meticulous surgical management remain essential to achieve complete resection while minimizing postoperative morbidity.

Advanced HSIL With Delayed Anal Carcinoma Diagnosis - A Diagnostic Challenge In a Rare Malignancy

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Background

Anal squamous cell carcinoma (ASCC) is a rare malignancy that often remains asymptomatic until late progression. Awareness of ASCC remains limited, not only in the general population but also among clinicians. Although believed to be primarily associated with MSM, ASCC is in total more common in women. Human papillomavirus (HPV) infection accounts for approximately 93% of cases, with the transformation zone near the dentate line being particularly susceptible. However, precancerous and cancerous infiltrative lesions may arise throughout the whole anal canal and perianal region. This case report underscores the diagnostic challenges of ASCC and highlights the need for a multimodal approach to achieve an accurate diagnosis and management.

Case Report

A 48-year-old HIV-positive man was referred to a proctologist by his GP for presumed anogenital condylomas. On examination, condylomatous changes were visible to the naked eye circumferentially around the anal canal, and on high-resolution anoscopy (HRA) after application of 5% acetic acid they had the appearance of high-grade squamous intraepithelial lesion (HSIL). Also perianal biopsy revealed extensive HSIL. Due to concern for malignancy, pelvic MRI was performed, revealing an infiltrative lesion. A repeat diagnostic HRA under general anesthesia with multiple, deep, small excisions showed extensive HSIL suspicious for superficially invasive ASCC, prompting subsequent excision. Repeated, wider excision confirmed multifocal invasive ASCC (T3N0M0). The patient was referred for definitive chemoradiotherapy following multidisciplinary discussion and remains under follow-up.

Conclusions

This case illustrates that HSIL can mask deep, multifocal lesions, risking delayed diagnosis of ASCC. A multimodal assessment in experienced HRA centers - including deep biopsies and pelvic imaging - enables timely detection and curative treatment, improving outcomes in vulnerable populations. This approach is particularly crucial for high-risk groups, such as patients living with HIV, solid organ transplant recipients more than 10 years post-transplantation, MSM, transgender and women with a history of high-grade cervical intraepithelial neoplasia, all of whom are recommended by current guidelines to be screened for ASCC. Hopefully, with raised awareness about HPV-related cancers, vaccination rates against high-risk HPV types will improve, leading to a reduced need for these costly and demanding diagnostic procedures.

Alveolar Bone Transport for Reconstruction of Severe Premaxillary Defect in a Patient with Bilateral Cleft Lip and Palate

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Background

Bilateral cleft lip and palate (BCLP) is a congenital craniofacial anomaly associated with impaired maxillary growth and alveolar bone deficiency. In patients with severe deformities, primary cleft repair procedures are complicated by loss of premaxillary bone, resulting in extensive anterior maxillary defects. In this case, the primary BCLP repair resulted in complete premaxillary loss, and the subsequent rhinoplasty failed to achieve the desired functional and cosmetic outcomes. Alveolar bone transport using distraction osteogenesis (DO) was chosen as a reconstructive approach due to the complex defects, which considerably limit orthodontic, prosthetic, and surgical treatment options.

Case Report

A 16-year-old patient with BCLP and skeletal Class III malocclusion was referred for broad multidisciplinary rehabilitation. As a result of previous reconstructive procedures earlier in life, the patient had a complete loss of the premaxilla and a significant anterior maxillary bone defect. Clinical examination revealed partial adentia and significant dental compensations, preventing functional rehabilitation. A treatment plan was developed that included orthodontic preparation, alveolar bone reconstruction, orthognathic surgery, and implant-supported prosthetic rehabilitation. Vascularized bone transfer was considered as an alternative, but alveolar bone transport was selected due to its lower surgical complexity and morbidity. The procedure was performed using DO with hybrid distractors after interdental osteotomies, and gradual activation led to the successful formation of new bone and soft tissue within the defect. The distractors were removed six months after completion of the alveolar bone transport. One month later, dental implants were placed in the regenerated bone. Subsequently, orthognathic surgery was performed to correct the skeletal Class III malocclusion, followed by definitive prosthetic rehabilitation to achieve the desired outcome.

Conclusions

Alveolar bone transport using DO is an effective method for reconstruction of extensive premaxillary defects in patients with BCLP. This technique permits restoration of bone volume suitable for implant placement and allows comprehensive multidisciplinary rehabilitation in complex craniofacial cases.

Bowel Obstruction As a Sign of Intestinal Tuberculosis: Case Report

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Background

Intestinal tuberculosis is a rare form of extrapulmonary tuberculosis that can mimic other gastrointestinal disorders, such as Crohn's disease or malignancy, often leading to diagnostic delays.

Case Report

We report a case of a 39-year-old man who presented with severe abdominal pain, vomiting, and cessation of stool and gas passage. Physical examination revealed cachexia and diffuse abdominal tenderness, while laboratory tests demonstrated elevated inflammatory markers. Abdominal computed tomography suggested small bowel obstruction, possibly due to intestinal torsion. Emergency laparotomy was performed, revealing thickened intestinal loops and enlarged mesenteric lymph nodes. Histopathological examination confirmed granulomatous inflammation with caseation, and sputum culture was positive for Mycobacterium tuberculosis, although direct microscopy was negative. Chest radiography demonstrated pulmonary involvement. The patient was subsequently transferred to a tuberculosis reference center for initiation of anti-tuberculous therapy.

Conclusions

In summary, this case underscores the need to consider intestinal tuberculosis in the differential diagnosis of intestinal obstruction, particularly in patients with chronic symptoms, malnutrition, or suggestive radiological findings. It also highlights the diagnostic limitations of sputum microscopy and the crucial role of histopathological and culture-based confirmation. Multidisciplinary management—combining surgical intervention when indicated with prompt initiation of anti-tuberculous therapy—remains essential to achieving a good clinical outcome.

Combined CT And Endoscopy-Guided Thoracoscopic Extraction Of a Mediastinal Shrapnel Fragment With Esophageal Wall Repair In Combat Penetrating Chest Wound

Authors

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Background

Penetrating thoracic trauma with esophageal involvement is uncommon but time-critical. Diagnostic uncertainty is common when perforation is not evident and leak tests remain negative. Therefore, CT findings such as pneumomediastinum and a retained mediastinal fragment support targeted endoscopic assessment and timely source control. In our setting, esophageal injury accounts for up to 1.3% of penetrating chest wounds.

Case Report

A 46-year-old male sustained a combat shrapnel right-sided blind penetrating chest wound. Forward surgical care at 8h post-injury included chest radiography and FAST ultrasound, chest tube drainage for hemopneumothorax, and wound debridement. He remained hemodynamically stable during transfer to a specialized center. Contrast-enhanced multidetector CT showed a 22×7 mm metallic fragment in the mediastinum between the trachea and esophagus with pneumomediastinum, small right hemothorax, and soft-tissue emphysema. Video esophagogastroduodenoscopy (VEGD) demonstrated a localized (~10 mm) intramural hematoma with mucosal hemorrhages on the posterolateral mid-thoracic esophagus (~30 cm from incisors), without pleural air discharge during insufflation. Video-assisted thoracoscopy included pleurolysis, mediastinotomy, extraction of the fragment embedded in the esophageal wall, and layer-by-layer suturing of the submucosal, muscular, and adventitial layers. Intraoperative air-leak and methylene blue tests were negative, the pleural cavity was irrigated, and a 28 Fr drain was placed. Duration of surgery was 60 minutes. Postoperatively, the patient received antimicrobial therapy, analgesics, proton pump inhibitors, prokinetic treatment, and nasogastric tube feeding. Chest tube drainage was removed on day 4, and the patient was discharged on day 12 without early complications. At 4-week follow-up, the patient reported no dysphagia.

Conclusions

In combat penetrating thoracic trauma, negative leak tests in the presence of pneumomediastinum and a retained mediastinal foreign body do not exclude clinically significant esophageal wall injury. CT with VEGD can aid in making the decision to use minimally invasive source control. Thoracoscopic foreign-body extraction with layer-by-layer esophageal repair is a feasible organ-preserving option in selected stable patients at specialized levels of care. Written informed consent for publication was obtained.

Combined Plate And Suture Fixation For Traumatic Flail Chest In Combat-Related Polytrauma: A Case Report

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Background

The incidence of combat-related flail chest is 0.5-5%. The combination of floating rib fractures with severe abdominal trauma and Grade III shock creates significant surgical challenges. Extensive bone loss from blast injuries requires non-standard approaches. This clinical case demonstrates staged hybrid thoracoplasty, using titanium plates and steel cerclage, for severe bone deficiency post-blast injury, enabling framework restoration when standard methods of osteosynthesis are unfeasible.

Case Report

A 49-year-old male was hospitalized within 1 hour of an artillery strike. He had Grade III shock and combined blast injury. CT and FAST scans showed right-sided rib fractures (III-X) with a flail segment (V-VIII), hemopneumothorax, pulmonary and cardiac contusions, liver laceration (Moore III, Sg V-VIII), and diaphragmatic rupture. Stage 1 surgery (3h after injury): chest tube drainage, laparotomy, diaphragmatic suturing, "sandwich" liver packing, and temporary laparostomy. Stage 2 surgery (27h after injury): Within the "window of opportunity" (stabilized lactate/coagulation), a 60-minute thoracoplasty was performed. Ribs VII-IX were fixed with titanium plates; rib VI was secured via hybrid steel cerclage due to bone loss. Integrity was restored by myoplasty. Stage 3 surgery (75h after injury): Second-look revision, pack removal, and definitive abdominal closure. Postoperative care included broad-spectrum antibiotics and multimodal analgesia. Chest drainage tubes were removed on days 4–5; sutures on day 10. Mechanical ventilation lasted 5 days. Day 5: 3D-CT confirmed thoracic cage stability. The patient was discharged in satisfactory general status after 18 days of hospital stay.

Conclusions

Damage control surgery (staged surgical management) effectively decouples hemorrhage control from complex reconstruction, enhancing survival in critical polytrauma. Thoracoplasty delayed by 24 hours is a safe strategy to prevent the lethal triad, even with severe concomitant abdominal injuries. Hybrid fixation (plates + cerclage) provides superior stability in cases of extensive comminution or bone deficiency where standard screws are unfeasible. Early stabilization optimizes respiratory mechanics and pain relief, thereby reducing complications and duration of mechanical ventilation.

Fetus-in-fetu Associated With Giant Omphalocele And Double-Outlet Right Ventricle: A Case Report

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Background

Fetus-in-fetu is an extremely rare congenital anomaly with an estimated prevalence of 1 in 500000 live births. It arises from an embryonic developmental defect - incomplete division of the early bastocyst. Consequently, a malformed parasitic fetus develops within the host twin. Despite advanced organogenesis, it remains incapable of survival outside the host's body.

Case Report

We present the case of a male neonate delivered by a cesarean section at 38 weeks of gestation with prenatally detected giant omphalocele and double-outlet right ventricle (DORV). Postnatal physical examination revealed a parasitic twin structure, later diagnosed as fetus-in-fetu, which included dysplastic upper limbs, normally developed lower limbs, pelvis and male external genitalia. Preoperative computed tomography with three-dimensional reconstruction confirmed the presence of bone structures and partially developed internal organs of the parasitic fetus. On day 4th of life, the neonate underwent a complex surgery: resection of the parasitic twin structures with closure of the omphalocele, aortic arch reconstruction and pulmonary artery banding. Surgical correction of the double-outlet right ventricle was scheduled for the 13th month of life. Postoperative histopathological examination revealed well-differentiated tissues of the parasitic fetus, which allowed the exclusion of teratoma and establishment of the final diagnosis. The patient was discharged home in good general condition on the 28th day of life, 4 weeks after the resection surgery.

Conclusions

The presented case illustrates the complex diagnostic and therapeutic challenges associated with the extremely rare, multisystem congenital anomaly of fetus-in-fetu coexisting with an extensive omphalocele and DORV. Successful management in such cases requires thorough prenatal diagnostics, multidisciplinary postnatal care, and individually tailored surgical strategy.

Functional Limb Salvage After Severe Post-Hemipelvectomy Deformities Using a Three-Stage Reconstructive Strategy

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Background

Internal hemipelvectomy leads to severe long-term biomechanical consequences, while restoration of functional ambulation in adolescents with multi-level deformities remains rarely described. Reports detailing staged integration of distraction osteogenesis and custom pelvic reconstruction after oncologic pelvic resection are limited. This case demonstrates a coordinated strategy addressing complex post-oncologic sequelae.

Case Report

A 16-year-old male presented 8 years after type I pelvic resection for Ewing sarcoma with severe functional impairment: 10-cm limb-length discrepancy, valgus malalignment, equinus contracture, and peroneal nerve palsy. Imaging revealed pelvic deformity, acetabular dysplasia, and proximal femoral asphericity. Due to extreme shortening and altered load transfer, a staged reconstructive strategy was chosen. Stage 1 involved Ilizarov distraction osteogenesis with 7.5-cm tibial-fibular lengthening and axis correction. Stage 2 consisted of custom-made pelvic implant reconstruction with total hip arthroplasty using a dual-mobility system to restore hip biomechanics and stability. Stage 3 addressed residual equinus deformity using further lengthening and Hoke tenotomy. At 12-month follow-up, the patient achieved independent full weight-bearing ambulation with marked functional improvement (MSTS score 80%), without knee hyperextension

Conclusions

This case illustrates that carefully planned staged biological–prosthetic reconstruction can restore ambulatory function even in severe long-term post-hemipelvectomy deformities. Biomechanical optimization prior to pelvic reconstruction may improve outcomes in selected patients with extreme limb-length discrepancy and axial malalignment.

Imaging Versus Evidence; Avoiding Unnecessary Nephroureterectomy In a Suspected Upper-tract Urothelial Carcinoma Case

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Background

Upper tract urothelial carcinoma (UTUC) is a rare but aggressive cancer, accounting for 5–10% of urothelial tumors. Its diagnosis is challenging, as cross-sectional imaging features—such as filling defects, urothelial thickening, and contrast enhancement—can mimic benign conditions like chronic inflammation or cystic lesions, particularly in older patients or those with a history of urinary tract disorders

Case Report

introduction; Upper-tract urothelial carcinoma (UTUC) can be challenging to diagnose because cross-sectional imaging may resemble benign inflammatory or cystic conditions. Typical CT features include irregular filling defects, wall thickening, and contrast enhancement. EAU guidelines recommend risk-stratified management of suspected UTUC; diagnostic ureteroscopy (URS) with selective cytology is advised when imaging and/or voided cytology are insufficient for diagnosis or risk stratification, while radical nephroureterectomy (RNU) remains standard for high-risk disease. We present a case in which imaging strongly suggested UTUC, but minimally invasive work-up supported a benign inflammatory process, avoiding unnecessary RNU. Method; An 80-year-old man was referred for suspected UTUC based on CT showing left renal parenchymal thickening, a dilated left renal pelvis, and contrast filling defects, with similar findings present on scans since 2017. Given the high radiologic suspicion, a diagnostic URS with in-situ selective cytology washings was performed before considering RNU. Results; Endoscopically, multiple cystic and polypoid lesions were seen without exophytic tumor formation. Washings revealed atypical urothelial cells (Paris III) in an inflammatory background, consistent with reactive atypia rather than malignancy. On this basis, RNU was deferred.

Conclusions

This case underscores the diagnostic pitfall of relying on cross-sectional imaging alone to distinguish advanced inflammatory pseudotumors/pyelitis from UTUC. Performing URS with cytology in a patient with highly suggestive CT findings provided sufficient evidence to avoid radical surgery and preserve renal function. In selected patients with CT findings highly suggestive of UTUC, diagnostic URS with contextualized cytology can prevent unnecessary RNU by identifying benign inflammatory mimickers. Current EAU guidance supports URS when imaging/cytology are insufficient to confirm diagnosis or risk-stratify, while reserving RNU for high-risk disease.

Internal Hernia With Necrosis: A Rare And Life-Threatening Complication Following Roux-en-Y Gastric Bypass surgery.

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Background

Roux-en-Y Gastric Bypass (RYGB), once considered the bariatric "gold standard," is now routinely performed as a revision procedure following sleeve gastrectomy. A rare (1–5%), yet potentially fatal complication of this method is the development of an internal hernia. It is particularly insidious because it often remains asymptomatic for months or years before rapidly leading to bowel ischemia and necrosis, as illustrated by this case.

Case Report

A 41-year-old female patient was transferred from the Emergency Department due to symptoms of acute abdomen, refractory to analgesics, persisting for 24 hours. Laboratory tests revealed decreased red blood cell parameters and an elevated C-reactive protein (CRP) level. Computed tomography (CT) demonstrated features of high-level intestinal obstruction. Two years prior, the patient had undergone Roux-en-Y Gastric Bypass as a revision of a sleeve gastrectomy. An emergency surgical intervention was decided upon. Laparotomy revealed strangulated intestinal loops with established necrosis. The necrotic intestinal segment was resected with a margin of healthy loops, and an entero-enteric anastomosis was performed. Due to her critical condition, the patient was admitted to the Intensive Care Unit (ICU). Within two days, her general condition improved - the patient was extubated and no longer required circulatory support. Following the transition from parenteral to oral nutrition, recurrent gastrointestinal bleeding occurred. The bleeding was managed conservatively with blood product and plasma transfusions, resulting in clinical improvement. Upon cessation of bleeding, the patient was discharged home in good general condition.

Conclusions

Internal hernia with necrosis is a rare complication of Roux-en-Y Gastric Bypass that may manifest even long after the procedure and is potentially fatal. Its progression can be rapid. Because of that, post-operative patients must remain highly vigilant regarding persistent, strong abdominal pain and must not underestimate these symptoms.

Intramuscular Myxoma of the Posterior Cervical Paraspinal Muscles: A Rare Case Report

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Background

Intramuscular myxoma is a rare benign mesenchymal tumor that typically develops within large skeletal muscles. Involvement of the cervical paraspinal region is exceptionally uncommon. It may be challenging both diagnostically and surgically due to the complex anatomy of the posterior neck and the potential for infiltrative intramuscular spread.

Case Report

A 65-year-old woman presented with a painless, gradually enlarging mass in the left posterior cervical region over a period of 6 months. She remained asymptomatic, with no other complaints. Clinical examination identified a firm, well-defined paraspinal neck mass associated with ipsilateral cervical lymphadenopathy. Surgical excision was performed under general anesthesia. After elevating a skin–subcutaneous flap, the surgeon dissected the splenius capitis and longissimus capitis muscles, revealing a solid, gray-white, partially encapsulated lesion within the paraspinal muscles. Because of adhesions and infiltrative extension into adjacent muscle fibers, the tumor was removed with a combination of enucleation and limited marginal excision. Additionally, enlarged lymph nodes from level IIA were excised. Histopathological analysis revealed a hypocellular tumor with extensive myxoid stroma and sparse spindle-shaped cells, without evidence of nuclear atypia, necrosis, or mitotic activity, confirming the diagnosis of intramuscular myxoma.

Conclusions

Although uncommon, intramuscular myxoma should be included in the differential diagnosis of posterior cervical paraspinal masses. Despite its benign histological nature and often well-demarcated intraoperative appearance, this tumor may extend into surrounding muscle tissue, increasing the risk of local recurrence if excision is incomplete. Therefore, meticulous surgical planning and comprehensive resection are essential to achieve optimal outcomes.

Percutaneous Cholecystostomy as Initial Management for Acute Cholecystitis in a High Risk Patient: A Case Report

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Background

In elderly individuals, acute cholecystitis ranks among the leading causes of emergent surgical evaluation and admission. Laparoscopic cholecystectomy is the standard definitive treatment for this condition, but it may be too high-risk for critically ill patients with significant comorbidities. In such cases, percutaneous cholecystostomy can be used as a less invasive alternative to relieve acute gallbladder inflammation. However, the role and long-term efficacy of percutaneous cholecystostomy in managing acute cholecystitis remains a subject of ongoing debate.

Case Report

A 78-year-old patient presented with acute calculous cholecystitis in a severely compromised clinical condition that progressively deteriorated over the following three days. Given his extensive comorbidities and high surgical risk, an urgent percutaneous cholecystostomy was performed as the initial treatment to decompress the gallbladder. The procedure successfully alleviated the acute symptoms, but the post-procedural course was complicated by a subcapsular liver hematoma and displacement of the cholecystostomy tube. After conservative management and stabilisation, the patient underwent definitive treatment with laparoscopic cholecystectomy four months later. The postoperative course proceeded without complications, and the patient experienced a favourable clinical outcome.

Conclusions

Percutaneous cholecystostomy can serve as an effective short-term management option for critically ill patients with acute cholecystitis, helping to stabilise them and bridge toward later definitive surgery. It provides a means of controlling gallbladder inflammation in high-risk situations; however, the decision to employ this approach should be individualised, guided by the surgeon’s clinical judgment and the patient’s overall condition.

Persistent Bile Leakage After Laparoscopic Cholecystectomy for Gangrenous Cholecystitis: Successful Conservative Management

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Background

Gangrenous cholecystitis is an advanced form of acute calculous cholecystitis and is associated with higher postoperative complication rates. Persistent bilious drainage after laparoscopic cholecystectomy is uncommon and raises concern for a postoperative biliary complication, such as ongoing bile leak. When the patient remains clinically stable, and imaging does not show obstruction or intra-abdominal collections, the choice between early invasive intervention and continued conservative management may be challenging.

Case Report

A 68-year-old male patient arrived at the emergency room with acute right upper quadrant pain and nausea. After a computed tomography scan, the patient was diagnosed with acute calculous cholecystitis. Laparoscopic cholecystectomy was performed, revealing gangrenous cholecystitis, after which two abdominal drains were placed. In the postoperative period, bilious drain output peaked at ~300 mL/day. Given the ongoing bile leakage, the patient remained clinically stable and afebrile, with normalization of inflammatory markers and bilirubin levels. Repeated abdominal ultrasound showed no bile duct dilatation or intra-abdominal fluid collection. Magnetic resonance cholangiopancreatography was performed and showed no biliary obstruction, no significant ductal dilatation, and no clear site of active leak. Conservative management was continued with external drainage, wound care, and close clinical follow-up. Drain output gradually decreased over the following days and resolved without clinical deterioration.

Conclusions

This case illustrates that persistent bile leakage after laparoscopic cholecystectomy because of gangrenous cholecystitis does not require immediate invasive intervention. In cases where patients are clinically stable and radiological examinations show no evidence of bile duct obstruction or intra-abdominal collections, conservative treatment with close monitoring may be a safer and more effective strategy, facilitating spontaneous resolution and avoiding unnecessary procedures.

Reconstruction of Long-Standing Recurrent Type IV Bony Ankylosis with Massive Sclerotic Remodeling Using a Custom-Made Total Joint Prosthesis and Autogenous Fat Grafting - Case Report

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Background

Temporomandibular joint (TMJ) ankylosis, particularly the recurrent Sawhney Type IV, characterized by extensive sclerotic remodeling, represents a clinical end-stage condition associated with exceptionally low therapeutic success rates when managed via conventional modalities. Standard surgical procedures, such as gap or interpositional arthroplasty, may exhibit significant fallibility in cases involving profound anatomical complexity due to the formidable risk of re-ankylosis and the inherent inability to restore physiological biomechanics. In such intricate clinical scenarios, the implementation of patient-specific engineering solutions is imperative to achieve definitive and functional reconstruction of the stomatognathic system.

Case Report

A 38-year-old female presented with significant restricted mandibular mobility (MIO: 12 mm) and facial asymmetry. Her history, originating in infancy, included failed distraction osteogenesis and silicone plate interposition, leading to implant extrusion and fibrosis. Preoperative 3D-CT confirmed Sawhney Type IV ankylosis with complete joint space obliteration and massive sclerotic masses. The surgical protocol utilized a "double-incision approach" (preauricular and submandibular). Following radical resection of the ankylotic block via piezosurgery, reconstruction was performed using a CAD/CAM-engineered individual total joint prosthesis (TJR) designed for the patient's specific anatomy ("implant-to-bone" strategy). To mitigate heterotopic ossification, the peri-prosthetic dead space was obliterated with an autogenous fat graft. At the two-month follow-up, MIO increased to a 27 mm. Notably, the procedure restored lateral mandibular excursions, which were preoperatively absent. The patient reported substantial improvement in quality of life, specifically regarding ease of mastication and solid food consumption. Preoperative chronic discomfort and tissue tension were fully resolved (VAS 0).

Conclusions

The application of custom-made CAD/CAM technology combined with autogenous fat grafting yielded positive outcomes in this case. This specific strategy proves effective in minimizing re-ankylosis risk and facilitating early rehabilitation. Even in cases of significant anatomical obliteration, this approach enables the restoration of joint function and mobility. The synergy of personalized engineering and biological barriers represents a superior pathway for functional recovery in patients with Sawhney Type IV ankylosis and sclerotic remodeling.

Surgery Session

Coordinators:
Maria Kienitz, Karolina Lach

Honorary Patronage:
Rector for Internationalization, Promotion and Development of the University of Warsaw
Prof. dr hab. Michał Grąt

Assessing Surgical Proficiency In Liver Surgery Across The Learning Curve Using TOLS – A Single-Centre Observational Cohort Study

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Introduction

Textbook Outcome in Liver Surgery (TOLS) is a composite benchmark integrating key perioperative endpoints into a single indicator of optimal surgical care, based on an International Delphi Consensus. It can also serve as a metric for evaluating learning curve (LC) in liver surgery, reflecting both surgical efficiency and safety.

Aim of the study

To assess textbook outcomes (TOLS) in laparoscopic liver resection (LLR) across different phases of the learning curve.

Materials and methods

This retrospective, single-centre observational cohort study was based on a prospectively maintained institutional database of patients who underwent laparoscopic liver resection (LLR) at the Department of General, Transplant and Liver Surgery, Central Clinical Hospital of MUW between Feb 2010 and Dec 2025. TOLS was defined as the achievement of the following: no major intraoperative incidents; no severe bile leak; no liver failure; no 90-day complications, readmissions or mortality; clear R0 margin. The learning curve (LC) threshold was defined as completion of 25 LLRs.

Results

Of the 536 patients in the overall cohort, 496 with complete data were included. A total of 364 out of 496 (73.4%) achieved TOLS. TOLS rates in the entire cohort showed no significant change across LC phases (203/282, 72.0% vs 161/214, 75.2%; p=0.473) and individual components (bile leak, post-hepatectomy liver failure, major complications, readmission, 90-day mortality, and R1 margins) also remained stable. Operative duration (240 min (IQR: 180–360) vs 250 min (IQR: 180–343.8); p=0.932) and intraoperative blood loss (150 mL (IQR: 100–300) vs 150 mL (IQR: 100–300); p=0.601) remained stable. However, post-LC conversion rates decreased (35/282, 12.4% vs 13/214, 6.1%; p=0.021), despite a higher proportion of major resections (45/282, 16.0% vs 57/214, 26.6%; p=0.005). In major resections (n=102), TOLS was achieved in 70/102 patients (68.6%), and remained stable across LC (31/45, 68.9% vs 39/57, 68.4%; p=1.000). However, experience significantly improved intraoperative outcomes: operative time (480 vs 370 min; p=0.010, blood loss (400 vs 250 mL; p=0.019) and conversion rates (12/45, 26.7% vs 5/57, 8.8%; p=0.030) all decreased significantly.

Conclusions

Textbook outcome in liver surgery (TOLS) is a practical composite metric for assessing surgical performance and learning curves. In high-volume hepatobiliary centre, overall quality remains stable throughout different learning phases, though the benefits of experience are observed in technically demanding resections.

Beyond Weight Loss: Mental Health After Metabolic Bariatric Surgery

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Introduction

Obesity is a chronic, progressive disease associated not only with metabolic and cardiovascular complications but also with an increased prevalence of mental and emotional disorders. Depression, impaired emotional awareness, and difficulties in emotion regulation are common in patients with severe obesity and contribute to reduced quality of life and impaired treatment adherence. Surgical treatment of obesity provides sustained weight loss and remission of comorbidities; however, its impact on psychological and emotional functioning remains an important clinical issue.

Aim of the study

The aim of this study was to evaluate the effect of metabolic bariatric surgery on depressive symptoms, alexithymia, and emotion regulation using standardized psychometric tools.

Materials and methods

This prospective observational study included 80 adult patients undergoing surgical treatment for obesity. Psychological assessment was performed before and after the surgery using the Beck Depression Inventory (BDI), Toronto Alexithymia Scale (TAS-20), and Difficulties in Emotion Regulation Scale (DERS). Pre- and postoperative results were compared using non-parametric statistical tests, with data presented as medians and interquartile ranges. Associations between psychological outcomes and percentage of excess weight loss (%EWL) were also analyzed.

Results

After the surgery, a significant reduction in depressive symptoms was observed, accompanied by a shift toward lower depression severity categories. A statistically significant improvement in emotional regulation was demonstrated, with total DERS scores decreasing from 77 [61.5–92.5] preoperatively to 67 [59.25–81.5] postoperatively ($p = 0.001$). Significant improvements were noted in several DERS subscales, particularly those related to emotional awareness, impulse control, and access to effective regulation strategies. Alexithymia scores also decreased significantly, with total TAS scores declining from 45.5 [36–57] to 40 [34.25–50] ($p = 0.035$). Improvement was observed mainly in Factor II, reflecting enhanced ability to identify and describe emotions. No significant correlations were found between %EWL and changes in psychological measures.

Conclusions

Metabolic bariatric surgery is associated with significant improvement in depressive symptoms and selected aspects of emotional functioning, suggesting psychological benefits adding to better quality of life after surgical treatment of obesity.

From OR to OSCE: Associations Between Active Operating Room Participation, Surgical Skill Confidence, and Career Interest

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Introduction

Objective Structured Clinical Examinations (OSCEs) are widely used to assess core surgical competencies in undergraduate medical education. While time spent in the operating room (OR) is central to training for the OSCEs, many medical students report limited confidence and preparedness

Aim of the study

To examine how OR exposure influenced final-year medical students' confidence in basic surgical skills, perceived OSCE readiness, and interest in pursuing a surgical career

Materials and methods

A cross-sectional questionnaire was provided to final year medical students. The questionnaire explored OSCE experience, duration of OR exposure, participation in surgical shadowing and frequency of active engagement during procedures. Students rated confidence in five OSCE-relevant surgical skills (scrubbing and gowning, knot tying, suturing, instrument handling, and assisting) using a 5-point Likert scale. Additionally, items such as satisfaction with surgical exposure, perceived adequacy of the surgical curriculum, changes in interest in surgery as a career, and factors influencing career choice were also assessed. Associations between OR engagement, confidence, perceived OSCE preparedness, and career interest were explored

Results

Students described mostly observational roles within the OR, with wide variation in quality and quantity of OR exposure. Higher levels of active engagement within the OR were associated with greater perceived confidence across all assessed surgical skills, greater perceived preparedness for OSCE tasks and were more likely to report increased interest in pursuing a surgical career. In contrast, total hours spent in the OR alone demonstrated a weaker association with confidence and perceived preparedness. Overall, feedback yielded a desire for further OSCE simulation, and active participation within the OR. Many respondents felt that the current surgical curriculum did not adequately prepare for clinical surgical responsibilities, despite OSCE success

Conclusions

Findings suggest that the quality of OR exposure, rather than time spent observing, plays an important role in confidence, perceived OSCE performance, and career interest. In preparation for OSCEs, surgical teachings should prioritise structured opportunities for hands-on involvement, supervision, and feedback to better align workplace learning with OSCE assessment and clinical practice. Meaningful OR participation, rather than passive observation, appears to enhance technical skill development, OSCE readiness and surgical career interest

Magnetic Instruments Improves Treatment Outcomes for Combat Injuries to Soft Tissues

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Introduction

In the structure of modern combat surgical trauma, firearm injuries (FIs) to soft tissues account for up to 68.2%, determining the level of disability and the duration of rehabilitation of the victims (Tsymbalyuk V.I., 2021). The evolution of weapons has led to a pathomorphosis of the wound process, requiring a review of dogmatic approaches to the mandatory radical surgical treatment of all types of wounds (Gracie R. Baum et al., 2022). Therefore, today the focus is on intraoperative magnetic navigation as a means of minimizing surgical aggression in areas of molecular shock.

Aim of the study

To prove the efficacy of magnetic instruments (MIs) in treatment for combat injuries to soft tissues.

Materials and methods

A comprehensive retrospective and prospective analysis of the treatment outcomes of 388 combatants (men, mean age 38.3±2.3 years) with FIs to soft tissues was done. Patients were divided into three groups according to the surgical tactics: Group I — 114 (29.3%) wounded, who did'nt require primary surgical wound debridement (PSWD), Group II — 148 (38.1%) wounded who underwent PSWD, and Group III — 126 (32.6%) who underwent reconstructive-plastic surgery. Magnetic diagnostic instrument (MDI) and universal magnetic instrument (UMI) were used in the treatment of patients. Statistical analysis was done using the Statistica 10.0 package.

Results

MDI was successfully used to diagnose and remove ferromagnetic foreign bodies (FFBs) in 96 (24.7%) wounded with superficial injuries to soft tissues, UMI - in 37 (9.5%) wounded with deep injuries to soft tissues. The use of both MIs allowed the extraction of FFBs in 34.2% of the wounded without incisions, based on the effect of magnetic induction and the "adhesion symptom." This reduced the duration of surgery by 25-30% and blood loss. The clinical efficacy of MIs was confirmed by the dynamics of the hospital stay: in the group I it was 1.9±0.3 days, in group II - 7.2±1.2 days, and in group III - 24.5±3.7 days. In 112 (28.8%) cases complete wound healing was achieved without surgery.

Conclusions

MIs in combat injuries to soft tissues allows to remove a greater number of FFBs, reduces the duration and aggressiveness of surgery, reduces additional tissue damage, pain and patient's hospital stay, decreases the number of complications, and therefore improves treatment outcomes.

No funding.

Predictors of Acute Kidney Injury Following Laparoscopic Liver Resection in Oncology Patients: Single-Center Retrospective Analysis

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Introduction

Laparoscopic liver resection (LLR) is recognized as a standard approach for selected patients with primary and secondary hepatic malignancies. Despite its minimally invasive nature, LLR remains associated with postoperative complications, including acute kidney injury (AKI). Renal injury can be caused by intraoperative factors, such as prolonged operative time and the need for vasopressor support, as well as pre-existing kidney disease. However, data on predictors of AKI following LLR remain limited.

Aim of the study

The aim of this study was to identify predictors of AKI in patients undergoing LLR for oncological indications.

Materials and methods

This retrospective cohort study was based on a prospectively maintained institutional database of patients who underwent LLR between February 2020 and December 2025. Data were collected until postoperative day 5 or discharge. Occurrence of AKI and its severity were defined according to KDIGO criteria. To identify independent predictors of AKI, univariate and multivariate regression analyses were performed. The level of significance was set at 0.05.

Results

A total of 467 patients underwent LLR during the study period. Among them, 406 patients underwent surgery for primary or secondary liver malignancies and were included in the final analysis. Postoperative AKI occurred in 71 of these patients (17.5%). In univariable analysis, higher preoperative creatinine levels, extent of resection, male sex, longer operative time, greater intraoperative blood loss, conversion, additional intraoperative interventions (cholecystectomy and lymphadenectomy), blood transfusion, and intraoperative norepinephrine use were associated with AKI. In multivariable analysis, longer operative time (per 60-minute increase: OR 1.52, 95% CI 1.34–1.73; $p<0.001$) and intraoperative norepinephrine administration (OR 3.18, 95% CI 1.71–5.90; $p<0.001$) were identified as independent predictors.

Conclusions

In this retrospective cohort, longer operative time and intraoperative norepinephrine administration were identified as independent factors associated with postoperative AKI following laparoscopic liver resection for oncologic indications. These findings highlight potentially modifiable perioperative factors that may influence renal outcomes.

Surgeons of Tomorrow: Impact of a Vascular Surgery Summer School

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Introduction

There are limited opportunities for medical students to gain early exposure to specialised surgical fields. Immersive surgical experiences possess the potential to provide practical insights, shape career aspirations and inspire the next generation of surgeons prior to graduation

Aim of the study

The programme aim was to assess the impact of a one-week intensive vascular surgery summer school (VSSS) on knowledge, practical skills and career decisions of medical students

Materials and methods

Medical Students in 4th and 5th year from European Universities were invited to partake in the programme, led by a team of vascular surgeons. The programme consisted of workshops (Suturing, Endovascular Procedures, Vascular Imaging), outpatient exposure, simulation centre scenarios, case discussions and assistance in the operating room (OR). One-on-one mentorship from vascular surgeons was provided to offer personalised guidance and career advice throughout the week

Results

All students reported significant improvements in technical skills and clinical confidence. Hands-on workshops and OR experience were cited as the most valuable aspect of the programme. Students emphasised the “support” and “approachability” of the vascular team as a key driver in fostering “an open and collaborative environment”. Mentorship was highlighted as particularly influential in shaping career aspirations with all reporting that the programme influenced their decision to pursue a career in vascular surgery. Attendance was perceived as “extremely beneficial” to those looking to enhance their career networking. Feedback on improvement yielded a desire to extend the programme further, with more advanced surgical workshops and OR exposure offered

Conclusions

Overall feedback indicates that providing a programme focused on personalised teaching and proactive workshops greatly bridges the gap between theory and practice. Students reported that consistent mentorship throughout the programme significantly enhanced competency in combining theoretical knowledge with practical applications. The VSSS successfully demonstrated the value of specialty-focused education in medical training, with unanimous reports of it “exceeding expectations” and highly recommended by all. Early exposure to surgical subspecialties within an immersive and mentorship-driven programme has the potential to inspire and shape the surgeons of tomorrow. Guidance from experienced surgeons coupled with personalised teaching experiences fosters continued advancement and passion in their field

To Drain or Not to Drain? Spinal Cord Protection Without Cerebrospinal Fluid Drainage During Branched Endovascular Aortic Repair

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Introduction

Spinal cord ischemia (SCI) remains a relevant complication after complex endovascular aortic repair, including thoracic, fenestrated, and branched endovascular procedures (TEVAR/F/BEVAR). Although cerebrospinal fluid drainage (CSFD) is commonly used for spinal cord protection, SCI rates remain variable, and CSFD is associated with procedure-related morbidity.

Aim of the study

This study aimed to prospectively evaluate neurological outcomes after BEVAR performed without routine CSFD and to interpret these outcomes in the context of published meta-analyses, with emphasis on physiologic spinal cord protection strategies.

Materials and methods

A prospective observational analysis included 78 consecutive patients undergoing BEVAR between 2020 and 2025, including procedures performed during the COVID-19 pandemic. Data were collected prospectively after each procedure, with a follow-up of 12 months. The primary endpoint was permanent paraplegia; secondary endpoints included all SCI events (paraplegia or paraparesis). Spinal cord protection was based on strict hemodynamic management with a target mean arterial pressure (MAP) >100 mm Hg, optimization of oxygen delivery with a target hemoglobin level >10 g/dL, and standardized antithrombotic therapy consisting of dual antiplatelet treatment and intra- and postoperative unfractionated heparin infusion. Routine CSFD was not employed.

Results

Permanent paraplegia occurred in one patient (1.28%), an 87-year-old individual with significant perioperative anemia (hemoglobin 9.6 g/dL). No additional cases of paraplegia or paraparesis were observed during hospitalization or throughout follow-up. Among patients in whom hemoglobin ≥10 g/dL and stable arterial blood pressure (MAP > 100 mm Hg) were maintained, no SCI events occurred. The observed paraplegia rate lies within the lower range reported in published meta-analyses of endovascular TEVAR and F/BEVAR procedures employing CSFD, which report SCI rates of approximately 3–10% and permanent paraplegia rates of 2–5%. Omission of CSFD avoided drain-related complications described in these analyses.

Conclusions

In this prospective BEVAR cohort with one-year follow-up, omission of routine CSFD was not associated with an increased risk of paraplegia. A spinal cord protection strategy focused on maintaining MAP >100 mm Hg, adequate hemoglobin levels, and standardized antithrombotic therapy appears effective and supports a selective rather than routine use of CSFD during BEVAR.

Transplant Renal Artery Stenosis - managment and impact on graft function

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Introduction

Transplant renal artery stenosis (TRAS) is a significant and potentially reversible vascular complication, with incidence ranging from 1% to 25%, following kidney transplantation. It is a substantial cause of secondary hypertension, and may significantly affect graft function, potentially leading to graft loss. Therefore, surgical correction is an important part of TRAS treatment. Due to good results and its minimally invasive character percutaneous transluminal angioplasty (PTA), with the possibility of stent implantation, is currently considered the intervention of choice.

Aim of the study

This retrospective single-center study aimed to evaluate treatment strategies of TRAS and assess the outcomes of endovascular procedures with particular focus on graft function and patient quality of life.

Materials and methods

Between 2014 and 2025, a total of 21 patients diagnosed with TRAS underwent percutaneous transluminal angioplasty (PTA) followed by stent implantation in 19 out of 21 cases.

Results

Percutaneous transluminal angioplasties (PTA) and stent implantations were performed in patients presenting with stenosis at the anastomosis or renal artery of the graft, distal to the anastomosis. Median serum creatinine levels at the time of TRAS diagnosis were: 2,24 mg/dl [0,78-4,24 mg/dl]. At discharge, the levels decreased to: 1,68 mg/dl [0,78-3,28 mg/dl; P1<0,022]. Median glomerular filtration rate (eGFR) at the time of TRAS diagnosis was: 36,55 ml/min [15-106 ml/min]. At discharge the levels improved to: 50,33 ml/min [22-101 ml/min; P2<0,01]. The follow-up was performed after two periods, at 6 and 12 months. Restenosis was observed in one patient (4,55%) at 3 months after the procedure and was treated with PTA and additional stent implantation. There were no graft failures observed.

Conclusions

Percutaneous transluminal angioplasty (PTA) is a standard of care in renal artery stenosis (TRAS), demonstrating consistent efficacy. The endovascular interventions led to significant improvement in renal function, as evidenced by decreased median levels of creatinine and increased median levels of eGFR, following treatment. Moreover, the procedure was associated with a favourable safety profile, with no instances of graft loss and the complications were infrequent and manageable. These findings further support PTA, with possible stent implantation as the primary therapeutic approach for TRAS. By maintaining and improving graft function, PTA contributes to long-term renal transplants success.