



The 3rd International Online Conference on Clinical Medicine

17-19 November 2025 | Online



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The 3rd International Online Conference on Clinical Medicine

17–19 November 2025 | Online



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Prof. Dr. Francisco Guillén Grima

Prof. Dr. Kent Doi

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Welcome from the Chairs

Dear Colleagues,

It is a great pleasure to welcome you to the 3rd International Online Conference on Clinical Medicine (IOCCM 2025), to be held from **17 to 19 Nov 2025, CET, online**.

The goal of this conference is to enable scientists to present their latest research in the field of clinical medicines and engage in discussions with the scientific community worldwide. We invite scientists, researchers, and healthcare professionals to contribute and share their findings in the following areas, including but not limited to:

- Cardiology & Cardiovascular Medicine
- Nephrology & Urology
- Emergency Medicine
- Nuclear Medicine & Radiology
- General Surgery
- Clinical Rehabilitation
- Pulmonology
- Anesthesiology

All submitted abstracts will undergo MDPI's standard peer-review procedure. After the conference, authors are invited to submit a full proceedings paper (5-9 pages), which will be published in the *Medical Sciences Forum*. The publication of the proceedings will be **free of charge**.

Additionally, selected contributions will have the opportunity to be submitted to the *Journal of Clinical Medicine* (ISSN: 2077-0383; Impact Factor: 2.9; ranked 65/332, Q1 in "Medicine, General & Internal") with a **20% discount** on the publication fee.

To acknowledge the support of the conference's esteemed authors and recognize their outstanding scientific accomplishments, we are pleased to announce that the conference will provide **six awards**, including Best Oral Presentation Awards and Best Poster Awards. The winner will receive a certificate and **200 CHF each**.

We look forward to your participation in this exciting event.



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Journal of *Clinical Medicine*

Journal of Clinical Medicine (ISSN 2077-0383) is an international, peer-reviewed, open access journal on clinical and pre-clinical research. It publishes article types including Research Papers, Reviews, Editorials, Communications, etc. Our aim is to encourage scientists to publish their experimental and theoretical results in as much detail as possible. The full experimental details must be provided so that the results can be reproduced.

There is, in addition, a unique feature of this journal: it accepts studies showing meaningful but negative results. While there are many journals that focus on clinical studies, only a few of them actively accept negative results. As a result, most negative data end up not being in the public domain even if the data were meaningfully negative and the study well designed. By accepting those negative results, our journal encourages scientists to share those data so that they would not need to repeat the experiments that somebody else has already carried out.

Impact Factor: 2.9 (2024); 5-Year Impact Factor: 3.3 (2024)

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Program at a Glance

	Day 1	Day 2		Day 3
Morning	Session 6. Clinical Rehabilitation	Session 3. Emergency Medicine		Session 7. Pulmonology
Afternoon	Session 1. Cardiology & Cardiovascular Medicine	Session 2. Nephrology & Urology (Parallel session)	Session 4. Nuclear Medicine & Radiology (Parallel session)	Session 5. General Surgery

IOCCM 2025 Program

17 November 2025 (Monday)

Session S6. Clinical Rehabilitation

Time: 9:00 CET, Basel | 03:00 EST, New York | 16:00 CST Asia, Beijing

Time in CET	Speaker	Title
9:00–9:10	<i>Welcome from the Event Chair Prof. Dr. Kent Doi</i>	
9:10–9:20	<i>Welcome from the Session Chairs Session S6. Clinical Rehabilitation Prof. Dr. Axel Brandes & Prof. Dr. Indre Bileviciute-Ljungar</i>	
09:20–09:45	Prof. Dr. Ann Dorthe Zwisler Invited Speaker	Rehabilitation as Part of Integrated Care in Heart Failure—State of the Art Lecture
9:45–10:00	Daniel Ebubechukwu Ekwueme	Age-Related Variations in Sleep Duration and Quality Before, During, and After Stroke Among Hospitalised Stroke Patients
10:00–10:15	Diego Primavera	Virtual Reality in Cognitive Remediation for Bipolar Disorder: A Paradigm Shift in Rehabilitation
10:15–10:30	Ana Laura Claraz de Souza Ferreira	Hospitalizations due to Stroke and Access to Physiotherapy Rehabilitation in the Brazilian Unified Health System (SUS): A 10-Year Analysis (2015–2024)
10:30–10:45	Rita Chiaramonte	From Local Data toward Global Mapping of Disability Care: Prescriptive Trends for Bedridden Paediatric Patients in Sicily, Italy
10:45–11:00	Auwal Abdullahi	Determination of Factors that Influence Self-efficacy and Quality of Life in Patients with Stroke: An Observational Study
11:00–11:15	Sergio M Navarro	Effects of Online Physical Therapy Interventions on Aged Adult Health to Reduce Falls: A Systematic Review of Mobile Health Applications in Rehabilitation
11:15–11:30	Karolina Średzińska	Analysis of the Prevalence of Postural Defects and Physiotherapeutic Management in Patients on the Autism Spectrum

Session S1. Cardiology & Cardiovascular Medicine

Time: 16:00 CET, Basel | 10:00 EST, New York | 23:00 CST Asia, Beijing

Time in CET	Speaker	Title
16:00–16:10	<i>Welcome from the Session Chairs Session S1. Cardiology & Cardiovascular Medicine Prof. Dr. Nathan Wong & Dr. Carlos Escobar</i>	
16:10–16:40	Prof. Dr. Nathan Wong Keynote Speaker	Lipoprotein(a): Ready for Prime Time?
16:40–17:05	Prof. Dr. Alexandra R. Lucas Invited Speaker	Virus-derived Serpin Interaction with Mammalian Serpins - Serpinosome
17:05–17:20	Kalliopi Megari	Neuroprotection and Cognitive Reserve in Patients Undergoing Cardiac Surgery
17:20–17:35	Yongting Luo	Mitochondrial DNA Mutations in Marfan Syndrome with Aortic Complications
17:35–17:50	Klaudia Piwowar	Obstructive Sleep Apnea Severity and its Association with Coronary Artery Disease Requiring Revascularization
17:50–18:05	Irina Tarasova	The Characteristics of Frequency-Spatial EEG Organization in Intact Cognitive Status and Cognitive Disorders in Coronary Artery Disease Patients
18:05–18:20	Burak TASCI	Artificial Intelligence-Based Prediction of Heart Failure Using Machine Learning Classifiers and Feature Optimization Techniques
18:20–18:35	Kanita Farooq	Hybrid Epicardial–Endocardial Ablation versus Catheter Ablation for non-Paroxysmal Atrial Fibrillation: A Systematic Review and Meta-Analysis

18 November 2025 (Tuesday)

*Session S3. Emergency Medicine**Time: 9:00 CET, Basel | 03:00 EST, New York | 16:00 CST Asia, Beijing*

Time in CET	Speaker	Title
09:00–09:10	<i>Welcome from the Session Chair</i> <i>Session S3. Emergency Medicine</i> <i>Dr. Ioannis Vogiatzis</i>	
09:10–09:35	Dr. Efstathios Koulouris Invited Speaker	To be announced
09:35–09:50	Shahin Salim	Post-Lumbar Puncture Headache in Practice: Insights from a Five-Year Audit at an East Midlands Tertiary Hospital
09:50–10:05	Maiss Reghefaoui	Bridging the Global Safety Gap: Suicide Prevention After Emergency Department Discharge
10:05–10:20	Amina Gafoor	Sepsis in the Emergency Department: Early Recognition and Rapid Management
10:20–10:35	Fiza Halima	Age Distribution of Dengue in Brazil (2015–2025): Implications for Emergency Medicine Demand
10:35–10:50	Karina Castilhos Bastos	Endovascular Thrombectomy for Acute Ischemic Stroke with a Large Infarct Area: An Updated Systematic Review and Meta-Analysis of Randomized Controlled Trials
10:50–11:05	Ayesha Amjad	Comparative Validation of Novel ANN-Based Scores vs. Utstein Predictor for Survival in Cardiogenic Out-of-Hospital Cardiac Arrest
11:05–11:20	Srdjan Nikolovski	Hemosuccus Pancreaticus: A Challenging Diagnosis and Complex Management
11:20–11:35	Ahmed Hassanien	Hemosuccus Pancreaticus: A Challenging Diagnosis and Complex Management

*Session S2. Nephrology & Urology (Parallel Session)**Time: 14:00 CET, Basel | 08:00 EST, New York | 21:00 CST Asia, Beijing*

Time in CET	Speaker	Title
14:00–14:10	<i>Welcome from the Session Chair</i> <i>Session S2. Nephrology & Urology</i> <i>Prof. Dr. Adam Ostrzenski</i>	
14:10–14:40	Prof. Dr. Adam Ostrzenski Keynote Speaker	Surgical Treatment for Female Stress Urinary Incontinence Across Various Anatomical Regions
14:40–15:05	Prof. Dr. Mariusz Kusztal Invited Speaker	To be announced
15:05–15:20	Hafs Elhag	The Impact of Service Centralisation on Time to Theatre and Testicular Salvage in Testicular Torsion: A Retrospective Cohort Study
15:20–15:35	Ya ping Su	An L-shape between Dietary Phosphorus Intake and Cardiovascular Disease in non-Dialysis Chronic Kidney Disease American Adults: National Health and Nutrition Examination Survey
15:35–15:50	Marija Kostoska Jovanovska	Real-World Effectiveness of SGLT2 Inhibitors on Renal and Metabolic Parameters in Patients with Chronic Kidney Disease
15:50–16:05	María Louloudes-Lázaro	Renal Involvement in West Nile Virus Infection: A Systematic Review and Meta-Analysis
16:05–16:20	Mariyam Khan	Emerging Nontraditional Therapies in Diabetic Kidney Disease: Evidence from 12 Clinical Trials
16:20–16:35	Athus Graziani Apollaro Rego	Current Therapeutic Strategies for Idiopathic Membranous Nephropathy
16:35–16:50	Michael Kolland	Preoperative SGLT-2 Inhibitor Use and Postoperative Outcomes in Cardiac Surgery: A Causal Inference Analysis

*Session S4. Nuclear Medicine & Radiology (Parallel Session)**Time: 14:00 CET, Basel | 08:00 EST, New York | 21:00 CST Asia, Beijing*

Time in CET	Speaker	Title
14:00–14:10	<i>Welcome from the Session Chair</i> <i>Session S4. Nuclear Medicine & Radiology</i>	

	<i>Prof. Dr. Alberto Signore</i>	
14:10–14:35	Prof. Dr. Javier Aristu Mendióroz Invited Speaker	The Expanding Role of Proton Therapy in Cancer Management
14:35–14:50	Lana Fadl	A Case Report of Peritoneal Mesothelioma as an Acute Abdomen Mimic: A Rare Presentation and Diagnostic Challenges
14:50–15:05	Pallavi Nayak	Synthesis and Characterization of Nuclear Nano-Theranostic Formulation for Metastatic Ovarian Cancer Treatment
15:05–15:20	Hamzah Adwan	Effect of Pulmonary Hypertension on Pulmonary Hemorrhage in Patients Undergoing CT-guided Lung Biopsy
15:20–15:35	Isidro Miguel Martín Pérez	From Atlas to Algorithm: A Systematic Review of CNN-Based Bone Age Assessment
15:35–15:50	Nan Zhang	Clinical Utility of 18F-FDG and 18F-AV45 PET Imaging in Patients with Varying Degrees of Cognitive Impairment
15:50–16:05	Areeba Khan	Assessment of Radiation Dose to Adult Patients in Cardiac CT
16:05–16:20	Olga Kolia	Oral Health and Quality of Life in Head and Neck Cancer Patients Undergoing Radiotherapy: A Cross-Sectional Study
16:20–16:35	Urszula Oziemczuk	Enlarged Mediastinal Shadow: Not always Lymphoma

19 November 2025 (Wednesday)

Session S7. Pulmonology

Time: 9:00 CET, Basel | 03:00 EST, New York | 16:00 CST Asia, Beijing

Time in CET	Speaker	Title
09:00–09:10	<i>Welcome from the Session Chair Session S7. Pulmonology Dr. Sukhwinder Singh Sohal</i>	
09:10–09:35	Dr. Wenying Lu Invited Speaker	Pulmonary Arterial Remodelling in Smokers and Patients with early COPD: Potential Drivers of EndMT
09:35–09:50	Nadine Cruz	Natural Alkaloids as Promising Candidates for Targeted Therapy in Lung Cancer
09:50–10:05	Kittisak Sawanyawisuth	Factors Associated with Higher Respiratory Disturbance Index than Apnea-Hypnea Index in Patients with Obstructive Sleep Apnea
10:05–10:20	Andreas M. Matthaiou	Plasma Fibrinogen, Fractional Exhaled Nitric Oxide (FeNO), and the Novel Fibrinogen-to-FeNO Ratio (FFR) as Biomarkers in Stable Bronchiectasis.
10:20–10:35	Zuha Rehman Akhtar	Improving Adherence to Asthma Medication - What are the most Clinically and Cost-Effective Strategies to Improve Medicine Adherence in Adults with Asthma who are non-Adherent to Prescribed Medicines?
10:35–10:50	Atiyeh Ebrahimi	Individual Patient Data Meta-Analysis of Histopathological Patterns and Vaping-Associated Lung Injury: Different Pathophysiology of Nicotine and Marijuana-Based Vaping
10:50–11:05	Faiz Ullah Khan	Adherence to Antibacterial Therapy and Associated Factors in Lower Respiratory Infections in War-Affected Areas: A Randomized Controlled Trial
11:05–11:20	Tabish Siddiqui	Intracranial Pressure and Obstructive Sleep Apnea: Exploring a Complex and Underrecognized Relationship
11:20–11:35	Stephanie Dahr	Factors Influencing Sleep and Post-Discharge Care-Seeking Attitudes in Hospitalized Stroke Patients: A Regional Study in Wales, UK

Session S5. General Surgery & Session S8. Anesthesiology

Time: 14:00 CET, Basel | 08:00 EST, New York | 21:00 CST Asia, Beijing

Time in CET	Speaker	Title
14:00–14:10	<i>Welcome from the host Session S5. General Surgery Dr. Baudolino Mussa</i>	

14:10–14:40	Prof. Dr. Adam Ostrzenski Keynote Speaker	A New Era in Cosmetic-Plastic Gynecologic Surgery
14:40–14:55	Georgios Giannos	RADIGAL Trial: Preliminary Results Comparing a "WHO" Diet Versus a Fat-Free Diet in Gallstone Disease and Their Impact on Quality of Life
14:55–15:10	Naukhaiz Taqi Sheikh	SVR Achievement in Triple Therapy Treated Hepatitis C Induced Cirrhosis: A Dual Center Retrospective Cohort Study
15:10–15:25	Agata Grochowska	Comparative Outcomes of Percutaneous Transhepatic Biliary Drainage versus Endoscopic Ultrasound-Guided Transluminal Procedures after Failed Endoscopic Retrograde Cholangiopancreatography in Malignant Biliary Obstruction
15:25–15:40	Hansel Joseph Gabriel	A Rare Cause of Chronic Iron Deficiency Anaemia: 13 cm Jejunal Venous Haemangioma
15:40–15:55	Gbemisola Ogundowole	When the Gallbladder Turns on Itself: A Case of Gallbladder Volvulus
15:55–16:10	Heather Margonari	Patient-Controlled Opioid-Free Surgical Pathway: A Quality Improvement Initiative
16:10–16:25	Zhe Lim	TXA - A Low Hanging Fruit Often Missed

Session 1. Cardiology & Cardiovascular Medicine

sciforum-123723: Evolocumab in the Management of Statin-Intolerant Familial Hyperlipoproteinemia with Elevated Lipoprotein(a) Post-TAVI: A Case Report

Kishore Muthukumar

Medical student, Medical University of Lodz, Lodz ,Poland

Background

Lipoprotein(a) [Lp(a)] is a genetically inherited lipid marker associated with an increased risk of atherosclerotic cardiovascular disease (ASCVD). Unlike LDL-C, Lp(a) is minimally responsive to lifestyle modification or statins. Management becomes especially challenging in patients with statin intolerance and co-existing cardiac conditions. PCSK9 inhibitors offer a therapeutic option by modestly lowering Lp(a) levels in addition to LDL-C. This case highlights the management of a patient with elevated Lp(a), statin intolerance, and a history of transcatheter aortic valve implantation (TAVI).

Case Presentation

A 65-year-old female with a history of chronic coronary syndrome and severe aortic valve stenosis underwent successful TAVI with a Sapien 3 bioprosthetic valve in November 2022. She was diagnosed with familial hyperlipoproteinemia and significantly elevated Lp(a) levels (801 mmol/L), alongside intolerance to high-dose statins. Due to her high cardiovascular risk, she was enrolled in the RDTL drug reimbursement program and initiated on evolocumab (a PCSK9 inhibitor) at 140 mg every 14 days.

At follow-up in December 2024, clinical assessment revealed stable cardiovascular status. Echocardiography showed preserved left ventricular ejection fraction (EF 60%) with good function of the implanted aortic valve. Blood pressure was 120/70 mmHg, ECG demonstrated sinus rhythm, and her Lp(a) level had decreased to 585 mmol/L, indicating a partial but significant response to therapy. Her medications included perindopril, metoprolol, rosuvastatin/ezetimibe (5/10 mg), metformin, clopidogrel, and evolocumab.

Conclusion

This case illustrates the long-term benefit of PCSK9 inhibitor therapy in a statin-intolerant patient with elevated Lp(a) and post-TAVI status. Partial biochemical response and clinical stability highlight the role of targeted lipid-lowering therapy and structured follow-up in managing genetically driven dyslipidemia in high-risk cardiac patients.



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sciforum-143812: Association of Neutrophil-to-Lymphocyte Ratio with Hypertension in Jordanian Inpatients: A Cross-Sectional Study

Hussein Alhawari ¹, Abdallah Hamdan ^{2,*}, Anas Naser Abdel Hafiz Suleiman ², Anas Mohammad AbdalRahman Ananzeh ², Maram Alzoubi ², Abdallah Khamaiseh ² and Ahmad Alhaj ²

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Inflammation is increasingly recognized in the pathogenesis of hypertension (HTN), and the neutrophil-to-lymphocyte ratio (NLR) has emerged as a simple, low-cost inflammatory marker. Yet published data on the NLR and HTN relationship are conflicting and virtually absent for Jordan. Clarifying this association could refine risk stratification and guide future anti-inflammatory interventions. Guided by the immuno-inflammatory model of HTN, we performed a cross-sectional analysis of 352 adult inpatients at the University of Jordan Hospital (February–July 2024). A minimum of three blood pressure readings were taken on different days. The HTN stage was assigned per ACC guidelines. Neutrophils and lymphocytes were measured using complete blood counts to calculate the NLR. Group differences were tested with independent-sample t-tests; Spearman correlation assessed relations between NLR, hemoglobin (Hb), and systolic/diastolic BP across age strata (young 18–35, middle-aged 36–55, older 56–75, elderly 76–90 yrs). NLR did not differ significantly between hypertensive and normotensive participants ($p = 0.131$) and showed only weak inverse correlations with systolic ($r = -0.166$, $p = 0.039$) and diastolic ($r = -0.128$, $p = 0.113$) pressures. Among hypertensive patients, mean NLR increased with age ($p = 0.0116$). Hb correlated positively with both systolic ($r = 0.238$, $p = 0.003$) and diastolic BP ($r = 0.366$, $p = 0.0001$). No significant associations were found between NLR and HTN stage. Hemoglobin demonstrated a clinically significant association with blood pressure in this Jordanian inpatient population, although NLR was not a significant predictor of the incidence or severity of HTN. These results raise uncertainty on NLR's ability to be used alone for HTN monitoring in comparable clinical contexts and suggest Hb as a potential marker. More extensive, multicenter research in a range of demographics is necessary to identify age-specific inflammatory profiles and investigate whether combining Hb with conventional risk factors will improve the treatment of hypertension.



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sciforum-128195: Endoluminal Radiofrequency Ablation and Stenting Following Percutaneous Transhepatic Biliary Drainage in Inoperable Common Bile Duct Cholangiocarcinoma: A Case Report

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Background

Percutaneous transhepatic biliary drainage (PTBD) is a minimally invasive procedure used in malignant biliary obstruction, including cholangiocarcinoma, pancreatic cancer, and tumors of the liver hilum, duodenum, and major papilla. In selected patients, endoluminal radiofrequency ablation (RFA) followed by stent placement may improve ductal patency. Prior reports, including our own experience, have suggested possible benefits in prolonging stent patency, and in some cases contributing to survival advantage, although evidence remains limited and heterogeneous.

Methods

A 78-year-old male presented with obstructive jaundice due to a tumor obstructing the middle third of the common bile duct. Imaging and laboratory findings confirmed elevated direct bilirubin. After ultrasound and fluoroscopy-guided right-sided PTBD, the patient underwent percutaneous recanalization of the malignant stricture two weeks later, via the mature drainage fistula under intravenous analgesia. A 0.035-inch guidewire was advanced into the duodenum, an 8 French bipolar endobiliary RFA catheter was positioned at the obstruction, and energy was applied (15 watts for 2 minutes). A 10 mm self-expanding metal stent was subsequently deployed to restore bile duct patency. The procedure was conducted as part of compassionate use without institutional review board (IRB) approval, given the palliative setting.

Results

The patient's bilirubin levels normalized, and there were no immediate complications. He was discharged in stable condition and referred to oncology for systemic therapy and palliative care. Known potential risks of RFA and stenting include cholangitis, biliary perforation, bleeding, and stent occlusion, but none were encountered in this case.

Conclusions

This case supports the feasibility and short-term safety of combining PTBD with endoluminal RFA and stenting in inoperable cholangiocarcinoma. While prior reports have suggested potential benefits for stent patency and symptom-free survival, the present case does not provide evidence of a direct effect on tumor progression. The procedure remains primarily palliative, and further controlled studies are required to clarify its role in modifying survival or long-term outcomes.



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sciforum-147176: Hybrid Epicardial–Endocardial Ablation versus Catheter Ablation for Non-Paroxysmal Atrial Fibrillation: A Systematic Review and Meta-Analysis

Kanita Farooq *, Zuha Rehman Akhtar, Maria Babu and Ishpreet Singh

NHS

Background:

While catheter ablation (CA) is effective for paroxysmal atrial fibrillation (AF), long-term success is limited in non-paroxysmal or long-standing persistent AF. This group often experiences recurrent arrhythmias despite antiarrhythmics and repeat ablations, impairing quality of life and increasing healthcare utilization. Hybrid epicardial–endocardial ablation (HA) combines surgical and catheter techniques, enabling the creation of durable lesions and the isolation of the posterior wall for improved rhythm control. Recent randomized controlled trials (RCTs) have shown promising results; however, existing systematic reviews are outdated, and therefore an updated review is needed to clarify efficacy and safety, as well as guide practice.

Methods:

The review followed PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines and was registered on PROSPERO. Multiple databases and trial registries were searched using pre-defined terms. Eligible studies were RCTs and observational studies of adults with non-paroxysmal or long-lasting persistent AF comparing HA with CA. Two reviewers independently screened and extracted data. The primary endpoint was maintenance of sinus rhythm without the use of antiarrhythmics. Secondary endpoints included major complications, quality of life, repeat ablation, and rhythm outcomes at 24 months or more.

Results:

Five RCTs compared CA with HA in non-paroxysmal AF. Across all studies, HA consistently achieved higher arrhythmia-free survival at 12- 24 months (65-76% versus 32-43%; pooled benefit approximately 30% (p0.001), including off antiarrhythmics (57-72% versus 28-41%). Both procedures had similar safety profiles, with comparable complication rates (8-11% versus 6-10%), no procedural mortality, and infrequent serious adverse effects such as tamponade and stroke. Lastly, HA also required fewer repeat procedures, such as cardioversion (12-16% vs. 24-29%) and repeat ablation (5-8% vs. 34-37%), compared to CA.

Conclusion:

In patients with non-paroxysmal AF, HA provides superior arrhythmia-free outcomes compared to CA, while maintaining a comparable safety profile.



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sciforum-147280: Obstructive Sleep Apnea Severity and Its Association with Coronary Artery Disease Requiring Revascularization

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Introduction:

Obstructive sleep apnea (OSA) is a chronic disorder leading to intermittent hypoxia, oxidative stress and vascular inflammation. These mechanisms are recognized contributors to atherosclerotic cardiovascular disease (CVD). The objective of this study was to evaluate the correlation between the severity of obstructive sleep apnea (OSA) and the presence of coronary artery disease (CAD) that necessitates revascularization procedures.

Materials and Methods:

A retrospective analysis was conducted on 70 patients treated between 2022 and 2024. Demographic data, comorbidities, sleep polygraphy results were reviewed. Patients were divided into two groups: mild/no OSA (apnea–hypopnea index [AHI] 15 events/h) and moderate to severe OSA (AHI ≥15 events/h).

Results:

Group I (n=35) included patients with no to mild OSA, while group II (n=35) comprised patients with moderate to severe OSA. The prevalence of ischemic heart disease requiring revascularization was more frequent in patients with moderate to severe OSA compared with those with mild/no OSA (52.9% vs. 47.1%). A subgroup analysis demonstrated that patients with severe OSA had a significantly higher prevalence of coronary artery disease requiring revascularization (41.2%) compared to those without OSA (14.7%), with mild OSA (32.3%), or moderate OSA (11.8%), with these differences being statistically significant ($p = 0.01$). No statistically significant association was found between the severity of sleep apnea and either the number of affected vessels or the involvement of a specific coronary artery by atherosclerotic lesions.

Conclusions:

The prevalence of CAD requiring revascularization was higher in patients with moderate to severe OSA. These findings emphasize the importance of systematic screening and management of OSA, particularly in patients with advanced CAD undergoing coronary interventions.



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sciforum-145157: Risk Factors for Cognitive Decline in Patients After Coronary Artery Bypass Grafting (Five-Year Follow-Up)

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Aim: To develop a prognostic model and identify risk factors that may lead to cognitive decline 5-7 years after coronary artery bypass surgery.

Materials and methods. The observational prospective study included 146 patients with an average follow-up period of 6.4 years. The patients underwent general clinical, neurological, and instrumental examinations 3-5 days before and 5-7 years after surgery. Neuropsychological testing included assessment of psychomotor and executive functions, attention, and short-term memory. The method of binary logistic regression was used to build a predictive model.

Results. Cognitive decline, characterized by $\geq 20\%$ decrease in postoperative cognitive indicators compared to the preoperative level in $\geq 20\%$ of the total test battery, was detected 5-7 years after surgery in 67 (45.9%) patients. Neurodynamic disorders occurred in 60% of patients, while violations of verbal and symbolic short-term memory occurred in 20-25% of cases. It was found that the presence of carotid artery stenosis (CA), smoking, low ejection fraction, and high triglyceride levels are associated with the development of cognitive decline 5-7 years after CABG. With the initial cut-off threshold (0.5), the most effective ratio of sensitivity (0.61) and specificity (0.82) was selected, which ensures the successful determination of both the presence and absence of cognitive decline and indicates the good quality of the predictive model.

Conclusion. Five to seven years after CABG surgery, 46% of patients experience a decrease in cognitive functions, manifested in the form of neurodynamic disorders, as well as deterioration of short-term memory. The factors included in the prognostic model were CA stenosis, low left ventricular ejection fraction, and high triglyceride levels, as well as smoking in patients. This indicates the need to improve approaches to postoperative follow-up of patients who have undergone cardiac surgery to minimize adverse neurological consequences.



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sciforum-133270: Valve Replacement in Young Adults: Balancing Risks, Benefits and Surgical Options

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A 20-year-old male was referred for echocardiography after presenting to his GP with tonsillitis. A new loud pansystolic murmur was detected. He was previously fit and well with a past medical history of thyrotoxicosis treated with subtotal thyroidectomy and stable immune thrombocytopenia (ITP).

A Transthoracic Echocardiogram (TTE) and Transesophageal Echocardiogram (TOE) confirmed the diagnosis of a bicuspid aortic valve with severe aortic regurgitation. The aortic root was dilated, maximally 4.2cm. The left ventricle was dilated 5.9cm on echo and 7.0cm on a cardiac CT with a borderline low Ejection Fraction of 50%. It was therefore decided to refer and discuss at a congenital multidisciplinary team meeting. The main options discussed were aortic valve repair, aortic valve replacement and a Ross procedure. A CT scan was performed, and, due to discrepant valve sizes, valve replacement was deemed the only viable option for this patient. He then underwent a mechanical aortic valve replacement (CarboMedics supra-annular top hat 27mm). He recovered well; however, 9 months post-operation he presented with weakness and aphasia, and CT head showed a left Middle Cerebral artery infarct. He also underwent thrombectomy. It was noted that he had periods of subtherapeutic INR.

This case presentation highlights complications that can arise with valve replacement and durability of surgical operation versus the complications of lifelong anticoagulation. We review the different surgical options available for severe aortic regurgitation, especially in the younger, congenital cohort of patients. This case increases awareness of the possibility of referring to congenital centers for the consideration of the Ross procedure.



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sciforum-149290: A Cross-Sectional Study of Risk Factors Associated with Hypertension in Heart and Kidney Disease Patients in Sana'a, Yemen

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Background:

Hypertension is one of the leading contributors to cardiovascular and renal disease worldwide, and its burden is particularly concerning in low-resource settings such as Yemen. The dual impact of heart disease (HD) and kidney disease (KD) places patients at an even higher risk of adverse outcomes. Despite the high prevalence of hypertension, there remains a gap in understanding the interplay of demographic, clinical, and lifestyle-related risk factors in the Yemeni population.

Objective:

This study aimed to identify factors associated with hypertension among HD and KD patients in Sana'a, thereby providing evidence to guide targeted prevention and management strategies.

Methods:

A cross-sectional study was conducted between March and August 2024 involving 300 patients (200 men, 100 women) aged 35–70 years. Sociodemographic and clinical data, including age, sex, body weight, smoking history, Qat chewing habits, comorbid diabetes, and adherence to antihypertensive medications, were collected through structured interviews and clinical records. Blood pressure was measured using a standardized sphygmomanometer. Logistic regression analysis was performed to estimate odds ratios (ORs) with 95% confidence intervals (CIs) for variables associated with hypertension.

Results:

Hypertension was significantly associated with increasing age (OR: 1.08; 95% CI: 1.02–1.11), obesity (OR: 2.42; 95% CI: 1.23–4.75), smoking (OR: 1.88; 95% CI: 1.05–3.35), type 2 diabetes (OR: 2.87; 95% CI: 1.56–4.55), and irregular use of antihypertensive medication (OR: 3.21; 95% CI: 1.45–7.11). Notably, all participants reported regular Qat chewing (100%), reflecting its entrenched cultural presence.

Conclusion:

Age, obesity, smoking, diabetes, and poor medication adherence emerged as major predictors of hypertension among Yemeni HD and KD patients. The universal irregularity in medication use and widespread Qat chewing highlight systemic healthcare challenges and cultural influences. Strengthening adherence support, promoting healthier lifestyles, and improving healthcare delivery are urgently required to reduce hypertension-related complications in this high-risk population.



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sciforum-147679: Artificial Intelligence in Heart Failure: A 10-year Review of Predictive Analytics, Personalized Therapeutics, and Translational challenges

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Background: To examine the impact of artificial intelligence on improving precise diagnosis, customized treatment and efficient heart failure monitoring over the past decade and to anticipate future progress in these studies. **Methods:** A literature search was conducted using keywords from the PubMed database from January 1, 2015, to August 31, 2025, and 404 articles were retrieved. Systematic analysis was conducted to examine annual publication volume; and to analyze authors, institutions, countries, journals, references, and keywords. **Results:** The 404 studies included in the analysis covered 56 countries or regions, involved 980 institutions, and included 3,208 authors. From 2020 to 2023, the number of publications rose steadily, then surged markedly once 2023 passed—especially between 2024 and 2025. This increasing trend is expected to continue moving forward. The University of California and Harvard University were the top institutions in terms of the number of publications in this field. China and the United States are the main countries researching in this field, with the United States leading in research impact and international collaboration. *Frontiers in Cardiovascular Medicine* publishes the most articles in this field, whereas *Circulation* has the highest rank in co-citations. In the diagnosis part, AI Integrating machine-learning and deep-learning algorithms into heart-failure diagnostics constitutes a paradigmatic advancement, as AI-driven interrogation of high-dimensional datasets yields rapid, evidence-based insights that surpass conventional analytic resolution, thereby enabling timely detection and individualized therapeutic strategies. In the treatment part, AI can be used to create personalized risk scores for treatment planning and to predict and prevent adverse events. Wearable sensors combined with machine learning analytics can enhance outcomes. **Conclusion:** AI revolutionizes HF care: algorithmic diagnosis, risk-stratification, precision therapy, omics-driven phenotyping, remote monitoring, boosting accuracy and speed. Yet high-dimensional data, overfitting and absent external validation impede models. Prospective multi-institutional trials are vital to curb bias and ensure generalizability.



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sciforum-148141: Artificial Intelligence-Based Prediction of Heart Failure Using Machine Learning Classifiers and Feature Optimization Techniques

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Heart failure stands as a major worldwide health problem that requires immediate and precise diagnosis to enhance patient treatment results. Researchers developed a machine learning system to predict heart failure based on standard clinical data collected from patients. The researchers analyzed 918 patient records, which included information about patient demographics, physiological measurements, and electrocardiographic data. The analysis utilized nine variables, including age and sex, chest pain type, resting blood pressure, cholesterol level, fasting blood sugar, resting ECG results, maximum heart rate, exercise-induced angina, ST depression (Oldpeak), and ST segment slope.

The Random Forest classifier received preprocessed data through imputation, normalization, and one-hot encoding before achieving 88.59% accuracy, with precision (positive class) at 91.00%, recall at 90.00%, and F1 score at 90.00%. The model demonstrated balanced performance, with 67 true negatives, 95 true positives, 10 false positives, and 12 false negatives, as indicated by the confusion matrix.

The proposed model demonstrates that artificial intelligence can perform automatic heart failure diagnosis by providing a reliable risk assessment for early detection. The model achieves better performance through feature optimization and ensemble learning methods, while its ability to process various types of clinical data makes it suitable for real-world applications. The proposed method enables researchers to develop AI-based clinical decision support systems that assist doctors in making prompt medical decisions through early disease detection.

Future research should aim to enhance model interpretability while validating the model across different population groups and implementing explainable AI techniques to foster clinical trust and transparency, ultimately leading to improved translational outcomes.



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sciforum-147230: Audit of Gastroprotection in Patients Prescribed Triple Antithrombotic Therapy

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Patients who are prescribed triple antithrombotic therapy, which usually consists of an oral anticoagulant alongside dual antiplatelet therapy, are known to be at a very high risk of gastrointestinal bleeding. Current national guidelines recommend that these patients should routinely receive a proton pump inhibitor to reduce this risk. Despite the strength of this recommendation, experience in everyday practice suggests that compliance is often variable, and patients may be left unprotected against a potentially preventable complication.

This audit aims to explore how well gastroprotection guidance is followed in a large UK teaching hospital. Using retrospective data collection, we will identify all patients prescribed triple therapy during the study period. For each case, we will record key details including demographics, indication for treatment such as atrial fibrillation or acute coronary syndrome, specific antithrombotic regimen, presence or absence of a concurrent proton pump inhibitor prescription, and whether a formal bleeding risk assessment using the ORBIT score was documented.

The primary outcome measure will be the proportion of patients appropriately co-prescribed a proton pump inhibitor in line with guideline standards. Secondary outcomes will examine variation in practice between different clinical teams and whether bleeding risk assessments influence prescribing behaviour.

By establishing a clear baseline of current practice, this project will highlight gaps in safe prescribing and identify opportunities for improvement. The findings are intended to guide future interventions and raise awareness of this important patient safety issue. Ultimately, ensuring that patients on triple therapy receive adequate gastroprotection has the potential to reduce preventable gastrointestinal bleeding and improve outcomes for a group already recognised as being at high risk.



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sciforum-147642: Blood Selenium Levels and Vascular Hemodynamics Interactions Vary by Age in US Adults

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Selenium (Se), an essential micronutrient, is potentially implicated in cardiovascular health; we hypothesized that due to Se's established antioxidant properties and effects on nitric oxide (NO) bioavailability, Se blood serum levels may influence vascular hemodynamics.¹ There is conflicting evidence on the relationship between Se and blood pressure and very limited evidence regarding the relationship between Se levels and early markers of vascular change such as pulse wave velocity (PWV) and mean arterial pressure (MAP). To clarify this association, we evaluated the relationship of serum Se with vascular parameters in a nationally representative US sample.

METHODS:

We conducted a cross-sectional analysis using data from seven NHANES cycles (2003-04 and 2011–23). Participants (n=21,793) aged ≥18 years with blood Se and blood pressure data were included. Participants were classified by age groups (18–35, 36–65, >65 years) and Se quartiles. Vascular measures included systolic and diastolic blood pressure (SBP, DBP), pulse pressure (PP), mean arterial pressure (MAP), and estimated pulse wave velocity (ePWV). Blood Se was measured by mass spectrometry.

RESULTS:

In fully adjusted models, participants in the highest Se quartile had significantly higher SBP (coefficient=1.76 mmHg; 95%CI: 0.76-2.75; p=0.001), DBP (coefficient=2.12 mmHg; 95CI:1.38-2.86; p0.001), MAP (coefficient=2.00 mmHg; 95%CI:1.29-2.70; p0.001), and ePWV (coefficient=0.13 m/s; 95%CI:0.08-0.18; p0.001) compared with the lowest quartile; there was no relationship with PP. Age modified the association between Se and vascular hemodynamics (Figure) such that adults>65years had lower SBP, PP, MAP, and ePWV than adults>18-35 years (interaction p-values = 0.003, 0.04, 0.01, 0.005 respectively).

CONCLUSIONS:

Our findings highlight that the relationship between Se and vascular hemodynamics is modified by age. The mechanisms responsible for these opposite effects of Se on vascular hemodynamics by age need further study.



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sciforum-147240: Coronary Artery Disease Between Guidelines and Reality: A Ten-Year Retrospective Analysis in a Rural Area of Croatia

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Introduction: Cardiovascular diseases remain one of the biggest public health challenges in Croatia, with coronary artery disease (CAD) being the most prevalent. The uneven development and concentration of healthcare facilities in urban areas suggest that rural regions are lagging in providing adequate healthcare. This study aimed to investigate the epidemiological characteristics of patients admitted to the General Hospital in Ogulin (Croatia) with CAD.

Methods: This quantitative, retrospective study included a total of 732 patients with a diagnosis of CAD who were treated between January 1, 2014, and December 31, 2023. The data were extracted from the hospital information system. After data collection, statistical analysis was performed with a significance level of $p = 0.05$.

Results: CAD accounted for 2.2% of all patients treated during the study period. The results indicate a higher prevalence of CAD among men (56.6%) and individuals aged 60 years or older (76.1%). A clear seasonal pattern was observed, with a peak during the colder months from October to March ($n = 462$, 63.1%). Of all participants, 488 patients (66.7%) presented with acute coronary syndrome. Taking into account the fact that 58 patients with acute coronary syndrome died, the calculation shows that 66.9% of these patients were transferred to other medical centres.

Conclusions: The results of this study show that CAD is an important cause of hospitalisation in Ogulin General Hospital, especially in men and people over 60 years of age. A marked seasonal variation was observed, with the highest number of cases occurring in the colder months. The high prevalence of acute coronary syndrome and the need to transfer a significant number of patients to other centres demonstrate the limited diagnostic and therapeutic capacity of the regional hospital. At the same time, the fact that one-third of patients are not transferred highlights the importance of further expanding cardiology care in rural areas and of educational programs aimed at reducing healthcare inequalities and improving treatment outcomes.



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sciforum-144980: Hemoglobin as an Adjunct Marker in the Assessment of Cardiovascular Risk in Adults

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Hemoglobin (Hb) is an essential hematological parameter, and its deviations from the physiological range can have important implications for cardiovascular health. Anemia is associated with chronic inflammation, oxidative stress, and endothelial dysfunction, increasing the risk of cardiovascular events, while elevated hemoglobin levels can cause high blood viscosity, tissue hypoxia, and thrombotic risk. A retrospective study was conducted on 100 adult patients, using data from standard hemograms. The parameters analyzed included Hb, hematocrit (Hct), leukocytes (WBC), platelets (PLT), age, and gender. The prevalence of anemia (Hb 12 g/dL in women, 13 g/dL in men) and elevated Hb values (>16 g/dL in men, >15 g/dL in women) was evaluated, as well as the correlations between Hb and other hematological parameters. Anemia was identified in 18% of patients, being more frequent in women over 65 years of age. Elevated Hb values were observed in 7% of patients, predominantly in young men. Hb showed a strong correlation with Hct ($r=0.82$, $p<0.001$), while the correlations with WBC ($r=0.24$) and PLT ($r=0.18$) were moderate and statistically insignificant. Extreme Hb values were associated with hematological changes suggestive of increased cardiovascular risk, including tissue perfusion disturbances and thrombotic predisposition. Hemoglobin values, either low or high, may constitute adjunctive hematological markers of cardiovascular risk. Integrating Hb into clinical evaluation, together with other hematological parameters and traditional risk factors, may support the identification of patients at high risk and the orientation of preventive interventions. These results provide a solid basis for future research on the role of Hb as a clinical marker in cardiovascular risk stratification.



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sciforum-140152: I'm in Two Hearts about this Diagnosis!

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A 61-year-old male patient presented to the ED by ambulance following two syncopal episodes. The ambulance crew reported abnormal ECG findings. The patient had felt hot, sweaty, and clammy with palpitations preceding both syncopal events. He had chest and epigastric pain in the past 24 hours. Syncopal events were witnessed by a partner who reported a grey and clammy appearance of the patient. During the A&E review, the patient reported ongoing chest discomfort with no associated symptoms. Previous medical history included a heterotopic heart transplant for myocarditis and long-term oral amiodarone therapy. Examination findings: Pulse: 90bpm; blood pressure: 120/94; SpO2: 98%; RA RR: 18/min Apex beat palpated on the right precordium. Chest: Bilaterally clear with no difficulty in breathing. ECG findings: A sinus rhythm from the transplanted heart was observed in the right-sided leads. Ventricular tachycardia/fibrillation was being picked up from the native heart on the left lateral leads. There is, however, an overlap of these rhythms seen on the ECG. Chest X-ray showed dual cardiac shadows. A Point-of-Care Echocardiogram showed the native heart to be in Ventricular tachycardia/fibrillation with severe systolic dysfunction, and the donor heart in sinus rhythm with good systolic function. The diagnosis was considered to be syncope secondary to an Electrical Storm generated from the native heart. The arrhythmia was being propagated from the native to the donor heart. Patient was started on amiodarone infusion and later transferred to ITU. A transesophageal echocardiogram-guided direct current cardioversion was attempted. After two unsuccessful attempts, a lidocaine infusion was initiated, and a subsequent attempt at DCCV proved successful in restoring the sinus rhythm. The patient was later discharged clinically and hemodynamically stable with oral sotalol and mexiletine. This rare and complex case highlights the importance of ECG interpretation in diagnosing arrhythmias in post-transplant patients.



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sciforum-145911: Impact of Periconceptional Maternal Diet and Supplementation on Malnutrition in Infants with Congenital Heart Disease: A Cross-Sectional Study

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Background

Maternal nutrition during the periconceptional period plays a crucial role in fetal cardiogenesis. Infants with congenital heart disease (CHD) face a dual burden of structural disease and malnutrition, which exacerbates morbidity, surgical risk, and survival. The influence of maternal dietary patterns and micronutrient supplementation on postnatal nutritional outcomes in CHD-affected infants remains underexplored.

Objective

To evaluate the association between maternal periconceptional nutrition—specifically dietary patterns, meal frequency, and micronutrient intake—and the prevalence of malnutrition in infants with CHD.

Methods

This cross-sectional study analyzed outpatient data of Indian-origin patients who underwent echocardiographic screening at a tertiary cardiac hospital (2022–2025). Maternal periconceptional dietary intake was retrospectively assessed via a validated in-house questionnaire and restricted to non-syndromic infants from singleton primigravida pregnancies to minimize recall bias. Infant's postnatal malnutrition was classified using WHO z-scores, and associations were evaluated using SPSS.

Results

Of 17,093 screened patients, 13,972 (81.7%) were diagnosed with CHD, including 6,980 infants. After applying the inclusion criteria, 2,243 mother–infant dyads were analyzed. Malnutrition prevalence was high: 75.2% underweight, 49.6% stunted, and 73.1% wasted. Among mothers, 15.8% reported no micronutrient supplementation. Dietary patterns were 50.9% vegetarian, 44.8% non-vegetarian, 3.9% eggitarian, and 0.2% vegan. Additionally, 8% consumed ≤ 1 meal/day during pregnancy. The type of food showed no significant association with malnutrition. However, consuming ≥ 2 meals/day was protective, reducing odds of stunting by 30% ($p = 0.024$) and wasting by 31% ($p = 0.024$). Micronutrient supplementation reduced underweight by 29% ($p = 0.020$) and stunting by 41% ($p = 0.020$) among CHD infants.

Conclusion

This large cohort study underscores the impact of maternal nutrition—particularly adequate meal frequency and micronutrient supplementation—in reducing postnatal malnutrition among CHD infants, emphasizing the need for targeted nutritional interventions during early pregnancy.



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sciforum-146736: Implementing STOPP-FALL Criteria to Reduce Medication-Related Falls in Patients aged over 65 using the PDSA model

Varthini Karvannan * and Upali Anand

KCH

Introduction: Patients over 65 often have multiple comorbidities and complex polypharmacy regimens, many including falls-risk-increasing drugs (FRIDs). Falls are a leading cause of morbidity in this group and are frequently associated with polypharmacy. Using the STOPP-FALL criteria, we systematically identified and reviewed FRIDs during hospital stays to reduce falls and improve prescribing safety. The multidisciplinary team consisted of consultants, resident doctors, and nursing staff.

Methods: Cycle 1 data obtained for patients who were either admitted with a fall or had a history of falls, along with their current medications, showed that all of them were on at least one FRID. To facilitate the practical use of the STOPP-FALL tool, we developed a color-coded template for each category of FRID. We educated the ward team to review each patient's medication regimen using the template and document this on the ward round entry.

Results: A re-audit was conducted under the PDSA model, one month after the intervention was implemented, reviewing a total of 35 patients. 69% were admitted with a fall or had a documented history of falls. Among these, 83% were prescribed one or more FRIDs. In 25% of these cases, it was considered clinically appropriate to deprescribe one or more FRIDs. The introduction of the STOPP-FALL tool led to a structured approach in identifying high-risk medications, which improved clinical awareness and accountability. Moreover, it promoted patient safety, leading to a potential reduction in future falls.

Conclusion: This project demonstrated that working closely as a team enabled us to effectively utilize the STOPP-FALL criteria in making prescribing safer for older patients. Future plans include expanding the use of the STOPP-Fall tool across other Health & Ageing wards, conducting large group teaching sessions, and further integrating it into electronic prescribing systems to ensure a consistent and sustainable practice across the Department of Clinical Gerontology at King's College Hospital.



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sciforum-140122: Independent Correlation between Familial Mediterranean Fever under Colchicine Therapy and Tpe Interval, QTc Interval, and Tpe/QTc Ratio Observed on Superficial 12-Lead Electrocardiography

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Introduction: Familial Mediterranean fever (FMF) is an auto-inflammatory disorder characterized by recurrent episodes of fever and inflammation, which can lead to cardiac complications, particularly issues with cardiac conduction due to irregularities in ventricular repolarization. This study aimed to investigate the Tpe interval, QTc interval, and Tpe/QTc ratio—key indicators of ventricular arrhythmia—among FMF patients undergoing colchicine treatment compared to healthy controls.

Methods: Conducted as a cross-sectional analysis, the study included 185 participants, with 96 diagnosed with FMF and 89 healthy controls. The researchers assessed cardiac repolarization markers through 12-lead surface electrocardiography (ECG) and collected demographic, laboratory, echocardiography, and medication data during cardiology outpatient visits.

Results: The average age of the control group was 43.2 years, while the FMF group averaged 35.2 years. Notably, the control group exhibited higher prevalence rates of coronary artery disease, diabetes, hypertension, and hyperlipidemia, correlating with their older age. Electrocardiographic findings revealed significant differences between the two groups: the Tpe interval (normal range: 50-100 ms) was longer in FMF patients (110.3 ms) compared to controls (91.4 ms) ($p=0.001$), while the QTc interval (normal range: 360-440 ms) was shorter in FMF patients (401.4 ms) than in controls (407.5 ms) ($p=0.001$). The Tpe/QTc (normal range: 0.15-0.25) ratio was also higher in FMF patients (0.27) compared to controls (0.22) ($p=0.001$). Correlation analysis indicated a positive relationship between FMF and both the Tpe interval ($r=0.567$, $p=0.001$) and Tpe/QTc ratio ($r=0.594$, $p=0.001$), while a negative correlation was observed with the QTc interval ($r=-0.163$, $p=0.027$). In multivariate regression analysis, FMF was independently correlated with the Tpe interval (OR: 17.710; 95% CI: 13.594-21.826, $p=0.001$), QTc interval (OR: -6048; 95% CI: -11723--0.374, $p=0.037$), and Tpe/QTc ratio (OR: 0.048; 95% CI: 0.038-0.058, $p=0.001$).

Conclusion: Despite colchicine therapy, FMF patients may still face an increased risk of arrhythmias. The findings suggest that regular cardiology follow-ups, including ECG evaluations, are a reasonable approach for clinically stable FMF patients.



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sciforum-144599: Indian Experience of Bifurcation PCI: Provisional or Two-Stent—Does Strategy Matter?

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Introduction:

Coronary bifurcation lesions, encountered in roughly one-fifth of PCI cases, remain among the most technically demanding scenarios in interventional cardiology. While provisional stenting has become the global default, complex anatomy or large diseased side branches often demand a planned two-stent approach. Most evidence guiding these decisions comes from Western populations, with limited data available on Indian cohorts reflecting our unique patient profiles and disease patterns. This study evaluates the clinical profile, angiographic patterns, and mid-term outcomes of bifurcation PCI using second-generation drug-eluting stents (DESs) in an Indian tertiary care setting, and to compare provisional and two-stent strategies in real-world practice.

Methods:

In this prospective observational study (April 2022–April 2023), 100 consecutive patients with major epicardial bifurcation lesions (main vessel >2.5 mm, side branch >2.3 mm) underwent PCI at a high-volume centre in Western India. Procedural details, risk factors, and lesion morphology (Medina classification) were documented. Follow-up at 8–12 months included clinical review and quantitative coronary angiography (QCA). The primary endpoint was major adverse cardiac events (MACE: death, MI, TVR, TLR, stent thrombosis); the secondary endpoint was binary in-stent restenosis (ISR).

Results:

The mean age was 60.5 ± 12.1 years; 76% were male. True bifurcation lesions (Medina 1,1,1) dominated (58%), followed by 0,1,1 (21%). Hypertension (66%) and family history (57%) were common, with significant clustering in complex patterns (1,1,1 and 1,0,1; $p0.02$). Provisional stenting was used in 73%, two-stent techniques in 27% (T-stenting most frequent). ISR occurred in 16.9% overall, with no difference between strategies. The MACE rate was 16%, again comparable across groups.

Conclusion:

In this detailed Indian dataset, provisional and two-stent bifurcation PCI with second-generation DESs achieved similar mid-term safety and efficacy. Our findings reinforce an anatomy-driven approach—provisional for simpler lesions, dedicated two-stent techniques for complex bifurcations—while underscoring the need for larger multicentre Indian registries.



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sciforum-147578: Maternal-Child Blood Group Discordance and Congenital Heart Disease Severity: An Immunological Risk Perspective from a Tertiary Hospital-Based Study

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Background

Congenital heart disease (CHD) is the most prevalent congenital anomaly, with outcomes strongly influenced by disease complexity. Beyond genetic and environmental determinants, maternal-fetal immuno-haematological interactions may contribute to CHD risk and severity. ABO and Rh incompatibilities can trigger immune responses in utero, yet their role in CHD severity remains unclear. This study assessed associations between maternal-child blood groups, compatibility patterns, and CHD severity using the Risk Adjustment for Congenital Heart Surgery (RACHS) scoring system and cyanosis status.

Methods

A retrospective cohort of 900 non-syndromic singleton children with CHD (0-12 years) undergoing surgical correction and their mothers was analysed at a tertiary referral center. Maternal and child ABO/Rh blood groups and compatibility status were documented. CHD was categorised as simple (RACHS 1), moderate (RACHS 2), or complex (RACHS ≥ 3), and as cyanotic vs. acyanotic. Associations were tested using comparative statistics and ordinal regression with subgroup validation by age.

Results

Of 900 cases, 562 (62.4%) were acyanotic; RACHS distribution was 64 simple, 432 moderate, and 404 complex. Blood group B predominated in mothers ($n=319$, 35.4%) and children ($n=316$, 35.1%). ABO and Rh incompatibilities occurred in 257 (28.6%) and $n=44$ (4.9%) dyads, respectively. Maternal-child ABO discordance was significantly associated with moderate CHD (OR=3.31, 95% CI: 1.19-9.18; $p=0.022$), while Rh incompatibility showed a notable trend with cyanotic CHD ($p=0.076$) in children aged 1-5 years. Maternal blood groups B and AB were protective against CHD severity compared to O (OR=0.26-0.41, p 0.05). Child blood groups A, B, and AB also conferred protection against moderate and complex CHDs (OR=0.29-0.39, p 0.05). No significant association was observed for combined ABOxRh discordance.

Conclusion

This study provides the first evidence that maternal-child blood group relationships, particularly ABO incompatibility, may influence CHD severity. These findings warrant multicentric validation and exploration of underlying immunogenetic mechanisms.



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sciforum-124477: Mitochondrial DNA Mutations in Marfan Syndrome with Aortic Complications

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Background and aims: Marfan syndrome (MFS) is an autosomal genetic disease caused by *FBN1* mutation. Patients with the same *FBN1* mutation type exhibit different phenotypes, which indicates extra risk factors. The primary risk factor for death in MFS patients is cardiovascular complications, including aortic root enlargement, aortic aneurysm and aortic dissection. Mitochondrial dysfunction was observed in the aortas of both MFS patients and marfan murine models. Single nucleotide variants (SNVs) in mitochondrial DNA (mtDNA) may cause mitochondrial dysfunction. However, the association of mtDNA mutations with MFS and its cardiovascular complications has been unclear.

Methods: Blood samples (48 healthy controls and 77 MFS patients, including 7 mother-offspring pedigrees) were obtained from the Beijing Anzhen Hospital, with informed consent. The identification of SNVs in the mitochondrial genome was through alignment to the GRCh38.p14 reference genome. Mutants were identified by VarScan2. Targeted mtDNA sequencing was used to detect single nucleotide variants in mtDNA.

Results: We found that, in the MFS group, 64.93% of patients enrolled have aortic manifestations, including width, dissection, and aneurysm. m.9738G>A was identified in a family whose dominant phenotype was aortic manifestations. The proband of pedigree II is a 5-year-old boy with a maternally inherited *FBN1* mutation (Exon2; p.R5C) and dilatation of the aorta (z-score = +5.63), whose mother has type A dissection. A mtDNA mutation m.9738G > A (VAF = 0.9993, AF in Mitomap = 0.0012) in the MT-CO3 gene was inherited from the I-2 mother to the proband. The same variant was detected in a sporadic case, a 47-year-old woman with an *FBN1* mutation who had an aneurysm (z-score = +9.19).

Conclusions: These data demonstrate frequent and specific mitochondrial mutational pattern in MFS patients with cardiovascular complications. The mtDNA mutation might be a potential modifier and diagnostics of MFS phenotypes, especially MFS patients with cardiovascular complications.



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sciforum-145928: Neuroprotection and Cognitive Reserve in Patients Undergoing Cardiac Surgery

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Introduction: Postoperative cognitive decline (POCD) is one of the most serious side effects after coronary artery bypass grafting (CABG). Significant postoperative cognitive impairment is seen in CABG patients. POCD, encompasses deterioration in social functioning, memory, orientation, attention, and judgment. Cognitive reserve (CR), a protective factor that has been considered to operate as a buffer against the impacts of neuropathology, may be able to mitigate these adverse effects.

Method: We investigated the prevalence of POCD and CR in individuals with coronary artery disease undergoing CABG. We postulated that, following heart surgery, elevated CR would guard against POCD. **Participants:** We evaluated 113 patients both prior to and four months following cardiopulmonary bypass surgery. **Measures:** The evaluation comprised measures of depression, anxiety, CR, and cognitive functioning.

Results: Based on median split, each patient was assigned to either the high (n=57) or low CR (n = 56) group. According to the result of chi-square tests, patients with low CR were significantly more likely than those with high CR to exhibit postsurgical cognitive deterioration in executive skills, attention, memory, and visuospatial perception during post-surgery neuropsychological evaluation.

Conclusions: According to our findings, CR can predict the neuropsychological results of heart surgery, identify patients with low CR, and assist them in enrolling in intervention programs that may improve their overall functional outcome following surgery or slow cognitive aging or lower the risk of dementia. Determining whether patients will need cognitive rehabilitation is essential due to the frequency and severity of post-operative cardiac dysfunction (POCD) and its impact on daily activities and functioning, which are aspects of quality of life, indicating that CR can predict the neuropsychological results after heart surgery and identifying patients with low CR and including them in intervention programs to improve the patients' overall functional outcome after surgery.



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sciforum-147413: Relationship of Dietary Intake of Eicosapentaenoic Acid and Docosahexaenoic Acid with Subclinical Atherosclerosis in Subjects with and without Diabetes Mellitus

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Introduction: subclinical atherosclerosis (SA) is a silent preclinical stage of atherosclerotic cardiovascular disease; this particularly in individuals with high-risk metabolic disorders. Eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) have shown cardiovascular benefits in supplementation trials; however, evidence from habitual intake is limited particularly in people with diabetes mellitus (DM). We aimed to assess the association between dietary EPA and DHA and the presence of carotid atherosclerotic plaque(s) (SA) in adults with and without DM.

Methods: a cross-sectional study was conducted in adults with and without DM. EPA and DHA intake were assessed with a validated 101-item Spanish food frequency questionnaire. Ultrasound was used to detect the SA in the common, bulb and internal carotid arteries, by a blinded operator. Statistical analyses included group comparisons and multivariable logistic regression adjusted for age, sex, hypertension, dyslipidemia, smoking, waist circumference, glycemic control, and renal function, conducted in the overall sample and restricted to participants with DM (both type 1 and type 2).

Results: out of 1,221 participants, 429 (35.1%) had AP (median age: 57 years), while 792 (64.9%) did not (median age: 45 years). DM was more frequent in the group with SA (57.3% vs. 36.4%). EPA intake was slightly higher in individuals with AP (0.14 vs. 0.13 g/day; $p = 0.061$), while DHA intake showed no difference (0.26 vs. 0.24 g/day; $p = 0.202$). In adjusted models, higher EPA intake was associated to lower odds of AP in analyses including all subjects (OR: 0.18; $p = 0.018$) and in those restricted to DM (OR 0.13; $p=0.034$). DHA intake was inversely associated with AP in all subjects (OR 0.37; $p=0.010$), with an association even stronger in DM (OR 0.25; $p=0.008$).

Conclusion: higher dietary intake of EPA and DHA was associated with a lower likelihood of SA, particularly in subjects with diabetes.



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sciforum-147283: Safety of Statins in the Elderly: A Systematic Review of Randomized Control Trials and Observational Studies

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Background:

The use of statins for cardiovascular disease prevention is widespread, yet their safety in the elderly, particularly those aged ≥ 75 years, remains under scrutiny due to polypharmacy, altered pharmacokinetics, frailty, and age-related physiological changes. Evidence is further limited because older adults are frequently underrepresented in randomized trials, leaving uncertainty regarding long-term tolerability, functional outcomes, and interactions with commonly prescribed medications. This systematic review aims to assess the safety of statin use in elderly populations.

Methods:

We conducted a systematic review in accordance with the PRISMA 2020 guidelines. Databases searched included PubMed and Cochrane CENTRAL (last search conducted in July 2025). We included studies reporting adverse outcomes of statin therapy in patients aged ≥ 65 years. Data on study design, population characteristics, and reported adverse effects were extracted for review and analysis. The risk of bias was assessed using the Cochrane RoB2 and Newcastle–Ottawa tools.

Results:

Of the 248 initial articles, 7 studies (4 RCTs, 2 cohort studies, 1 meta-analysis) met the inclusion criteria. Across these studies, statins were generally well-tolerated. Myopathy and elevated liver enzymes were reported, but had a low incidence. No consistent increase in serious adverse events (e.g., rhabdomyolysis, cognitive decline) was observed in elderly cohorts compared to younger groups. One observational study noted a higher discontinuation rate in adults ≥ 80 years, largely due to patient preference or comorbidities rather than toxicity.

Conclusion:

Statins appear to have an acceptable safety profile in the elderly populations, including the very elderly, though individualized risk-benefit assessments remain essential. Future studies should explore safety in frail subpopulations and clarify long-term tolerability, particularly regarding drug–drug interactions, multimorbidity, and functional outcomes. These findings may support more confident prescribing in age groups that have been historically underrepresented in trials and guide geriatric-focused clinical decision-making.



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sciforum-147313: Self-Reported Cardiovascular Symptoms Following COVID-19 Vaccination: A Cross-Sectional Study in Algeria

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Abstract

Background: The COVID-19 pandemic represented an unprecedented global health challenge, leading to the accelerated development and deployment of several vaccines. Their effectiveness in reducing severe cases and mortality is well established; however, concerns have emerged regarding rare but potentially significant cardiovascular adverse events. Understanding these manifestations is essential to strengthening post-vaccination surveillance and providing clinicians with reliable data.

Objective: This study aimed to analyze self-reported cardiovascular symptoms following COVID-19 vaccination, considering vaccine type, number of doses received, and medical history. A comparative analysis with a non-vaccinated group was also performed to identify potential differences in symptom occurrence.

Methods: A cross-sectional descriptive study was conducted in the Wilaya of Relizane, Algeria, between February and April 2025. The survey included 148 participants: 56 individuals vaccinated against COVID-19 and 92 non-vaccinated controls. Participants were voluntarily recruited through a structured self-administered questionnaire, distributed online and in health centers and public institutions. Collected data were analyzed using SPSS version 27.0, with the level of statistical significance set at $p = 0.05$.

Results: Among vaccinated participants, 75% reported at least one symptom suggestive of cardiovascular involvement after vaccination. The most frequently reported were chest pain (39.3%), palpitations (26.8%), shortness of breath (26.8%), and limb pain (30.4%). Symptoms typically appeared within hours (39.3%) or within a few days (28.6%) after vaccination. In most cases, they lasted only a few days (51.8%), although 14.3% of participants reported persistent symptoms at the time of the survey. Statistical analysis did not reveal any significant association between vaccine type and the occurrence of cardiovascular manifestations.

Conclusion: This exploratory study, the first of its kind in Algeria, provides valuable preliminary insights into post-vaccination cardiovascular symptoms. While no significant associations were found, the findings highlight the importance of continuous monitoring and the need for larger, more rigorous, and clinically documented national studies.



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sciforum-119675: The Characteristics of Frequency-Spatial EEG Organization in Intact Cognitive Status and Cognitive Disorders in Coronary Artery Disease Patients

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Background and aim. The relationship between coronary artery disease (CAD) and cognitive impairment (CI) has been established, but the neural mechanisms that underlie this interaction have yet to be identified. CAD patients may exhibit specific manifestations of CI, underscoring the importance of early diagnosis. EEG activity changes are a valuable diagnostic tool to detect brain pathology. The study aimed to investigate the effects of CAD on EEG activity with intact cognitive status and CI.

Methods. The study involved 132 patients with stable coronary artery disease (CAD) aged 45 to 75 years. According to the Montreal Cognitive Assessment Scale (MoCA) results, the patients were divided into two groups: those without CI (no CI), with MoCA scale sum scores ranging from 27 to 30 ($n = 37$), and those with CI, with MoCA scale sum scores ranging from 20 to 26 ($n = 95$). The group of practically healthy elderly subjects consisted of 63 individuals aged 43 to 78 years. All patients and healthy participants underwent an EEG study. The mean values of the spectral power density were calculated in the frequency band of 4-30 Hz for the electrode areas symmetrically located in the left and right hemispheres: frontal, central, temporal, parietal, and occipital.

Results. Theta and alpha 2 power values were lower for the healthy elderly group compared to CAD patients, both with and without CI. Furthermore, CAD patients without CI had higher alpha 2 power values than the CI group. The topographic features of the differences in the theta 1 rhythm between the practically healthy elderly group and CAD patients were related to the frontal and temporal areas in patients without CI, as well as to the frontal, temporal, and occipital areas of the brain in the CI group.

Conclusion. The study's data can be used to develop diagnostic tools for identifying cognitive impairment in patients with coronary heart disease at early stages.



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sciforum-146807: Virus-derived Serpin Interaction with Mammalian Serpins - *Serpinosome*

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Abstract:

Serine protease inhibitors, termed *Serpins*, bind and inhibit serine proteases that control central coagulation, immunity and connective tissue remodeling throughout the mammalian body. Genetic mutations in serpins including alpha-1 anti-trypsin, neuroserpin and anti-thrombin, cause severe disease ranging from emphysema and epilepsy to clotting disorders. With classic serpin inhibitory function there is cleavage of a reactive center loop (RCL) by selectively targeted proteases, forming a suicide complex with translocation of the protease to the opposite pole of the serpin, adding an additional A beta sheet sequence and forming inactive 'suicide complexes'. In diseases caused by serpin mutations, there is RCL insertion into adjacent mutated serpin A beta sheet or binding at other sites. Large DNA viruses express serpins with highly potent immune and coagulation modifying activity, functioning at low doses with selective targeting of mammalian pathways, providing a new class of immune modulating biologics. Myxomavirus-derived Serp-1, effectively blocks immune disorders in a wide range of models, providing a new therapeutic class, improving outcomes when given systemically at low doses (microgram/kg range). In a pristane induced lupus lung hemorrhage model, PEGylated (PEGSerp-1) reduces lung hemorrhage and inflammation. Immunoprecipitation and mass spectrometry analysis demonstrated binding of PEGSerp-1 to known target proteases, inflammatory mediators and unexpectedly to selected mammalian serpins. Here we examine serpin-to-serpin interactions, specifically PEGSerp-1 binding to unrelated mammalian serpins *in vivo*, *in vitro* and *in silico*. We postulate a new, previously unexplored, regulatory *serpinosome* complex.

Keywords: Serpins, PEGylated Serp-1, Pulmonary inflammation, Immune modulation, Serpin-to-serpin interactions, Lupus lung hemorrhage, Therapeutic biologics



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Session 2. Nephrology & Urology

sciforum-126656: An L-shape between Dietary Phosphorus Intake and Cardiovascular Disease in non-dialysis Chronic Kidney Disease American Adults: National Health and Nutrition Examination Survey

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Abstract

Objective: This study aims to investigate the threshold effects and the shape of the association between dietary phosphorus intake and the prevalence of cardiovascular disease (CVD) in non-dialysis chronic kidney disease (CKD) patients. Understanding this relationship is crucial for dietary recommendations and clinical management in this vulnerable population.

Background: Phosphorus intake is strictly regulated in dialysis patients due to its significant impact on health outcomes. However, the association between phosphorus intake and CVD in non-dialysis CKD patients remains poorly understood. This knowledge gap prompted our investigation into whether dietary phosphorus intake influences CVD prevalence in this specific patient group.

Methods: The US National Health and Nutrition Examination Survey data from 2001 to 2018 were analyzed for this cross-sectional study. The diagnosis of chronic kidney disease is eGFR less than 60 (mL/min/1.73m²) or urinary albumin/creatinine ratio (ACR) greater than or equal to 30mg/g. Dietary phosphorus intake was evaluated using the 24 h dietary recall system.

Results: A total of 7,890 chronic kidney disease participants were included, divided into three groups according to dietary phosphorus intake: T1 (1000 mg/day), T2 (1000-1200 mg/day), and T3 (>1200 mg/day). Of whom 2,198 (24.74%) reported having cardiovascular disease. Compared to T2 (1000-1200 mg/day), the adjusted odds ratios for CVD in T1 and T3 were 1.33 (95% confidence interval [CI]: 1.07-1.64, p = 0.01) and 0.98 (95% CI: 0.77-1.23, p = 0.834), respectively. Sensitivity analysis also showed an association between dietary phosphorus intake and cardiovascular disease.

Conclusion: Our analysis revealed an L-shaped relationship between dietary phosphorus intake and cardiovascular disease, indicating a higher risk at lower levels of intake.



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sciforum-144422: Preoperative SGLT-2 Inhibitor Use and Postoperative Outcomes in Cardiac Surgery: A Causal Inference Analysis

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Abstract

Background: Sodium-glucose cotransporter-2 inhibitors (SGLT-2i) have been shown to provide protective effects in patients with type 2 diabetes, heart failure, and chronic kidney disease. Evidence on their impact in the perioperative setting, particularly in cardiac surgery, however, remains scarce, thus, we aimed to evaluate the association between preoperative SGLT-2i use and postoperative outcomes in patients undergoing major cardiac surgical procedures.

Methods: This retrospective, single-center study included adult patients with SGLT-2i therapy, who underwent cardiac surgery between 2020 and 2024. The exposure was defined as documented SGLT-2i use within 14 days before surgery. The primary endpoint was postoperative acute kidney injury (AKI) defined according to KDIGO criteria; secondary endpoints included need for kidney replacement therapy, ICU length of stay, and 30-day mortality. A causal inference framework employing inverse probability of treatment weighting was applied to estimate the effect of SGLT-2i therapy.

Results: Of the study population (n=1257), 211 (16.8%) were female. Four hundred eighty two (38.3%) patients were SGLT-2i users and 775 (61.7%) non users. Users had a EuroSCORE II (median 2.5 [1.4–4.9] vs. 1.5 [0.9–2.6], p<0.001), and more frequent chronic kidney disease and heart failure. Baseline creatinine was higher among users, while preoperative hemoglobin was lower. Thirty-day survival did not differ significantly between groups (97.0% vs. 98.3%, p=0.253).

Conclusion: In patients undergoing cardiac surgery, preoperative SGLT-2i use was associated with distinct baseline characteristics including higher comorbidity burden. While mortality did not differ, the causal inference framework will allow for robust estimation of the therapy's effect on postoperative AKI risk. These findings contribute to the growing body of evidence on the potential perioperative benefits of SGLT-2i and support the need for prospective validation.



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sciforum-145704: Combined Plasma Syndecan-1 and Renal Resistive Index as Early Predictions of Sepsis-Associated Acute Kidney Injury: A Prospective Observational Study

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Background: In septic patients, the interplay between macro-microcirculatory dysfunction and acute kidney injury (AKI) remains elusive. This study aimed to explore the association between hemodynamics and endothelial damage in sepsis associated AKI (SA-AKI) by evaluating the combined predictive value of renal resistive index (RRI) and plasma syndecan-1.

Methods: This prospective observational study enrolled 80 septic patients admitted to the intensive care unit of a tertiary hospital from May to December 2024. AKI was diagnosed according to the Kidney Disease: Improving Global Outcomes (KDIGO) criteria. Plasma syndecan-1 levels were measured at admission and RRI was assessed within 24 hours of ICU admission. Diagnostic performance was evaluated using receiver operating characteristic (ROC) curve analysis by calculating the area under the curve (AUC). Univariate and multivariate logistic regression models were applied to identify independent risk factors of SA-AKI. Predictive models were constructed to validate the effectiveness.

Results: Among 80 septic patients, 41 (51.25%) developed AKI. Syndecan-1 levels were significantly higher in the AKI group [109.95 (73.67,221.40) vs. 73.67 (54.59,109.95) ng/ml, $P=0.007$], and RRI values were markedly elevated (0.69 ± 0.08 vs. 0.60 ± 0.06 , $P=0.001$) compared to non-AKI patients. Univariate analysis revealed syndecan-1 (OR=2.68, 95%CI 1.29-5.59) and RRI (OR=1.18, 95%CI 1.09-1.28) as predictors of AKI. In multivariate models adjusted for confounders, both plasma syndecan-1 (OR=3.57, 95%CI 1.01-12.64, $P=0.048$) and RRI (OR=1.19, 95% CI 1.07-1.33, $P=0.002$) retained significance. The Predictive Model using a combination of plasma syndecan-1 and RRI achieved superior diagnostic performance (AUC 0.859, sensitivity 87.8%, specificity 92.3%).

Conclusions: In patients with SA-AKI, elevated plasma syndecan-1 and RRI were identified as independent risk factors for SA-AKI. The combination of syndecan-1 and RRI can serve as synergistic biomarkers for prediction of SA-AKI.



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sciforum-145096: Current Therapeutic Strategies for Idiopathic Membranous Nephropathy

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Introduction: Idiopathic membranous nephropathy (IMN) is a common cause of nephrotic syndrome in adults. It is an immune-mediated disease characterized by subepithelial immune complex deposition and alterations in the glomerular basement membrane. The Kidney Disease Improving Global Outcomes (KDIGO) guidelines recommend, for the treatment of this serious public health problem, rituximab or cyclophosphamide with steroids, or calcineurin inhibitor–based therapy. However, it is necessary to evaluate the efficacy of the currently proposed therapies. **Methods:** A search was conducted in the PubMed (MEDLINE) database using the MeSH terms “Glomerulonephritis, Membranous” and “Therapeutics,” applying the filters “Systematic Reviews” and “Free full text.” Studies published between 2020 and 2024 were selected, totaling 13 articles. **Results:** Rituximab proved to be effective, well-tolerated, and safe in the treatment of IMN, with the added advantage of being steroid-free. Most patients achieved complete remission during the follow-up period, with low rates of adverse events and relapses. Treatment with *Tripterygium wilfordii* polyglycosides showed improvements, observed through essential markers for assessing renal function, such as 24-hour urinary protein levels, with significant clinical remission. Additionally, tacrolimus, both as monotherapy and combined with steroids, demonstrated a strong therapeutic effect in achieving overall and complete remission. However, the relapse rate with monotherapy was higher than with established therapies such as cyclophosphamide plus corticosteroids. **Conclusions:** IMN is a serious disease and a significant health problem for both patients and healthcare systems. In this context, rituximab therapies have shown high efficacy. Moreover, treatments with tacrolimus and *Tripterygium wilfordii* poly-glycosides have demonstrated potential effectiveness in treating IMN, as evidenced by renal function markers and good clinical remission, highlighting the need for further studies to ensure the safety and efficacy of these alternative therapies.



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sciforum-147577: Emerging Nontraditional Therapies in Diabetic Kidney Disease: Evidence from 12 Clinical Trials

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Introduction

Diabetic Kidney Diseases (DKD) remain a leading cause of Chronic Kidney Disease (CKD) and End Stage Renal Failure (ESRD) worldwide. Conventional therapies confer only partial protection from disease progression. Recent clinical trials have explored novel therapeutic agents that target non-traditional pathways and offer potential reduction in Renal and Cardiovascular morbidity in patients with Type II Diabetes.

Methods

A data-driven review was conducted by extracting efficacy and safety outcomes from Phase II and III clinical trials published between 2019–2025, focusing on three emerging therapeutic classes: the nonsteroidal mineralocorticoid receptor antagonist finerenone, the dual SGLT1/2 inhibitor sotagliflozin, and the endothelin A receptor antagonist atrasentan. Key renal outcomes included reductions in albuminuria and slowing of estimated glomerular filtration rate (eGFR) decline, while cardiovascular outcomes and adverse events were also evaluated.

Results

Across 12 Phase II and III trials encompassing over 19,000 patients with DKD, unconventional therapies demonstrated consistent renal and cardiovascular benefits. Finerenone ($n \approx 5,700$) reduced the risk of kidney failure or cardiovascular death by 18% (HR 0.82; 95% CI 0.73–0.93; $P=0.001$) and the composite kidney outcome by 23–32%, while slowing eGFR decline by up to 20%. Sotagliflozin ($n \approx 10,500$) reduced kidney disease-related events by 20–24%, improved albuminuria, and decreased cardiovascular events, including heart failure hospitalizations, with pooled analyses showing a 24% reduction in composite cardiovascular endpoints (HR 0.76; 95% CI 0.70–0.83; $P0.001$). Atrasentan ($n \approx 2,900$) lowered proteinuria by 30–36% (95% CI -44.6 to -26.4 ; $P0.001$) and reduced the risk of kidney failure or doubling of serum creatinine by 35% (HR 0.65; 95% CI 0.49–0.88; $P=0.005$). Fluid retention remained the primary adverse effect. Collectively, these agents demonstrated statistically significant improvements in renal and cardiovascular outcomes across diverse DKD populations, offering clear advantages over standard therapy.

Conclusions

Emerging therapies such as finerenone, sotagliflozin, and atrasentan show substantial promise in mitigating renal and cardiovascular complications in DKD. Their unique mechanisms highlight a new paradigm in disease management, offering potential benefits beyond standard glycemic and blood pressure control.



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sciforum-146966: Intracavernosal OnabotulinumtoxinA (BoNT-A) for the Treatment of Erectile Dysfunction: A Systematic Review.

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Introduction

Erectile dysfunction (ED) affects up to 20% of men globally, with a significant subset unresponsive to first-line phosphodiesterase type 5 inhibitors (PDE5-Is). Alternatives like intracavernosal alprostadil are often declined due to administration difficulties. Intracavernosal onabotulinumtoxin type A (BoNT-A) has emerged as a potential treatment by relaxing cavernosal smooth muscle and enhancing penile blood flow, with effects lasting approximately six months.

Methods

A systematic search was conducted in accordance with PRISMA guidelines. Databases (PubMed, Embase, Cochrane Library) were searched from inception to 2025 for clinical studies (randomized controlled trials and prospective cohorts) investigating BoNT-A penile injections for ED. Data on patient demographics, BTX dosage, changes in International Index of Erectile Function (IIEF) scores, Erection Hardness Score (EHS), adverse events, and study quality were extracted using the Cochrane Risk of Bias or NIH Quality Assessment tools and narratively synthesized due to study heterogeneity.

Results:

Included studies (n=50) reported that BoNT-A injections were associated with improvements in erectile function scores (IIEF, SHIM, EHS), with response rates between 40% and 77.5%. Higher response rates were observed in patients with less severe ED and those receiving repeated doses, mainly at 100U. The treatment showed a favorable safety profile; adverse events were mostly mild and transient penile pain (1.5–6%), with no systemic complications reported. The quality of evidence was limited by study heterogeneity and small sample sizes

Conclusions

Intracavernosal BoNT-A is a promising and safe option for men with ED refractory to standard therapies. It may be moderately effective in select patients and could improve sexual function and reduce the need for invasive procedures. It may improve sexual function and reduce the need for invasive procedures. These findings warrant validation by large-scale, randomized, placebo-controlled trials to definitively establish its clinical role and optimal administration parameters.



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sciforum-145316: Real-world Effectiveness of SGLT2 Inhibitors on Renal and Metabolic Parameters in Patients with Chronic Kidney Disease

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Introduction: Sodium-glucose co-transporter 2 (SGLT2) inhibitors have become known as cornerstone therapies, demonstrating glycemic and cardiorenal benefits. While their role on glycemic control is established, real-world data on their impact on renal function (serum creatinine, serum urea, estimated glomerular filtration rate–eGFR) in different stages of chronic kidney disease (CKD) remains limited. This study evaluates the changes in kidney function following SGLT2 inhibitors in adults with varying stages of CKD, including both diabetic and non-diabetic patients.

Methods: This retrospective observational study included CKD patients aged 35 years and older. Patients on dialysis and patients who had side effects (UTI, diarrhea) or intolerance (shortness of breath and palpitations) to therapy were excluded. Kidney function was the primary endpoint, and secondary were glycemic control and electrolytes (natrum and potassium). Measurements were recorded at baseline, one month, and three to six months after the treatment initiation.

Results: Participants (38-80 years), consist of both males and females, predominantly CKD stages 3b-4. After six months of SGLT2 inhibitor therapy, eGFR responses varied. Some patients showed stabilization or improvement, and others experienced initial decline followed by stabilization or a sustained decline. SCr changes paralleled eGFR changes. Reduction in proteinuria was observed. Patients with diabetes mellitus marked significant improvements in both glucose and HgA1C, while electrolytes remained stable. Metabolic and renal parameters were similar between diabetic and non-diabetic patients.

Conclusions: This real-world retrospective study shows that SGLT2 inhibitors may promote renal stabilization, with metabolic benefits in patients with chronic kidney disease. While individual renal varied, the overall data supports the metabolic and renal benefits of these agents.



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sciforum-143443: Renal Involvement in West Nile Virus Infection: A Systematic Review and Meta-Analysis

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Introduction:

West Nile virus (WNV) is a neurotropic pathogen with an increasing clinical significance. This pathogen is responsible for recurrent outbreaks of meningitis and encephalitis worldwide. Severe cases can be fatal or result in long-lasting sequelae. While its impact on the central nervous system is well documented, recent evidence also suggests potential peripheral manifestations of WN disease, including renal involvement. The aim of this study was to evaluate alterations in renal function parameters in infected patients through a systematic review and meta-analysis.

Methods:

A systematic literature search was conducted in PubMed following PRISMA 2020 guidelines to identify studies reporting numerical data on biochemical markers of kidney function in hospitalized individuals infected with WNV. Several kidney function markers were analyzed, namely serum creatinine, blood urea nitrogen (BUN), sodium, potassium, calcium, bicarbonate, magnesium, hemoglobin, and estimated glomerular filtration rate (eGFR).

Results:

Data suggested that many patients showed signs of kidney issues. Creatinine levels were high in most of the patients, and BUN was elevated in about two-thirds of patients. Low sodium levels (hyponatremia) were common. Nearly half the patients had moderately reduced eGFR, and some had values suggesting serious kidney failure. Other markers like potassium, calcium, and magnesium did not show consistent patterns, likely because of the low number of available data.

Conclusions:

Our findings suggest that WNV infection often has effects on the kidneys. The results here described invite caution and more attention to renal function in WNV-infected patients, which may reduce the complications associated with infection and improve the outcome of the patients.



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sciforum-127898: Surgical Treatment for Female Stress Urinary Incontinence Across Various Anatomical Regions

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Abstract

Introduction: In October 2008, the FDA issued a Public Health Notification about severe complications and insufficient information suggesting that mesh-sling surgery improves clinical outcomes compared to traditional non-mesh treatments. Additionally, medical societies have raised concerns that surgical meshes and slings are linked to low but serious complications, including death, when treating stress urinary incontinence in women, and their long-term effectiveness remains uncertain. However, no recommendations were made to replace the currently used slings and meshes for treating female stress incontinence. Numerous clinical-scientific studies have shown that the native tissue of the female pelvis has considerable strength and durability. Therefore, using native tissue is suitable for surgical treatment; however, transitioning from slings and meshes to reconstruction with native tissue requires a comprehensive understanding of anatomy in various regions. With significant advancements in dynamic magnetic resonance imaging and ultrasonography, accurate identification of site-specific defects across multiple anatomical regions is now possible, allowing for targeted reconstruction.

Methods: A systematic review addressed the question, "Which anatomical regions contain the structures that support female urinary continence?" A PowerPoint presentation will summarize the findings.

Results: This systematic review documents the anatomy of female urinary continence across various anatomical regions for the first time. It also updates evidence-based medical data and emphasizes the importance of a thorough anatomical understanding when transitioning from meshes and slings to native tissue for treating urinary incontinence in women.

Furthermore, the pelvic floor muscles, endopelvic fascia, perineal membrane, and anterior-distal vaginal wall help maintain the urethra's natural position.

Conclusions: Identifying site-specific defects in various anatomical regions and repairing them with native tissue may help prevent surgical treatment failures in female stress incontinence.



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sciforum-139557: Temporal Trends in Sepsis-Associated Mortality Among Older Adults with Chronic Kidney Disease: A CDC WONDER Analysis

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Background

Sepsis and chronic kidney disease (CKD) are major causes of mortality in the U.S. However, national trends in mortality involving both conditions remain poorly defined.

Methods

This cross-sectional study analyzed CDC WONDER data (1999–2023) to examine mortality trends related to CKD–sepsis (ICD-10: N18, A40, A41) among U.S. adults aged 45 years or older. Age-adjusted and crude mortality rates (AAMRs, CMRs) were calculated per 100,000 population and stratified by gender, age, race, urbanization, region, state, place of death, and ICD-10 subcodes. Annual and average annual percentage changes (APCs, AAPCs) in trends were assessed using Joinpoint regression.

Results

CKD–sepsis mortality remained stable from 1999 to 2023, with AAMR rising from 7.5 to 9.0 per 100,000 by 2019 (APC = 0.60%, 95% CI: -0.21 to 1.51), then declining from 10.3 in 2020 to 9.7 in 2023 (APC = -2.6%, 95% CI: -6.96 to 1.81). Of 270,746 CKD–sepsis-related deaths, 51.5% were male, with consistently higher AAMRs and a significant rise through 2019. Black individuals consistently had the highest AAMRs throughout the study. From 1999 to 2019, rates declined across all racial groups except Whites. By 2023, Black AAMR (21.1) remained over twice that of Whites (8.0), Asian/Pacific Islanders (8.3), and Hispanics (10.4). The CMR gap between the 45-54 and ≥85 groups widened from a 9-fold to a 23-fold difference over the study period. DC had the highest AAMR (22.5), while Montana had the lowest (4.1). AAMRs in medium-sized and small, as well as non-metropolitan areas, rose significantly, surpassing those in large metropolitan areas. Regionally, the South had the highest AAMR throughout, increasing from 8.8 to 10.7. The majority (92.91%) of deaths were attributed to unspecified septicemia.

Conclusion

CKD–sepsis-related mortality remained relatively stable from 1999 to 2023, though certain populations, particularly males, older adults, Black individuals, and residents of the South, experienced consistently higher mortality rates.



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sciforum-147436: The Impact of Service Centralisation on Time to Theatre and Testicular Salvage in Testicular Torsion: A Retrospective Cohort Study

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Introduction

Testicular torsion (TT) is a time-dependent urological emergency. Surgical exploration within six hours of symptom onset is reported to have a testicular salvage rate exceeding 90% , but this rapidly declines to below 50% if the delay extends past 12 hours. In 2017, the merger between Hinchingsbrooke Hospital (HH) and Peterborough City Hospital (PCH) centralised urological services. This study aimed to evaluate whether this service reorganisation impacted key outcomes, including time to theatre and testicular salvage rates.

Methods

We conducted a retrospective cohort study of 98 patients who underwent scrotal exploration for suspected torsion. Data were collected from electronic and hard copy notes for the periods 2014–2020 at HH and 2016–2018 at PCH. The data points collected included the time of pain onset, presentation, referral, operative findings, and outcomes. Patients from HH transferred to PCH after the merger were included in the PCH post-merger group for analysis.

Results

A total of 98 patients were included. Pre-merger, HH had a 25% salvage rate for its 4 confirmed torsion cases. Post-merger, all 5 torsion cases from HH were salvaged (100% salvage rate). In contrast, PCH had a 100% salvage rate for its 10 pre-merger torsion cases, which fell to 82.4% for 17 torsion cases after the merger. The six-hour benchmark for timely exploration was rarely achieved across all groups, with mean times to theatre far exceeding this critical window.

Conclusion

The centralisation of services significantly improved outcomes for HH patients, with a 100% salvage rate post-merger. However, the decline in PCH's salvage rate suggests that the centralisation of services and increased workload may have negatively impacted the primary surgical site. The persistent failure to meet the six-hour benchmark highlights significant multifactorial delays. These are likely due to a combination of late patient presentation and systemic inefficiencies in the care pathway. Further work is needed to optimise referral protocols and improve public awareness to minimise time to surgery



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Session 3. Emergency Medicine

sciforum-147447: Advances in Targeted Temperature Management After Cardiac Arrest: A Narrative Review

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Introduction:

Cardiac arrest is a leading cause of sudden death, and survivors frequently suffer from significantly neurological problems. Targeted Temperature Management (TTM) has emerged as a critical post resuscitation technique that aims to decrease hypoxic ischemic brain injury and enhance results. Over the last decade, evolving clinical trials and updated recommendations have altered the techniques for applying TTM, with a greater emphasis on personalized treatment. This review focuses on significant developments and current discussions on TTM in emergency care.

Methods:

A narrative review was conducted using the PubMed, Scopus, and Cochrane Library databases to identify studies published between January 2013 and July 2025. Randomized controlled trials, large observational studies, systematic reviews, and expert guidelines were included. Articles focusing on TTM protocols, temperature targets, timing, and neurological outcomes in both in-hospital and out-of-hospital cardiac arrest were analyzed.

Results:

Recent landmark trials, including TTM1, TTM2, and HYPERION, demonstrate that strict hypothermia at 32°C to 34°C offers no clear advantage over controlled normothermia or milder temperature targets, shifting the focus to fever prevention and individualized care. Improvements in cooling technologies, like automated surface systems and intravascular devices, have improved precision and security. Evidence suggests that combining multimodal neuroprognostication, such as electroencephalography and biomarkers, can improve patient selection and outcomes. Despite progress, questions remain about the best duration of therapy, the timing of commencement, and risk reduction for complications like infection and arrhythmias.

Conclusion:

With its evolution from a standard hypothermia strategy to a customized approach that emphasizes stringent temperature control, TTM continues to be a fundamental component of post-cardiac arrest care. In order to integrate TTM with additional neuroprotective therapies and improve patient-specific procedures, ongoing research is necessary. In order to provide prompt, evidence-based therapy that optimizes neurological recovery, emergency physicians need to be up to date on these developments.



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sciforum-145315: Sepsis in the Emergency Department: Early Recognition and Rapid Management

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Introduction

Sepsis is one of the main causes of mortality worldwide and is a life-threatening emergency that needs early recognition and rapid treatment to enhance outcomes. Emergency departments (EDs) globally continue to face difficulties in promptly identifying sepsis due to nonspecific presentations and varying resource levels.

Methods

A literature review of international ED studies from 2020 to 2025 was conducted to find and analyze advances in sepsis diagnostic criteria, triage systems, antibiotic timing, and patient outcomes. Key PubMed-indexed studies, reviews and guidelines were analyzed.

Results

The Sepsis-3 definition (infection with organ dysfunction) has been widely adopted. Numerous screening methods (e.g., qSOFA, SIRS, NEWS) are employed to aid early diagnosis. Modern approaches, such as machine-learning triage algorithms, outperform traditional scores in terms of accuracy. According to a 2024 meta-analysis, ED sepsis alert systems have improved care processes by lowering mortality and by facilitating faster delivery of sepsis bundle elements (e.g., fluids, antibiotics). Early antibiotic administration remains essential. A 2020 meta-analysis reported no significant difference in mortality between antibiotics administered at 0–1 hour of sepsis and those given at 1–3 hours, despite the fact that global guidelines recommend using antibiotics within 1 hour. However, a larger 2024 meta-analysis, encompassing around 190,000 patients, showed that antibiotics given within 3 hours significantly increases survival compared to later administration. Though outcomes depend on factors like provider buy-in and screening accuracy, implementation of ED sepsis protocols has consistently increased adherence to guidelines.

Conclusions

ED-focused sepsis initiatives worldwide have advanced early detection and accelerated management over the last five years. Protocol-driven care and enhanced triage tools have increased adherence and show promising reduction in mortality. To further enhance patient outcomes worldwide, a structured and rapid-response approach to ED sepsis care is essential.



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sciforum-147859: Title: Post-Lumbar Puncture Headache in Practice: Insights from a Five-Year Audit at an East Midlands Tertiary Hospital

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Background:

Post-lumbar puncture headache (PLPH) is the commonest complication of lumbar puncture (LP). It worsens patient experience, prolongs length of stay and drives additional interventions. Meta-analytic data demonstrate that atraumatic (non-cutting) needles significantly reduce the incidence of post-LP headache and related interventions. (Nath *et al.*, 2018) The primary aims of our audit were to assess the prevalence and severity of post-LP headache, documentation quality, and needle choice (traumatic versus atraumatic needles) across departments in a tertiary hospital in the East Midlands.

Methods:

We retrospectively reviewed the healthcare records of 62 patients who developed post-lumbar puncture headaches between January 2020 and February 2025. Data on demographics, procedural details (needle type, LP site) and outcomes were analysed. An anonymised electronic questionnaire assessed clinicians' knowledge of PLPH and perceived barriers to using atraumatic needles.

Results:

Most PLPH episodes (64.5 %) followed LPs performed in acute medicine, where traumatic needles are still widely used. Documentation was poor: needle type was recorded in only 8% of cases (all cutting needles). Pain scores were missing in 61.3% but when documented, 83.3% were reported as severe (8–10/10). 80% of post LP headaches required readmission, with patients either being readmitted or if not, requiring a 4 times prolonged length of stay.

While 83 % of operators recognised that atraumatic needles reduce PLPH risk, only 28 % reported using them routinely; the remainder relied on whichever needle was available. Reported barriers were limited stock (50 %) and lack of hands-on training (33 %) .

Conclusion:

PLPH imposes a measurable inpatient burden yet key procedural details, especially needle type, are seldom documented. High PLPH rates likely reflect routine use of cutting needles in acute medicine, where atraumatic alternatives are rarely stocked. Ensuring consistent ward-level availability of atraumatic needles, mandating needle-type recording and delivering practical training could close the knowledge-practice gap and reduce PLPH related morbidity and related resource use.



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sciforum-145272: Age Distribution of Dengue in Brazil (2015–2025): Implications for Emergency Medicine Demand

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Introduction: Dengue is a significant public health concern in Brazil, characterized by its extensive territorial distribution, seasonal patterns, and regional variations. A substantial increase in reported cases in 2024 placed a critical burden on emergency services. **Objective:** To describe the number of dengue notifications in Brazil from 2015 to September 2025 by age group and discuss their implications for Emergency Medicine. **Methods:** This ecological, descriptive, and quantitative study used secondary data from the National Notifiable Diseases Information System (SINAN) via the TABNET/DATASUS platform. All probable dengue notifications (excluding discarded cases) from 2015 to September 2025 were included. **Results:** A total of 18,231,381 cases were reported between 2015 and 2025, with the highest number occurring in 2024 (6,431,065; 35.3%). The most affected age group was 20–39 years, accounting for 6,592,263 cases (36.2%), while the least affected were individuals aged 80 years or older, at 260,518 (1.43%). Adolescents aged 10–19 years accounted for 2,862,216 cases (15.7%) and have been eligible for free dengue vaccination since 2024. In this group, 970,410 cases were reported in 2024, which represents an approximately 297% increase from the 244,423 cases reported in 2023. As of September 2025, 217,313 cases had been notified in this age group. **Conclusion:** Dengue notifications increased substantially between 2015 and 2024, with a potential decline in 2025, especially among adolescents. The high concentration of cases among this age group and young adults presents a significant challenge for emergency services, requiring rapid triage, fluid management, and the timely identification of severe cases. Therefore, these fluctuations have a significant impact on the organization of emergency services, underscoring the need for enhanced preparedness, staff training, and effective resource allocation to manage seasonal surges and mitigate morbidity and mortality.



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sciforum-130658: Approach to Non-Traumatic Headache in the Emergency Department: A Literature Review

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Background: Headache is a common presenting complaint in emergency departments (EDs), accounting for approximately 2%–4% of all visits. While most headaches are benign, a subset may signal life-threatening conditions. Accurate and timely assessment is critical to distinguish primary from secondary causes, especially in the absence of trauma.

Objective: This literature review aims to provide an evidence-based approach to the evaluation and management of non-traumatic headaches in the ED, focusing on clinical assessment, red flags, diagnostic strategies, and treatment pathways.

Methods: A comprehensive review of the literature was conducted using databases such as PubMed, EMBASE, and Google Scholar. Articles published between 2010 and 2024 were selected based on relevance, with an emphasis on clinical guidelines, systematic reviews, and high-quality observational studies. Key search terms included “non-traumatic headache,” “emergency department,” “headache red flags,” “neuroimaging,” and “management.”

Results: The literature emphasizes the importance of a focused history and physical examination, with attention to red flags such as sudden onset (“thunderclap” headache), age over 50, immunosuppression, malignancy, and neurological deficits. Clinical decision tools such as the Ottawa Subarachnoid Hemorrhage Rule and the SNNOOP10 mnemonic aid in risk stratification. While neuroimaging is not routinely indicated for primary headaches, it is essential in cases with red flags. Treatment is guided by headache type, with tailored therapies for migraines, tension-type headaches, and secondary causes like meningitis or venous sinus thrombosis.

Conclusion: A structured and evidence-based approach is crucial for the safe and effective management of non-traumatic headaches in the ED. Identifying red flags, using validated decision rules, and adopting targeted treatment strategies improve diagnostic accuracy and patient outcomes while minimizing unnecessary imaging and delays.



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sciforum-146623: Bridging the Global Safety Gap: Suicide Prevention After Emergency Department Discharge

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Introduction

Emergency departments (EDs) are often the first point of contact for individuals in acute suicidal crisis. While immediate care may stabilize the crisis, the days following discharge remain one of the most dangerous periods, with suicide attempts frequently occurring within hours or days (Chung et al., 2017). Despite long-standing recognition of this risk, health systems across the world continue to lack standardized protocols to ensure safe transitions (Boudreaux et al., 2015).

Methods

We conducted a structured review of literature published between 2010 and 2025 using PubMed, Google Scholar, and World Health Organization (WHO) reports. Studies were included if they reported outcomes following ED discharge, evaluated suicide risk assessment tools, or investigated follow-up interventions. MeSH terms included “suicidal ideation,” “emergency department,” “post-discharge,” “follow-up,” and “suicide prevention.”

Results

Patients discharged from the ED after presenting with suicidal ideation have the highest risk of repeat self-harm within the first month, especially in the first 72 hours (Chung et al., 2022; Carroll et al., 2014). Although tools such as the Columbia Suicide Severity Rating Scale (C-SSRS) and the SAD PERSONS scale are available, their predictive accuracy is limited and application in routine practice remains inconsistent (Saunders et al., 2014). Interventions that combine safety planning with proactive follow-up, such as structured phone calls or rapid linkage to outpatient care, have shown significant reductions in repeat suicide attempts (Stanley et al., 2018; Luxton et al., 2013). Nonetheless, barriers persist, with nearly 70% of patients failing to attend follow-up care after ED discharge (Chung et al., 2022).

Conclusion

Suicide prevention in the immediate post-discharge period remains a neglected global patient safety challenge. Implementing standardized discharge protocols that include suicide risk screening, effective communication, and timely follow-up could prevent avoidable deaths and should be prioritized worldwide.



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sciforum-145128: Comparative Validation of Novel ANN-Based Scores vs. Utstein Predictor for Survival in Cardiogenic Out-of-Hospital Cardiac Arrest

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Introduction

Out-of-hospital cardiac arrest (OHCA) survival rates remain critically low despite decades of research, with cardiogenic causes representing the highest mortality burden. To address limitations in existing prediction tools, we developed two novel artificial neural network (ANN)-based predictive scores for return of spontaneous circulation (ROSC) and survival-to-discharge specifically in cardiogenic OHCA. This study directly compared their performance against the established Utstein comparator group—the current benchmark for OHCA outcome prediction.

Methods

Using prospectively collected data from a EuReCa_One-aligned OHCA registry (October 2014–September 2023; n=3,369 confirmed cardiogenic cases with initiated CPR), multilayer perceptron ANN modeling identified key predictive factors through iterative feature importance analysis. Scores (0–10 points) were weighted by factor contribution and categorized into low (0–3), intermediate (4–6), and high (7–10) probability tiers. Validation occurred in a temporally distinct, propensity-matched cohort (October 2023–December 2024; n=628) controlling for age, bystander involvement, and arrest location. The Utstein comparator group (witnessed arrest + bystander CPR + initial shockable rhythm) served as the primary benchmark for performance comparison using multivariate logistic regression.

Results

In the derivation cohort, ROSC occurred in 23.4% (790/3,369) and survival-to-discharge occurred in 5.0% (170/3,369). The ANN-derived scores demonstrated high discriminative accuracy: ROSC score OR 2.741 (95% CI 2.017–3.724; p0.001) and survival score OR 4.850 (95% CI 2.083–11.294; p0.001). Compared to the Utstein predictor, the ANN ROSC score showed non-inferior performance (Utstein OR 2.841, 95% CI 2.819–4.438; p0.001). Critically, the ANN survival-to-discharge score significantly outperformed the Utstein predictor, which demonstrated no statistical significance for survival prediction (Utstein OR 1.610, 95% CI 0.647–4.010; p=0.306), indicating limited clinical utility for this endpoint.

Conclusion

ANN-generated scores provide clinically actionable, granular prediction of cardiogenic OHCA outcomes. While comparable to Utstein for ROSC prediction, the survival-to-discharge score offers substantially superior discriminatory power (4.85 vs. 1.61 OR), enabling more precise early field triage and resource allocation. Future implementation studies should validate these tools in prehospital settings.



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sciforum-144477: Endovascular Thrombectomy for Acute Ischemic Stroke with a Large Infarct Area: An Updated Systematic Review and Meta-Analysis of Randomized Controlled Trials

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Abstract

Background: Since the efficacy and safety of endovascular thrombectomy (EVT) in patients with acute ischemic stroke with a large infarct area is still inconclusive, we sought to compare functional and neurological outcomes with the use of endovascular thrombectomy versus medical care alone.

Methods: We searched MEDLINE (via PubMed), Embase, Cochrane Library, ClinicalTrials.gov, and the International Clinical Trials Registry Platform (ICTRP) to retrieve all the relevant randomized controlled trials (RCTs) on this topic. Review Manager (RevMan) was used to perform meta-analyses using a random-effect model. Dichotomous outcomes were pooled using risk ratios (RR) with 95% confidence intervals (CIs).

Results: Our meta-analysis included 6 RCTs with a total of 1665 patients. Most studies included patients with an ASPECTS score of 3-5. Our results demonstrate that endovascular thrombectomy significantly increased the rates of functional independence (mRS ≤ 2) (RR, 2.49; 95% CI, 1.89-3.29) and moderate neurological outcome (mRS ≤ 3) (RR, 1.90; 95% CI, 1.50-2.40) at 90 days. The benefit of EVT for these outcomes remained unchanged at the 1-year follow-up. Endovascular thrombectomy was associated with increased rates of early neurological improvement (RR, 2.22; 95% CI, 1.53-3.22), excellent neurological recovery (mRS ≤ 1) (RR, 1.75; 95% CI, 1.02-3.03), and decreased rate of poor neurological recovery (mRS 4-6) (RR, 0.81; 95% CI, 0.76-0.86). No significant difference was found between the two groups regarding all-cause mortality (RR, 0.86; 95% CI, 0.72-1.02), decompressive craniectomy (RR, 1.32; 95% CI, 0.89-1.94), and the incidence of serious adverse effects (RR, 1.39; 95% CI, 0.83-2.32) between the two groups. Endovascular thrombectomy significantly increased the rates of any intracranial hemorrhage (relative risk [RR], 1.94; 95% confidence interval [CI], 1.48-2.53) and symptomatic intracranial hemorrhage (RR, 1.73; 95% CI, 1.11-2.69).

Conclusion: Endovascular thrombectomy (EVT) significantly improves neurological and functional outcomes in patients who present within 6 hours of stroke onset with ICA and proximal M1 occlusions, and ASPECTS scores ranging from 3 to 5, compared to medical therapy alone, with an increased risk of symptomatic intracranial hemorrhage.



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sciforum-146687: Hemosuccus Pancreaticus: A Challenging Diagnosis and Complex Management

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Abstract

Background:

Hemosuccus Pancreaticus (HP) is a rare and often underdiagnosed cause of upper gastrointestinal bleeding, usually associated with pancreatitis, pseudocysts, or vascular abnormalities such as visceral artery pseudoaneurysms. Its intermittent presentation frequently delays diagnosis, contributing to significant morbidity and mortality.

Case Presentation:

We report a 69-year-old man with a background of chronic alcoholic pancreatitis, fatty liver disease, and multiple comorbidities who presented with melena, symptomatic anaemia, and a Glasgow-Blatchford score of 14. Initial endoscopy revealed esophagitis with Candida infection, but did not account for persistent bleeding and haemoglobin decline. Capsule endoscopy localized slow bleeding to the proximal jejunum, while subsequent enteroscopy identified active bleeding near the ampulla of Vater. Contrast-enhanced CT revealed a 3.3 cm aneurysm in the pancreatic head/uncinate process. Despite angiography, no definite arterial source was visualized. Given poor surgical candidacy, a multidisciplinary team opted for endoscopic ultrasound (EUS)-guided intervention. Thrombin injection (4.5–5 mL, 500 U/mL diluted) into the identified pseudoaneurysm achieved immediate haemostasis. Unfortunately, the patient later experienced recurrent massive bleeding, culminating in haemorrhagic shock and death.

Discussion:

This case illustrates the diagnostic complexity of HP and highlights the limitations of conventional imaging and angiography. EUS-guided thrombin injection represents a promising minimally invasive approach, particularly in high-risk surgical patients. However, recurrence remains a major concern, emphasizing the need for vigilant monitoring and multidisciplinary decision-making.

Conclusion:

HP should be considered in obscure GI bleeding, especially in patients with pancreatitis. Novel endoscopic ultrasound-guided interventions can provide temporary haemostasis, but durable management remains challenging in frail patients with multiple comorbidities.

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sciforum-148570: Kounis Syndrome: A Rare Intersection of Allergy and Cardiac Emergency

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1) Introduction: Kounis syndrome (KS) is an acute coronary syndrome (ACS) triggered by hypersensitivity or allergic reactions, most commonly following exposure to allergens such as insect stings, drugs, or environmental factors. This syndrome is likely underdiagnosed due to its rarity and varied clinical presentation.

2) Methods: This is a single-patient case report based on clinical encounter and follow-up in the emergency department, conducted with patient consent. Key clinical events, diagnostic findings, and therapeutic interventions are detailed to illustrate the diagnosis and management of KS secondary to bee sting.

3) Case: This is the case of a 45-year-old man with known past medical history of type 2 diabetes mellitus and hypertension. This gentleman presented to the Emergency Department 45 minutes after sustaining multiple bee stings to his neck. He reported generalized itching, chest pain, and difficulty breathing. Examination revealed urticarial wheals on the back and chest, pruritus, tachycardia (heart rate 121 bpm), tachypnea (respiratory rate 32/min), oxygen saturation of 97% on room air, and hypotension (BP 88/42 mmHg). Standard guidance was followed to treat anaphylaxis. Due to persistent chest pain, an ECG was recorded, which demonstrated an anterior wall ST-elevation myocardial infarction (STEMI). The patient was admitted under cardiology, underwent coronary angiography, and received a stent to the left anterior descending (LAD) artery. This presentation of STEMI in the context of anaphylaxis is consistent with Kounis syndrome.

4) Conclusion: This case highlights the need for clinicians to maintain a high index of suspicion for Kounis syndrome in patients presenting with ACS symptoms in the context of an allergic reaction, particularly following bee stings. Prompt recognition and coordinated management of both the allergic and cardiac components are essential for optimal outcomes. Increased awareness and reporting of such cases will aid in early diagnosis and improve patient care.



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Session 4. Nuclear Medicine & Radiology

sciforum-145113: Effect of Pulmonary Hypertension on Pulmonary Hemorrhage in Patients Undergoing CT-Guided Lung Biopsy

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Purpose: To retrospectively evaluate several parameters associated with the occurrence of pulmonary hemorrhage in patients undergoing CT-guided percutaneous lung biopsy (PLB), focusing on pulmonary hypertension (PH).

Methods and Materials: This study enrolled patients with pulmonary lesions, who underwent CT-guided PLB for histological diagnosis. The systolic pulmonary artery pressure (sPAP) was determined using echocardiography. PH was defined as sPAP of 35 mmHg or higher. The pulmonary hemorrhage was classified as follows: grade 0: no hemorrhage; grade 1: hemorrhage with a width of ≤ 2 cm around needle; grade 2: hemorrhage > 2 cm in width and sublobar; grade 3: lobar hemorrhage or greater; and grade 4: hemothorax). Higher-grade pulmonary hemorrhage was defined as grade 2 or higher.

Results: We included 400 patients (mean age: 69 ± 12 years; 206 women) with indeterminate lung lesions who underwent CT-guided PLB. A total of 186 patients had PH at a rate of 46.5%. The rate of patients without PH was 53.5% (214/400). The baseline characteristics of both groups were similar without significant differences except for age. The rate of overall hemorrhage was higher in patients with PH compared to patients without PH (66.7% vs 49.5%; p-value 0.001). The rate of higher-grade hemorrhage in patients with PH was also higher compared to patients without PH (46.2% vs 24.8%; p-value 0.001). No hemorrhage-related deaths were observed in either group. An sPAP threshold of 36 mmHg showed a sensitivity of 72% and specificity of 56% for predicting higher-grade hemorrhage. Size of lung lesion, sPAP, length of intrapulmonary needle path and age were, on both univariate and multivariate analyses, significant factors for higher-grade hemorrhage. Both main pulmonary artery diameter and main pulmonary artery diameter to ascending aorta diameter ratio were not significantly associated with higher-grade hemorrhage in either univariate or multivariate analyses.

Conclusions: Pulmonary hypertension significantly increases the risk of pulmonary hemorrhage in patients undergoing CT-guided lung biopsy. Estimating sPAP using echocardiography prior to biopsy should be integrated into clinical practice to possibly predict pulmonary hemorrhage.



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sciforum-147608: A Case Report of Peritoneal Mesothelioma as an Acute Abdomen Mimic: A Rare Presentation and Diagnostic Challenges

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Background

Malignant peritoneal mesothelioma (MPM) is a rare and aggressive cancer originating from the peritoneal lining, accounting for less than 10% of all mesothelioma cases. It is strongly linked to prior asbestos exposure, typically presenting after a latency of several decades. The clinical presentation is often vague—abdominal pain, distension, or altered bowel habits—making early diagnosis challenging. Presentation as an acute abdomen is exceptionally rare and can lead to misdirection in initial management.

Case Presentation

We report the case of a 60-year-old man with remote occupational asbestos exposure who presented with acute abdominal pain and localized tenderness, initially raising concerns for a surgical emergency. He was referred to the surgical team with presumed peritonitis. Initial imaging revealed omental thickening, peritoneal enhancement, and a pelvic soft tissue lesion. Upper and lower GI endoscopy were inconclusive. The diagnostic process was prolonged due to the non-specific presentation, with malignancy not initially suspected. Subsequent biopsy confirmed epithelioid peritoneal mesothelioma.

He was reviewed by the specialist peritoneal mesothelioma multidisciplinary team and commenced on dual immunotherapy (ipilimumab and nivolumab). During treatment, he developed right-sided neck pain and was found to have an internal jugular vein thrombosis—a rare thrombotic complication in the context of malignancy. He was started on anticoagulation. The disease later progressed, with increasing ascites requiring repeated paracentesis. He is currently receiving palliative care.

Conclusion

This case highlights the diagnostic complexity of MPM when it presents atypically, as in this patient mimicking an acute surgical abdomen. Initial misdirection delayed diagnosis, underscoring the importance of considering malignancy in unexplained abdominal presentations, especially with relevant exposure history. The development of an unusual thrombotic event further reflects the systemic and unpredictable nature of mesothelioma. A high index of suspicion, early multidisciplinary involvement, and awareness of atypical presentations are key to timely diagnosis and improved patient outcomes.



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sciforum-147632: Assessment of Radiation Dose to Adult Patients in Cardiac CT

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Introduction: Heart disease is the leading cause of death globally, with increasing cases of Atherosclerotic Cardiovascular Disease (ASVD) and coronary artery disease (CAD). Coronary CT angiography (CTA) is an advanced, non-invasive tool with high sensitivity for diagnosing CAD, offering advantages over traditional angiography, including 3D imaging and the ability to assess related structures. However, CTA involves ionizing radiation and contrast material. Several attempts have been made to record and assess the radiation doses in CTCA. Despite the implementation of various initiatives to reduce radiation exposure, there is a need for assessing the radiation exposure levels with CT examination. This study's aim was to evaluate the radiation doses received by the adult patients during cardiac CT examination.

Methods: The retrospective study at a tertiary care hospital from May to August 2024 included adults over 15 undergoing CT angio on GE Healthcare Revolution EVO CT following standard protocol. The software on the unit generates Dose Length Product (DLP) for each patient scan, and the Effective Dose (E) was computed for each patient. Linear regression analyzed the relationship between effective dose, BMI, and injected contrast volume.

Results: The mean value of effective dose was observed to be 13.55 mSv with a minimum of value of 0.175 mSv and maximum of 27.23mSv. The median DLP was found to be 943.26 mGy.cm, with minimum value of 12.47 mGy.cm. The linear regression analysis shows that there exists no dependence of effective dose on BMI and volume of the contrast injected.

Conclusion: Our audit shows values exceeding UK NDRLs for coronary CT angiography and coronary angiography, 4.3 mSv and 170 mGy.cm, respectively. The study suggests tailoring CTCA protocols for each patient to reduce radiation dose, optimize dosage based on patient size, improve patient selection, conduct regular audits, and raise public awareness about radiation risks.



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sciforum-146304: Clinical Utility of ^{18}F -FDG and ^{18}F -AV45 PET Imaging in Patients with Varying Degrees of Cognitive Impairment

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Objective: To explore the utility of ^{18}F -FDG and ^{18}F -AV45 PET/CT in patients with varying cognitive impairment severities. **Methods:** This retrospective study included 202 patients with cognitive impairment (70 males, 132 females; aged 41-91 years) who underwent both ^{18}F -FDG and ^{18}F -AV45 PET/CT between December 2020 and March 2025. Patients were classified into mild cognitive impairment (MCI, $n=81$), mild Alzheimer's disease (AD, $n=75$), and moderate-to-severe AD ($n=46$) groups. A healthy control (HC) group ($n=23$) was also included. Regional ^{18}F -FDG Z-scores and ^{18}F -AV45 SUVR values were processed using Cortex ID software. Statistical analyses included Cohen's *Kappa*, ANOVA, Kruskal–Wallis test, Bonferroni correction, Pearson correlation, and ROC analysis. **Results:** Visual analysis method of PET imaging showed that the sensitivity in diagnosing MCI was 74.07% (*Kappa*=0.34, $P=0.001$); the sensitivity for diagnosing AD was 96.69% (*Kappa*=0.78, $P=0.001$). Semi-quantitative analysis revealed: With the progression of the patients' condition, the ^{18}F -FDG Z-score of the whole brain and each brain region gradually decreased (H values: 25.53-85.31, all $P=0.001$). The ^{18}F -AV45 SUVR gradually increased (H values: 37.93-49.08, all $P=0.001$). There was no statistically significant difference in ^{18}F -AV45 SUVR among the AD subgroups (all $P>0.05$). ROC analysis identified the posterior cingulate gyrus as the most discriminative region for ^{18}F -FDG in differentiating MCI from HC and AD from HC (AUC=0.68-0.99) and the parietal lobe for mild AD vs. MCI (AUC=0.71). For ^{18}F -AV45, the posterior cingulate–precuneus region best distinguished MCI/AD from HC (AUC=0.87-0.99), and the occipital lobe best differentiated moderate-to-severe AD from MCI (AUC=0.66). **Conclusions:** ^{18}F -FDG and ^{18}F -AV45 PET/CT imaging can non-invasively evaluate brain A β deposition and neurodegenerative changes; Both their visual and semi-quantitative analysis methods can provide important imaging evidence for the early diagnosis and pathophysiological evolution of MCI and AD; ^{18}F -FDG PET/CT is superior in evaluating disease severity and cognitive function.



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sciforum-146302: Diagnostic Value of Modified Hepatobiliary Scintigraphy in Biliary Atresia with Varying Liver Injury

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Objective: To evaluate the diagnostic value of modified hepatobiliary scintigraphy in children with biliary atresia (BA) across varying degrees of liver injury. **Methods:** A retrospective analysis was conducted on 272 infants with persistent jaundice, including 113 cases of BA confirmed by follow-up or pathology and 159 cases of intrahepatic cholestasis. Based on ALBI scores, patients were divided into two groups: a mild-to-moderate liver injury group ($n=212$) and a severe liver injury group ($n=60$). A modified analytical approach, combining visual analysis within 6 hours with semi-quantitative assessment of bowel excretion delay, was applied as an improved method for hepatobiliary scintigraphy. The diagnostic efficacy of conventional hepatobiliary scintigraphy, the modified method, and ultrasound for BA was compared. **Results:** In the mild-to-moderate liver injury group, the modified hepatobiliary scintigraphy method demonstrated sensitivity, specificity, accuracy, positive predictive value (PPV), and negative predictive value (NPV) of 96.88%, 95.69%, 96.23%, 94.90%, and 97.37%, respectively, for diagnosing BA. Compared with the conventional method, the modified approach showed significantly higher specificity, accuracy, and PPV (all $P<0.01$), while no significant differences were observed in sensitivity or NPV (all $P>0.05$). Compared with ultrasound, the modified method exhibited significantly higher sensitivity, accuracy, and NPV (all $P<0.01$), with no significant differences in specificity or PPV (all $P>0.05$). In the severe liver injury group, the modified method showed sensitivity, specificity, accuracy, PPV, and NPV of 88.24%, 88.37%, 88.33%, 75%, and 95%, respectively. Compared with the conventional method, the modified approach had significantly higher specificity, accuracy, and PPV (all $P<0.01$), while no significant differences were found in sensitivity or NPV (all $P>0.05$). There were no significant differences between ultrasound and the modified method across all metrics (all $P>0.05$). **Conclusions:** The modified hepatobiliary scintigraphy method offers high diagnostic value for children with BA across varying degrees of liver injury.



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sciforum-147420: Enlarged Mediastinal Shadow: Not Always Lymphoma

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Introduction:

Mediastinal widening on chest X-ray is an alarming finding that requires further investigation. In infants and young children, it usually reflects physiological thymic enlargement. In older children, however, it may result from germ cell tumors, thymic disease, infections, vascular anomalies, or hematopoietic malignancies. We present three pediatric cases in which proliferative disorders of the hematopoietic and lymphatic systems manifested as very similar mediastinal enlargement on radiographs.

Case reports:

Case 1: A 14-year-old girl presented with fever, pruritus, and neck contour changes. Examination revealed hard, painless lymphadenopathy in the supraclavicular and cervical regions. Laboratory tests showed leukocytosis of 13,000/ μ l, hemoglobin 11.1 g/dl, and platelets 405,000/ μ l. Chest X-ray demonstrated a mediastinal shadow of 105 mm. Histopathology confirmed stage IVB Hodgkin's lymphoma, nodular sclerosis subtype.

Case 2: An 11-year-old boy was admitted with progressive dyspnea, cough, and neck swelling lasting one month. Chest X-ray revealed mediastinal widening of 83 mm, narrowing the airway to 1 mm. Due to respiratory failure, tracheostomy and biopsy were performed. Laboratory results showed leukocytosis of 10,100/ μ l and elevated D-dimers. Final diagnosis was stage IV T-cell lymphoblastic lymphoma.

Case 3: A 13-year-old boy presented with gastrointestinal bleeding and generalized petechiae. Ultrasound revealed splenomegaly. Laboratory findings included hyperleukocytosis (170,000/ μ l) with 80% blasts, thrombocytopenia (23,000/ μ l), and elevated transaminases. Physical exam showed hepatosplenomegaly and generalized lymphadenopathy. Chest X-ray demonstrated mediastinal widening of 77 mm. Myelogram and immunophenotyping confirmed acute T-cell lymphoblastic leukemia.

Conclusions:

Although chest X-ray is an important initial tool, it cannot differentiate the causes of mediastinal widening. In adolescents with alarming symptoms, further evaluation with blood counts, imaging, and histopathology is essential. These cases demonstrate that nearly identical radiological appearances may correspond to distinct hematologic malignancies, each requiring targeted treatment.



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sciforum-144135: From Atlas to Algorithm: A Systematic Review of CNN-Based Bone Age Assessment

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Introduction: Bone age (BA) assessment is crucial in pediatric endocrinology, growth disorder evaluation, and forensic age estimation. Traditional methods, such as the Atlas of Greulich–Pyle and Tanner–Whitehouse, are widely adopted but remain time-consuming, operator-dependent, and prone to inter-observer variability of 0.5–1.0 years. Convolutional Neural Networks (CNNs) offer a promising automated alternative with the potential to improve accuracy and consistency. **Methods:** This systematic review followed PRISMA guidelines and was prospectively registered in PROSPERO (CRD42024619808). A comprehensive search was conducted across eight databases—MEDLINE (PubMed), Google Scholar, Scopus (Elsevier), EBSCOhost, Cochrane Library, Web of Science (WoS), IEEE Xplore, and ProQuest—from 2019 to 2024. Eligible studies applied CNN-based models to posteroanterior hand–wrist radiographs for BA estimation. Architectures included VGGNet, ResNet, DenseNet, Inception-v4, Inception-ResNet-v2, Xception, MobileNetV2, and EfficientNet, with or without transfer learning. Extracted data covered model architecture, dataset characteristics, training strategy, and performance metrics, focusing on mean absolute error (MAE) and measures of variability (standard deviation [SD] or confidence intervals). **Results:** Fifty-five studies met the inclusion criteria. CNN-based models achieved MAEs as low as 0.23 ± 0.02 years ($\approx 2.75 \pm 0.24$ months), markedly surpassing traditional manual assessments. In large-scale datasets, CNN predictions showed 95% confidence intervals within ± 0.4 years, compared with ± 1.2 years for expert evaluations. Hybrid and ensemble approaches, which combine CNN outputs with atlas-based scoring, enhanced robustness. Methodological refinements, including preprocessing pipelines, automated region-of-interest detection, U-Net segmentation, and attention mechanisms, optimized feature extraction and reduced error variability. **Conclusions:** CNNs provide high-precision BA estimates with substantially lower dispersion than Atlas-based methods, achieving accuracies within less than one growth stage in standard atlases. Their integration into clinical workflows could reduce diagnostic variability, accelerate reporting, and enable population-specific calibration. Future work should prioritize multimodal data integration, cross-population validation, and explainable AI to enhance clinical trust and regulatory adoption.



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sciforum-143873: Oral Health and Quality of Life in Head and Neck Cancer Patients Undergoing Radiotherapy: A Cross-Sectional Study

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Introduction:

Oral cavity is a common site of complications in patients with head and neck cancer undergoing radiotherapy. Maintaining good oral health and educating patients plays a critical role in managing the adverse effects of treatment and preserving quality of life.

Methods:

This cross-sectional, descriptive study involved 30 patients (22 men, 8 women; mean age 69.2 ± 12.4 years) and was carried out in the Radiation Therapy Departments of the two General Hospital of Patras: P.G.N.P., the "Panagia I Voithia", and G.H., "Agios Andreas Hospital", from April 01 2024 to September 30, 2024. Thirteen patients were examined at the "Panagia I Voithia" Hospital and 17 at the "Agios Andreas Hospital" in Patras. Data was collected in three phases—prior to, during, and after radiotherapy—through clinical examination, history taking, and a structured questionnaire with dental health measurements. Statistical analysis was conducted using IBM SPSS 27.0, with significance set at $p = 0.05$.

Results:

Participants exhibited poor oral health, with a high mean DMFT index (Decayed, Missing, Filled Teeth) of 24.3 ± 7.6 and notable periodontal issues. A significant majority (90%) reported visiting a dentist only when problems arose, and oral hygiene practices were generally inadequate. A negative correlation was found between DMFT scores and educational level ($\rho = -0.531$, $p = 0.003$). Radiotherapy led to a statistically significant increase in oral pain ($Z = -4.585$, $p = 0.001$), jaw discomfort ($Z = -2.271$, $p = 0.023$), and deterioration in quality of life, particularly regarding pain at work ($Z = -4.820$, $p = 0.001$).

Conclusion:

The findings highlight the need for systematic dental assessment and patient education before, during, and after radiotherapy to reduce complications and improve quality of life. Integrating oral health evaluations into the standard treatment protocol for head and neck cancer patients is strongly recommended.



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sciforum-147342: Qoppa as a New Synthetic Analytical Marker to Detect the Oncological Population at High Risk of Metastasis during Follow-up and Optimize the Imaging Test Schedule

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Introduction: Advanced cancers produce numerous soluble factors that affect the microcirculation of organs with high capillary density. This produces a response in these organs, whose pathophysiological biomarkers can indirectly alert us to the existence of premetastatic niches. We propose a new synthetic analytical marker called Qoppa to identify the population at highest risk of metastasis to more effectively schedule the follow-up imaging tests.

Methods: In this RESOLT prospective observational study, plasma samples were obtained from cancer patients to detect 11 biomarkers of response to soluble tumor factors using multiplex immunoassay with Luminex and to calculate 20 global analytical parameters related to prognosis. A clustering study was performed using Euclidean metrics and Ward method, followed by the creation of synthetic covariates for each cluster. Their potential as classifiers for the risk of death and the development of de novo metastasis was analyzed using ROC operator curves. Finally, their classifying role was related to the clinical impact using Kaplan–Meier and Cox analyses.

Results: Thirty patients were enrolled. The clustering study resulted in two clusters: the first with only 12 global parameters and the second with the 11 response biomarkers and the remaining 9 global parameters. The synthetic covariate Stigma was built from the first cluster, and the synthetic covariate Qoppa from the second cluster. While Stigma showed a poor performance as a classifier for death or the development of de novo metastasis, Qoppa was an acceptable classifier with an AUC of 0.78 for both events (cutoff: 4.775). Likewise, the Cox and Kaplan–Meier risk analysis showed that a high Qoppa population has a statistically significantly higher risk of death and metastasis.

Conclusion: Qoppa could help detect the cancer population at higher risk of metastasis or death during the follow-up. This could allow for optimal and early scheduling of imaging tests for detection of metastasis formation.



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sciforum-147286: Synthesis and Characterization of Nuclear Nano-Theranostic Formulation for Metastatic Ovarian Cancer Treatment

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Background and Aim: Ovarian cancer (OC) is frequently diagnosed at an advanced stage, limiting treatment options. Luteinizing hormone-releasing hormone (LHRH) receptors are overexpressed on ovarian tumour cells, enabling receptor-mediated targeting. Nano-particles (NPs) offer precise drug delivery. In nuclear medicine, theranostic NPs are promising tools for delivering both therapeutic and diagnostic agents. In our previous study, we synthesised and radiolabelled Poly-lactic-co-glycolic acid (PLGA) NPs in a single step by using an innovative microfluidic technique. This study focuses on the functionalization of PLGA NPs with LHRH for targeted ovarian cancer therapy.

Methods: PLGANPs were synthesized using a microfluidic technique, providing precise control over particle size and reproducibility. Technetium-99m (99mTc) was used to radio-label PLGA NPs. Non-radioactive formulations were synthesized under similar conditions and functionalized with LHRH. Particle size and surface charge were assessed via dynamic light scattering (DLS), and LHRH conjugation efficiency was quantified using high-performance liquid chromatography (HPLC). Cellular uptake and cytotoxicity were evaluated in LHRH receptor-positive ES-2 ovarian cancer cells.

Results: PLGA NPs synthesized at a total flow rate of 15 mL/min and a 5:1 flow rate ratio showed optimal size and radiolabelling efficiency. LHRH conjugation achieved ~70% efficiency. Zeta potential measurements confirmed successful surface modification during activation and peptide attachment. Cellular uptake and viability studies were conducted to evaluate the targeting efficiency and biocompatibility of LHRH-conjugated PLGA nanoparticles. Fluorescence intensity showed significantly higher uptake of LHRH-PLGANPs in LHRH receptor-positive ES-2 ovarian cancer cells compared to native NPs, confirming receptor-mediated internalization. In contrast, uptake in control cells remained low, indicating non-specific binding. Cell viability revealed no toxicity of PLGA NPs.

Conclusion: The microfluidic technique facilitated rapid and efficient NPs formulation, minimizing batch variability. LHRH-functionalized PLGA NPs demonstrated selective uptake in OC cells, supporting their potential as an effective targeted delivery system and future nuclear theranostic tool for OC management.



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Session 5. General Surgery

sciforum-146260: A Rare Cause of Chronic Iron Deficiency Anaemia: 13 cm Jejunal Venous Haemangioma

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Introduction:

Iron deficiency anaemia (IDA) is frequently attributed to nutritional deficiency, menstrual loss, or chronic gastrointestinal bleeding. When upper and lower endoscopies are unremarkable, small bowel pathology must be considered. Venous haemangiomas of the small intestine are exceptionally rare, comprising less than 0.05% of all gastrointestinal neoplasms. These lesions are usually small, asymptomatic, and often missed on standard imaging. We report a unique case of a large 13 cm jejunal venous haemangioma causing longstanding IDA.

Case Presentation:

A 36-year-old male lorry driver presented with worsening fatigue, exertional dyspnoea, and somnolence. He had a 19-year history of unexplained IDA, with persistently low haemoglobin (Hb 75 g/L) and ferritin (2 µg/L) despite regular iron supplementation. Initial workup, including OGD and colonoscopy, was unrevealing. Ongoing symptoms and positive fecalimmunochemical testing (FIT 39.8) prompted further evaluation. Capsule endoscopy and balloon-assisted enteroscopy identified a suspicious, bleeding lesion in the jejunum. PET-CT and MRI suggested a hypervascular mass concerning for malignancy. Laparoscopic small bowel resection was performed. Histopathology confirmed a 13 cm benign venous haemangioma without evidence of dysplasia or malignancy.

Discussion:

This case highlights the diagnostic challenge of obscure small bowel bleeding. Large venous haemangiomas may mimic malignancies or angiodysplasias on imaging, and their location often delays diagnosis. In this patient, multiple negative investigations over nearly two decades underscore the importance of considering small bowel sources early in chronic IDA, particularly in younger males without overt bleeding. Capsule endoscopy and enteroscopy played pivotal roles in diagnosis and localisation, facilitating definitive surgical management.

Conclusion:

Persistent IDA with negative bidirectional endoscopy warrants early evaluation of the small bowel. Although rare, large venous hemangiomas should be included in the differential diagnosis for obscure gastrointestinal bleeding. Prompt identification and surgical resection can be curative, significantly improving the patient's quality of life.



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sciforum-147614: When the Gallbladder Turns on Itself: A Case of Gallbladder Volvulus

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Background:

Gallbladder volvulus is a rare but potentially life-threatening condition caused by torsion of the gallbladder on its mesentery, leading to compromised vascular supply and biliary obstruction. Its clinical and radiological features are often non-specific, making pre-operative diagnosis challenging. Prompt surgical intervention is essential to prevent necrosis, perforation, and sepsis. Awareness of patient risk factors—such as advanced age, female sex, spinal deformities, and loss of visceral fat—is important for early recognition.

Case Presentation:

A 77-year-old female presented with sudden-onset severe epigastric pain radiating to the back, accompanied by nausea, vomiting, and anorexia. The pain was persistent and unresponsive to analgesia. Her history included gastro-oesophageal reflux disease, chronic kidney disease stage 3, hiatus hernia, and spinal stenosis, though she remained functionally independent.

Laboratory investigations were largely unremarkable, with only a mildly elevated alkaline phosphatase. Differential diagnoses included acute cholecystitis and gastric volvulus. Computed tomography revealed a distended gallbladder in an abnormal position between the diaphragm and liver segment VIII. Magnetic resonance cholangiopancreatography further demonstrated displacement of the gallbladder with a possible twisted cystic pedicle, highlighting the importance of careful imaging review in atypical presentations.

She underwent emergency laparoscopic cholecystectomy. Intra-operatively, the gallbladder was located above the liver dome with torsion of the cystic duct and artery, confirming volvulus. She made an uneventful recovery and was discharged on postoperative day four with outpatient follow-up.

Conclusion:

This case underscores the diagnostic challenges of gallbladder volvulus and the importance of maintaining a high index of suspicion in elderly patients with acute abdomen. Early recognition, attention to imaging clues, and prompt surgical intervention are critical to achieving favourable outcomes.



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sciforum-147647: Surgical Outcomes in Axillary Hidradenitis Suppurativa: A Systematic Review of Closure Techniques

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Axillary involvement in hidradenitis suppurativa (HS) presents unique surgical challenges due to the region's high mobility, which can hinder wound healing, as well as high recurrence rates and limited consensus on optimal closure methods. Although surgical intervention for severe HS is increasing, comparative data on closure strategies, such as secondary intention, grafts, and flaps, remain sparse, complicating standardization of care. The objective of this review was to evaluate and compare surgical outcomes for axillary HS across closure techniques, highlighting data gaps and informing treatment algorithms. A systematic literature review was conducted using PubMed with the search string: (((axilla) AND (hidradenitis)) AND (surgical outcomes)) AND (closure). Articles published between 2010 and 2025 were screened. Included studies evaluated axillary HS treated with defined surgical closure techniques and reported on healing time, recurrence, complications, or functional outcomes. Exclusion criteria were non-English language, non-axillary focus, or lack of outcome-specific data. Ten studies were included, several focused exclusively on axillary HS, though total axillary case volume was inconsistently reported. Healing by secondary intention was common, associated with fewer complications but prolonged healing. Flap-based techniques, such as thoracodorsal artery perforator (TDAP), posterior arm, parascapular, and V-Y advancement flaps, offered faster recovery and improved mobility, though donor site issues like dehiscence and seroma varied. Split-thickness skin grafts showed intermediate healing times and recurrence. One prospective study comparing TDAP flaps to secondary intention reported superior quality of life and function. Few studies used validated patient-reported outcomes or standardized recurrence definitions. This review highlights the lack of standardized outcome metrics for axillary HS and the need for validated tools to assess healing, recurrence, and patient satisfaction. Existing literature is limited by inconsistent follow-up, nonuniform recurrence definitions, and scarce utilization of patient-reported outcomes. Future research should prioritize prospective, multicenter trials using real-world data to develop evidence-based, anatomically-tailored surgical strategies



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sciforum-128335: A New Era in Cosmetic-Plastic Gynecologic Surgery

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Introduction

Recent clinical-scientific research finding demonstrates that cosmetic surgery can lead to severe complications, including suicides, and is associated with the surgical concepts of today's most commonly used techniques, marking it as the first report in medical literature. The pictorial documentation and narrative presentation of severe cosmetic surgical complications are detailed.

Methods

A case series study was conducted to provide pictorial documentation of severe cosmetic complications related to labia minora from currently used surgical interventions.

Results

Severe complications from cosmetic surgery appeared in various forms and were primarily associated with labial amputations (labioplasty, trimmings, linear, and other marketing terms) affecting the labial trunk, clitoral prepuce, and frenulum. Predominantly, labial over-resection was the leading cause of these adverse, symptomatic surgical outcomes. *Labia minora central wedge resection* is the second most common surgical intervention. It causes severe complications and results in an unnatural anatomical appearance. This procedure involves V-shaped resections from the free edge to the base of the labial tissues. Such a technique includes removing vital anatomical structures of the neurovascular bundle and its anastomosis, leading to symptoms associated with the disruption of nerves and vessels.

The delamination of the labia minora technique creates a monolithic structure that consists of the clitoral prepuce, clitoral frenulum, and labia minora trunk. Additionally, this surgical technique creates labial eversion, fusing the inner surface of the clitoral prepuce with the clitoral glans. This can lead to persistent clitoral compression with engorgement and can result in clitoral atrophy (an irreversible condition). The concept of this surgical intervention is poorly developed.

Conclusions

Using labium minus reduction techniques is linked to serious complications because of underdeveloped surgical concepts. A new approach to surgical interventions should be created to reduce or eliminate complications related to cosmetic surgery.



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sciforum-145380: A Population Study of MRONJ-Afflicted Patients

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Background

Medication-related osteonecrosis of the jaw (MRONJ) is a serious adverse effect of antiresorptive drugs (such as bisphosphonates, denosumab) or antiangiogenic drugs. These therapies are primarily used to prevent pathological fractures of long bones associated with cancer or osteoporosis. MRONJ is characterized by a non-healing jawbone exposure, accompanied by persistent symptoms of inflammation. The necrosis complicates cancer therapy and significantly impacts the patients' quality of life.

The aim

Analysis and characteristics of the population of patients who developed MRONJ and were treated at the Department and Clinic over a 4-year period.

Material and method

This paper presents a retrospective clinical observation of 60 patients treated with MRONJ at the Department and Clinic of Cranio-Maxillofacial Surgery of the Silesian Medical University in Katowice between 2020 and 2024. After applying the study inclusion criteria, 41 patients were ultimately enrolled. The study considered the following patient parameters: gender, age, underlying disease, causative factors, type and route of antiresorptive drug administration. Particular attention was paid to the clinical symptoms in the oral cavity, location, stage and size of the necrotic lesions.

Results

The mean age of the patients in the study's population was 68.3 (age_{min}=44, age_{max}=90), 73.2% (n=30) were taking antiresorptive medications due to cancer, and 26.8% (n=11) were taking antiresorptive medications due to osteoporosis. Gender was another key factor, as 73.2% (n=30) of patients were women. In the study group, the majority (85.4%, n=35) of patients were diagnosed with AAOMS stages II and III of MRONJ. Necrotic lesions were primarily located in the mandible (70.7%, n=29). Tooth extraction was identified as a causative factor in 61.0% of cases (n=25). Moreover, in 31.7% (n=13) of patients, denture was suspected as a factor of trauma to the dental arch, which was later diagnosed with necrosis.

Conclusions

Poor oral health, surgical procedures, and trauma from ill-fitting dentures can often be triggers for drug-induced osteonecrosis of the jaw.



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sciforum-146065: Comparative Outcomes of Percutaneous Transhepatic Biliary Drainage Versus Endoscopic Ultrasound-Guided Transluminal Procedures after Failed Endoscopic Retrograde Cholangiopancreatography in Malignant Biliary Obstruction

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Background: Malignant obstructive jaundice is a frequent complication of pancreaticoduodenal and hilar hepatic tumors. It significantly impairs quality of life, reduces survival, and often prevents continuation of oncological treatment. The standard method of treatment is endoscopic retrograde cholangiopancreatography (ERCP) with biliary stenting; however, some patients require alternative biliary decompression.

Aim: The study aimed to compare the effectiveness, complications, and overall survival of endoscopic ultrasound-guided (EUS) transluminal procedures with those of percutaneous transhepatic biliary drainage (PTBD).

Materials: A retrospective analysis was performed on 104 patients with malignant biliary obstruction in whom ERCP with biliary stenting had failed. Thirty-nine patients underwent EUS-guided procedures, and sixty-five patients underwent PTBD. Clinical success was defined as a reduction in serum bilirubin concentration. Demographic data, complications (Clavien–Dindo classification), length of hospitalization, and survival were analyzed using logistic and linear regression.

Results: Clinical success was achieved in 91 out of 104 patients (87.5%), and the efficacy of both techniques was comparable (EUS: 91.9%, PTBD: 87.7%, $p = 0.742$). Complications occurred more frequently in the EUS group (41% vs. 12.3%, $p = 0.001$), including death in three individuals. PTBD-related complications were limited to Clavien-Dindo II. The mean hospital stay did not differ significantly (5.4 vs. 4.9 days, $p = 0.258$). Median survival was 66 days in the EUS group and 93.7 days in the PTBD group, with a higher 30-day mortality rate in the PTBD group (33.9% in the PTBD group, 10.3% in the EUS-guided group).

Conclusion: Both methods, PTBD and EUS-guided drainage, are equally effective alternatives after failed ERCP. EUS-guided drainage offers a slightly higher success rate but carries a greater risk of severe complications. PTBD was associated with higher short-term mortality but had a better safety profile.



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sciforum-146009: Differential Gene Expression Analysis of Liver Cancer: Insights from TCGA Tumor and Normal Tissue

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Abstract

Background: The aggressiveness of liver cancer, especially hepatocellular carcinoma (HCC), and the lack of early diagnosis make liver cancer a significant global health issue. This study aims to analyse transcriptomic data from The Cancer Genome Atlas (TCGA-LIHC) project to identify patterns of differential gene expression between tumor and normal liver tissues. **Materials and Methods:** The analysis focused on the 20 most variable genes using statistical visualization methods such as boxplots, density plots, and heatmaps. Principal component analysis (PCA) and Random Forest classification models were employed to detect expression differences and assess predictive capabilities. **Results:** The findings revealed distinct expression patterns, with some genes (e.g., GLUL, FTL, APOA2) upregulated in tumor samples, while others (e.g., ALB, APOA1, ALDOB, HP, FGA) were downregulated, reflecting cancer-specific transcriptional activity. Strong gene–gene correlations suggested the presence of co-regulated modules potentially involved in oncogenic pathways. PCA demonstrated a clear separation between tumor and normal tissues, and the Random Forest model achieved high classification accuracy with a low error rate, particularly in identifying tumor tissues. Functional enrichment analysis further revealed significant involvement of coagulation, complement, and lipid metabolism pathways, providing biological context for the expression differences. External validation using an independent GEO cohort (GSE14520) confirmed the robustness of the 20-gene panel, with elastic-net achieving an AUC of 0.97 and Random Forest reaching an AUC of 0.9998, supporting reproducibility across platforms. **Conclusion:** These results support the potential of expression-based biomarkers in distinguishing liver cancer states and lay the groundwork for developing diagnostic or therapeutic strategies. Although further validation in independent cohorts and experimental settings is necessary, this study highlights the value of integrative bioinformatics in uncovering molecular signatures critical to advancing liver cancer research and clinical management.



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sciforum-147424: RADIGAL Trial: Preliminary Results Comparing a "WHO" Diet Versus a Fat-Free Diet in Gallstone Disease and Their Impact on Quality of Life

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Rationale:

There are no established guidelines or high-quality evidence supporting the widespread use of a fat-free diet in patients with cholecystitis or biliary colic, either as part of conservative treatment or postoperatively. This is the first clinical trial to assess the role of a more flexible diet, World Health Organization (WHO) diet, characterized by total fat 30% of daily energy intake and limited saturated fats (10%), as an alternative to the traditionally prescribed fat-free diet, which contains 5% of total daily energy from fat, in symptomatic gallstone disease.

Methods:

Patients presenting with biliary colic or acute cholecystitis(RADIGAL-1), or undergoing cholecystectomy for gallstones(RADIGAL-2), are randomized to receive recommendations for either a fat-free diet or a WHO-diet. A follow-up at 3 months evaluates adherence, adverse events, and quality of life using the validated Gastrointestinal Quality of Life Index (GIQLI). Based on sample size calculations, recruitment targets are 136 patients for RADIGAL-1 and 106 for RADIGAL-2.

Results:

To date, 71.3% of the planned recruitment target for RADIGAL-1 and 92.5% of RADIGAL-2 participants have completed the 3-month follow-up. In RADIGAL-1, 88.7% achieved full compliance, 7.2% adhered for more than 50% of the time, and 2.1% adhered for less than 50% of the time. In RADIGAL-2, the compliance rates were similar: 89.8%, 7.1%, and 3.1%, respectively. The main reason for less than full adherence was that participants did not experience any symptoms (83%). Rates of adverse events were similar between diet groups (RADIGAL-1: 20.8% vs.22.4%, $p=0.8$; RADIGAL-2: 12.5% vs.18.4%, $p=0.4$), as were hospital readmissions (RADIGAL-1: 20.4% vs.12.5%, $p=0.4$; RADIGAL-2: 4.1% vs.4.2%, $p=0.9$). A decrease in QoL at 3 months was more frequent in the fat-free group (14.9% vs.4.2%, $p=0.4$ in RADIGAL-1; 6.1% vs.12.5%, $p=0.4$ in RADIGAL-2). At 3 months, GIQLI scores were similar between diet arms in both trials (RADIGAL-1: 136.4 ± 6.8 vs. 136.3 ± 6.7 ; mean difference -0.1 , 95% CI -2.8 to 2.6 ; $p=0.9$; RADIGAL-2: 134.8 ± 10.7 vs. 135.8 ± 11.9 ; mean difference 1.0 , 95% CI -3.6 to 5.6 ; $p=0.7$).

Conclusion:

Preliminary results suggest that the WHO diet is not inferior to the empirically prescribed fat-free diet in the management of symptomatic gallstone disease, regarding biliary adverse events and quality of life.



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sciforum-146272: SVR Achievement in Triple-Therapy-Treated Hepatitis C-Induced Cirrhosis: A Dual Center Retrospective Cohort Study

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Background and Objective:

Multiple prospective and retrospective cohort studies from Western countries have reported conflicting results regarding the efficacy of direct-acting antivirals (DAAs) in achieving sustained virologic response (SVR) among patients with hepatitis C virus (HCV) infection. However, there is limited evidence from South Asia, and almost no data evaluating the effectiveness of triple therapy with ribavirin, sofosbuvir, and daclatasvir in cirrhotic HCV-infected patients from Pakistan. Understanding the real-world effectiveness of this regimen is crucial for improving patient outcomes in resource-limited settings. This study aimed to assess treatment outcomes and identify factors associated with SVR in this population.

Methods:

We conducted a retrospective cohort study of 359 HCV-infected patients treated with triple therapy at two tertiary care hospitals in Pakistan between February 2018 and June 2019. Of these, 187 (53%) were cirrhotic and 172 (47%) non-cirrhotic. Follow-up was incomplete for 158 (44.1%) patients due to death (n = 24, 6.68%), non-response to contact (n = 43, 9.63%), or withdrawal/refusal (n = 91, 25.34%). The final analysis included 201 (55.9%) patients, of whom 87 (43.2%) were cirrhotic, classified using the Liver Stiffness Index. Patients were stratified into SVR and non-SVR groups for comparison.

Results:

Among 201 patients completing follow-up, mean age was 50.6 ± 10.65 years. SVR was achieved in 81 cirrhotic patients (94.2%), while 5 (5.8%) failed therapy. SVR achievement was significantly associated with lower platelet count, elevated total bilirubin, and reduced albumin (p 0.05). Other demographic and disease-related factors were not statistically significant.

Conclusion:

Triple therapy with ribavirin, sofosbuvir, and daclatasvir demonstrated a high SVR rate (>94%) in Pakistani cirrhotic patients, highlighting its effectiveness in this population. These findings support its continued use as a valuable therapeutic option and provide real-world evidence to guide clinical decision-making and policy development in similar resource-limited settings.



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sciforum-148649: TXA - A Low Hanging Fruit Often Missed

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Background

Major intraoperative bleeding remains an important cause of surgical morbidity and mortality. Blood transfusion, though often life-saving, is a limited resource and carries risks including transfusion reactions, infection, and increased length of stay. Tranexamic acid (TXA) is a low-cost antifibrinolytic that has been shown to reduce bleeding and transfusion requirements in surgery. National guidance, including the Joint Royal Colleges Implementation Group and NICE QS138, recommends administration of 1 g TXA before incision and again after closure for all adult surgical patients at risk of moderate blood loss. Despite these recommendations, TXA use in general surgery is often inconsistent.

Methods

We conducted a retrospective audit of consecutive moderate-risk colorectal operations performed at [SMH and WGH] between 1 September and 31 November 2024. Data were obtained from electronic records. Outcomes included whether TXA was administered correctly (both timing and dose), estimated intraoperative blood loss, and postoperative requirement for blood transfusion or iron replacement. A total of 96 procedures were identified, of which 2 were excluded due to missing records.

Results

Correct TXA administration was documented in only 4/96 (4%) patients, while 13 patients received an incomplete or incorrect regimen. Intraoperative blood loss was generally minimal, although documentation was absent in 31% of cases. One quarter (25%) of patients required postoperative transfusion or iron therapy. Notably, among the 4 patients who received the correct TXA regimen, only 1 required a transfusion. In contrast, patients needing transfusion or iron were predominantly those who had not received TXA or had received it incorrectly.

Conclusion

This audit demonstrates marked underuse of TXA in general surgery, despite clear evidence and national recommendations. A checklist prompt at time of WHO surgical safety sign-in, combined with targeted education of anaesthetic and surgical teams, represents a low-cost and high-yield intervention. Optimising TXA use has the potential to reduce unnecessary transfusions, conserve blood resources, and improve perioperative outcomes.



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Session 6. Clinical Rehabilitation

sciforum-149270: The Role of Vitamin D in Bone Health: A Clinical Perspective

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Introduction:

Vitamin D plays a crucial role in calcium homeostasis and bone metabolism. Deficiency in vitamin D is linked to impaired bone mineralization, increased fracture risk, and osteoporosis. Despite growing global awareness, vitamin D insufficiency remains highly prevalent across different age groups, particularly in the elderly and postmenopausal women. This study aims to evaluate the impact of vitamin D levels on bone health outcomes, investigate the effectiveness of supplementation in at-risk populations, and highlight the importance of preventive strategies in clinical practice.

Methods:

A systematic review was conducted, including randomized controlled trials (RCTs) and observational studies published between 2015 and 2024. Databases searched included PubMed, Scopus, and Cochrane Library. Studies assessing serum 25-hydroxyvitamin D levels and outcomes such as bone mineral density (BMD), fracture incidence, or bone turnover markers were included. Data were extracted on participant demographics, intervention type, duration, baseline vitamin D status, and clinical outcomes. A qualitative synthesis was performed to identify trends and evaluate clinical significance.

Results:

Twenty-eight studies with a total of 15,342 participants were included. Low serum vitamin D (20 ng/mL) was consistently associated with reduced BMD and a higher risk of osteoporotic fractures. Supplementation, particularly when combined with calcium, significantly improved BMD in postmenopausal women and elderly men. Fracture risk reduction ranged from 12% to 25%, especially in participants with baseline deficiency. Compliance, dosage, duration of supplementation, and initial vitamin D status were key determinants of efficacy.

Conclusion:

Maintaining adequate vitamin D status is essential for bone health, particularly in high-risk populations. Vitamin D supplementation effectively improves BMD and reduces fracture risk when appropriately administered. Early detection of deficiency and individualized supplementation strategies are recommended to optimize skeletal outcomes and support long-term musculoskeletal health.



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sciforum-145575: Enhancing Post-Stroke Motor Recovery Through a Structured Home-Based Rehabilitation Program: A Pilot Study

Sudip Barua

Independent Researcher

Motor deficits caused by stroke are one of the significant contributors to long-term disability, which minimally improves independence and quality of life. Although rehabilitation in hospitals has shown to be effective, the lack of accessibility, cost, and compliance have also been identified as barriers to other forms of rehabilitation. Home-based rehabilitation is a feasible option; there is a lack of structured programs and evidence-based practice. This pilot was used to assess the viability, safety, and initial results of an organized 4-week home-based intervention involving rehabilitation. Ten participants with post-stroke between 45 and 70 years were involved in mobility, balance, and strength daily exercises, and the pre- and post-intervention tests were performed using both the Fugl-Meyer Assessment and the Timed Up and Go (TUG) test. There were no adverse events and high adherence to the program reported by all participants who report it to be easy to follow and help them in achieving their recovering aims. The clinical outcomes showed the improvement of motor skills and mobility, whereas subjective feedback showed the increase of confidence, motivation, and self-efficacy in carrying out daily activities independently. The results indicate that structured home-based rehabilitation is a viable, safe, and possibly effective addition to the hospital-based care and can facilitate physical recovery and patient engagement. Notably, the program enhanced more autonomy and motivation, which are crucial when it comes to rehabilitation success in the long run. Despite the small sample size and brief timeline, this study demonstrates some promising results that patient-based, adaptable rehabilitation plans can be extended to enhance access and compliance in post-stroke groups. These findings should be supported by bigger and more longitudinal studies to validate the findings and optimize program protocols, eventually increasing rehabilitation options to serve patient needs and maximize recovery outcomes.



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sciforum-118994: Exploring the Relationship Between Urinary Incontinence and Physical Activity Participation

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introduction: The latest guidelines from the World Health Organization suggest that all adults, including those with chronic conditions or disabilities, should engage in a minimum of 150 to 300 minutes of moderate-to-vigorous aerobic exercise each week. The health implications of physical inactivity are significant, and if global physical activity levels do not improve, the estimated cost associated with this inactivity could reach around USD 5.2 billion over an 11-year period from 2020 to 2030. This study investigates the impact of urinary incontinence (UI) on physical activity levels among women, highlighting that nearly two-thirds of women in the U.S. perceive UI as a barrier to exercise. **Methods:** Conducted in Spain during 2021 and 2022, this observational study involved 1,446 women, with 55.8% (807) experiencing UI and 25.7% (371) reporting low physical activity. The primary objective was to determine how UI influences physical activity patterns. Researchers measured physical activity levels using the International Physical Activity Questionnaire (IPAQ) and assessed UI's impact through the Urogenital Distress Inventory (UDI-6) scale. Various sociodemographic, health, lifestyle, and obstetric data were collected, followed by statistical analyses using binary logistic regression to establish adjusted odds ratios (aOR). **Results:** The findings revealed that mixed incontinence (aOR: 1.53) and a higher severity of urinary symptoms (UDI-6 score; aOR: 1.014) were significantly associated with lower physical activity levels. Other contributing factors included age, body mass index (BMI), pelvic pain, and income level, all linked to reduced physical activity (p 0.001). **Conclusion:** This study indicates that women suffering from mixed-type UI are more likely to have low physical activity or inactivity. Furthermore, the severity of urinary symptoms correlates with an increased likelihood of reduced activity levels among women with UI. This highlights the need for awareness and potential interventions to address the physical activity barriers posed by UI, ultimately aiming to improve the quality of life of affected women.



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sciforum-145334: Hospitalizations due to Stroke and Access to Physiotherapy Rehabilitation in the Brazilian Unified Health System (SUS): A 10-year Analysis (2015–2024)

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Background: Stroke is a leading cause of mortality and long-term disability in Brazil, making access to rehabilitation within the public health system (SUS) a critical issue. Physiotherapy is essential for functional recovery, yet national-level data on care integration remains limited. This study analyzes over a decade of hospitalization and rehabilitation data to quantify trends in care provision. **Methods:** This descriptive ecological study used public data from Brazil's SIH/SUS (stroke hospitalizations, ICD-10 I60-I64) and SIA/SUS (neuro-kinetic-functional physiotherapy and acute stroke treatment codes). We analyzed trends across complete calendar years from 2015 to 2024, with data from the first semester of 2025 reported separately to indicate the most recent trajectory. **Results:** From 2015-2024, 2,269,871 stroke hospitalizations occurred, with 355,143 in-hospital deaths (case-fatality rate: 15.6%). Over the decade, annual hospitalizations increased 125% (from 123,844 to 278,125), despite a temporary decline in 2020. Concurrently, physiotherapy procedures grew at an even faster pace of 146% (from 2.9 to 7.0 million annually), totaling 51.5 million. This disproportionate growth, however, only slightly increased the sessions-per-hospitalization ratio from 23 to 25. Preliminary 2025 data (139,630 hospitalizations; 3.2 million procedures) confirm these trends. **Conclusion:** Our findings show expanded access to post-stroke physiotherapy in SUS, though this growth mainly absorbed an increasing patient load rather than deepening the care intensity per individual. The persistently high in-hospital mortality (15.6%) points to significant gaps in the acute care chain. This underscores a dual policy priority: improving acute stroke management to reduce mortality, while simultaneously strengthening multidisciplinary rehabilitation. Integrating speech and occupational therapy is essential to address the diverse functional deficits and truly reduce the long-term disability burden of stroke in Brazil.



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sciforum-143922: The Effectiveness of Prehabilitation, i.e. Comprehensive Preparation of a Preparation for Use Analysis based on the Measurement of Respiratory Adequacy

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Prehabilitation is a cost-effective, safe, and side-effect-free intervention that can positively impact respiratory function, which is particularly important before thoracic surgery. However, it is not widely used. Its goal is to improve the patient's overall health, minimize the risk of complications, and ensure the fastest possible recovery. This is particularly important for high-risk surgical patients, who are typically elderly and suffer from multiple comorbidities. Implementing prehabilitation programs, rationally speaking, aims to establish contact with patients as soon as possible after diagnosis.

The pilot study involved 30 patients of both sexes with lung cancer who participated in a prehabilitation program prior to surgery at the Thoracic Surgery Department of the University Hospital in Rzeszów. Based on established standards for each patient, two volume measurements were performed before and after the physiotherapy procedure. Inspiratory capacity measurements were performed using the Voldyne 5000 device, designed to measure and support the effectiveness of breathing exercises, which is a way to improve patients' self-efficacy.

The measurements showed that inspiratory capacity, calculated according to specific standards, averaged 1686.67 ml $\pm$ 644.06 ml before the start of prehabilitation, and after individually tailored physiotherapy, it increased to 2030 ml $\pm$ 631.86 ml in the study participants. The mean difference of 343.33 ml $\pm$ 264.49 ml was statistically significant.

Patients' adherence to recommendations and performance of prehabilitation exercises during the preparatory period was effective. Prehabilitation was associated with improved performance before surgery, and future studies may demonstrate that this will lead to a shorter hospital stay and fewer complications. Respiratory therapy as part of preoperative preparation is an effective rehabilitation method, as confirmed by volumetric studies. Patients who completed the prehabilitation program experienced improved respiratory function. The program's success may be attributed to a number of principles and expertise acquired from sources recommended by the National Institute for Health and Care Excellence in Pulmonary Rehabilitation



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sciforum-147059: Age-Related Variations in Sleep Duration and Quality Before, During, and After Stroke Among Hospitalised Stroke Patients

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Background: Sleep is essential for neurological recovery, yet it remains under-recognised in stroke care. Disrupted sleep is common among stroke patients and may hinder recovery or worsen cardiovascular risk.

Aim: This study explores how sleep duration and quality vary with age before, during, and after hospitalisation for stroke.

Methods: We conducted a retrospective cohort study at Wrexham Maelor Hospital using data from the Sentinel Stroke National Audit Programme (SSNAP), electronic health records from the Welsh Clinical Portal, and discharge summaries from the EPOC system between March 2024 and March 2025. Sleep was assessed through structured post-discharge questionnaires that captured self-reported sleep duration and perceived quality across three phases: prestroke, during hospital admission, and post-discharge. Participants were divided into three age groups: 18–49, 50–74, and 75+ years.

Results: Clear age-dependent differences in sleep duration and quality were evident prior to, during, and following hospitalisation for stroke. Patients aged 50–74 years reported the longest sleep durations before stroke, with a mean of 7.10 hours, while younger participants (18–49 years) had the most substantial post-discharge recovery at 7.30 hours. Older adults (75+ years) consistently had the shortest sleep durations throughout the study period; the mean values during prestroke, inpatient admission, and post-discharge were 6.96 hours, 5.72 hours, and 6.82 hours, respectively, with little improvement in sleep quality. All age groups experienced sleep declines during hospitalisation, with varying degrees of recovery afterward.

Conclusion: Sleep disruption is a widespread problem in stroke care, particularly among older patients who face persistent deficits. These findings emphasise the importance of routine sleep assessments and age-appropriate interventions. Integrating sleep health into comprehensive, patient-centred stroke rehabilitation may improve recovery and long-term well-being.



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sciforum-145108: Analysis of the Prevalence of Postural Defects and Physiotherapeutic Management in Patients on the Autism Spectrum

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Introduction: Autism is a neurodevelopmental disorder with a neurobiological basis. It is characterized by problems in communication, behavior and social interaction. The motor development of children with autism spectrum disorders is often delayed compared to neurotypical children. Both small and large motor skills can be impaired. This translates into problems with coordination and balance, communication, reluctance to engage in physical activity, and sometimes intellectual disability. Promptly undertaken, systematic rehabilitation has a positive impact on the functioning of people on the autism spectrum. Rehabilitation has a significant impact not only on motor development, but also on the child's cognitive, social, and emotional development.

The purpose of this study was to assess posture in children with autism spectrum disorder using a proprietary survey questionnaire completed by parents, and to determine what postural defects occur in children with autism spectrum disorder, what ailments the children struggle with, what therapeutic activities are carried out, and what type of physical activity the children engage in.

Methods: This study involved 140 parents of children aged 5-15. A proprietary survey questionnaire consisting of 36 questions was used, including questions about the child's attitude, activities undertaken, ailments accompanying the child, difficulties in daily functioning, and therapeutic activities.

Results: The survey showed that the majority of children do not have a diagnosed postural defect, and the most common among those who had one was flat and valgus feet. Most of the children do not have any complaints. The children receive help from a psychologist, speech therapist, Si therapist and various specialized clinics, most often psychiatric. Physical activity undertaken by the child is usually moderate, with children most likely to choose running and walking.

Conclusions: Systematic rehabilitation and prevention among children on the autism spectrum has a positive impact on improving quality of life and correcting posture.



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sciforum-146212: Comparative Evaluation of Masseter Muscle stiffness by Muscle hardness meter and Ultrasound Elastography in Patients with Temporomandibular Disorders—A Case Control Study

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Temporomandibular disorders (TMDs) are musculoskeletal conditions affecting the TMJ. Myofascial pain, a common condition associated with TMD, accounts for 45.3% of cases, often involving the masseter muscle, characterized by trigger points and muscle stiffness. Manual palpation assesses muscle hardness but relies on the examiner's skill and experience. The primary objective was to evaluate and compare the stiffness of the masseter muscles using the Muscle Hardness Meter and Ultrasound elastography in patients with TMDs and healthy adult volunteers.

Materials and Methods

This case-control study included 80 patients with myofascial pain and 80 healthy volunteers. Diagnostic criteria for temporomandibular disorders were analyzed in cases within the pain group. A portable muscle hardness meter (Neutones TDM) was used to measure muscle stiffness on both sides. Strain wave elastography was performed using a LOGIQ P9 with a transducer. The thickness and elasticity index of the masseter muscle were evaluated bilaterally.

Results

The study involved 160 patients, with 80 cases and 80 controls, with an average age of 32.9 years. Mean pain was 8.34, mouth opening 30.95 mm, both significantly different from controls ($p < 0.001$). Bruxism was present in 50% of myofascial pain patients, showing a strong link ($p < 0.001$). Muscle hardness and elasticity were higher in cases, with significant differences on both sides, especially in areas with complaints, indicating stiffness. ROC analysis demonstrated high diagnostic accuracy (hardness meter: 0.941, elasticity index: 0.877). Principal component analysis identified three TMD subtypes: (0) high stiffness, pain, limited opening; (1) moderate stiffness, often linked to parafunctions; (2) low stiffness, minimal pain, near-normal functions.

Conclusion

SWE revealed increased stiffness associated with TMD, consistent with global research findings. The muscle hardness meter provides an affordable, non-invasive, chairside tool for assessing muscle stiffness, particularly where elastography isn't available. Principal component analysis grouped patients based on pain and stiffness, aiding in personalized treatment, reducing pain, and improving quality of life.



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sciforum-134546: Determination of Factors that Influence Self-efficacy and Quality of Life in Patients with Stroke: An Observational Study

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Objectives: Stroke is a significant cause of disability. In addition, self-efficacy, which is the confidence in one's ability to carry out a task or achieve a goal, can be affected after a stroke, and reduced self-efficacy can negatively impact quality of life. This study aimed to identify the factors that influence self-efficacy and quality of life in individuals with stroke. **Study design:** This is a cross-sectional study. **Methods:** The Stroke Self-Efficacy Questionnaire, the SF-8 questionnaire, the Edinburgh Handedness Questionnaire, and the Modified Rankin Scale were used to assess the participants' self-efficacy, quality of life, handedness, and level of disability, respectively. Standard linear multiple regression was used to determine the factors that will significantly predict self-efficacy and quality of life. **Results:** A total of 120 patients with stroke, with a mean age of 46.81 ± 12.75 years, participated in the study. For self-efficacy, the total variance explained by the whole model was significant, accounting for 67.0% of the variance, $F(7,120)=13.027$, $R^2=0.449$, $p=0.001$. In the final model, only the level of disability (Beta= -0.585, $p=0.001$) and time since stroke (Beta= 0.154, $p=0.034$) significantly predicted self-efficacy, with level of disability as the strongest predictor. For quality of life, the total variance explained by the whole model was significant, accounting for 48.2% of the variance, $F(8,120)=4.189$, $R^2=0.232$, $p=0.001$. In the final model, only the level of disability (Beta= -0.259, $p=0.018$) and self-efficacy (Beta=0.211, $p=0.0261$) significantly predicted quality of life, with level of disability as the strongest predictor. **Conclusions:** Time since stroke and level of disability significantly predict self-efficacy after stroke. Similarly, the level of disability and self-efficacy significantly predict quality of life after stroke. Therefore, rehabilitation after a stroke should begin as soon as possible to help improve patients' self-efficacy.



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sciforum-147215: Effects of Online Physical Therapy Interventions on Aged Adult Health to Reduce Falls: A Systematic Review of Mobile Health Applications in Rehabilitation

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Introduction

Regular physical activity is considered one of the most impactful lifestyle factors for promoting health and longevity. However, there remains a gap in evidence regarding the effectiveness of online and mobile rehabilitation interventions specifically designed for older adults. This study sought to systematically review and synthesize the literature on digital physical therapy interventions for aged adults, quantifying outcomes including lifestyle indicators (VO₂ max), biometrics, and clinical outcomes such as falls, hospital admissions, and functional index scores.

Methods

A systematic review and meta-analysis was conducted using predefined inclusion criteria and keyword combinations (“aged adults,” “mobile therapy,” “rehabilitation,” “non-acute”). Seventeen studies published between 2016 and 2025 were included, the majority of which were randomized controlled trials (RCTs, n = 13). Extracted data included participant demographics, intervention characteristics, outcome measures, and risk of bias. Pooled analyses were performed where outcomes were comparable across studies.

Results

A total of 17 studies (combined N ≈ 3,400 participants, mean study size 212, range 29–1628) were included. Interventions primarily utilized videoconferencing, app-based monitoring, and virtual reality platforms. Online physical therapy was associated with significant improvements in functional mobility scores (e.g., chair stand, Timed Up-and-Go), increased activity levels, and reduced falls compared with usual care. Meta-analysis of mobility outcomes (5 RCTs) demonstrated a moderate pooled effect size favoring intervention (SMD = 0.42, 95% CI 0.25–0.59, p = 0.001). Secondary outcomes showed gains in lean muscle mass and balance indices, while hospital admissions and mortality were less consistently reported. Risk of bias was generally low to moderate, with most trials using randomization and standardized protocols.

Conclusion

Online physical therapy interventions delivered through mobile health applications improve mobility, functional outcomes, and fall risk in older adults. Evidence supports integrating digital rehabilitation as a scalable strategy to enhance aged adult health. Future work should standardize outcome measures and assess long-term biomarkers related to aging.



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sciforum-147060: Factors Influencing Sleep and Post-Discharge Care-Seeking Attitudes in Hospitalized Stroke Patients: A Regional Study in Wales, UK

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Background: Sleep disruption is a prevalent yet under-recognised issue among stroke patients, with growing evidence suggesting its adverse impact on neurological recovery and rehabilitation. This study explores the causes of in-hospital sleep disturbances and evaluates post-discharge care-seeking behaviours in a stroke patient cohort.

Methods: A retrospective cohort study was conducted at Wrexham Maelor Hospital, North Wales, using data from the Sentinel Stroke National Audit Programme (SSNAP), the Welsh Clinical Portal, and EPOC from March 2024 to March 2025. A structured questionnaire was administered post-discharge to assess self-reported sleep quality across three time periods: pre-stroke, during hospitalisation, and after discharge. Contributing factors to sleep disturbance and patient interactions with healthcare providers regarding sleep concerns were also examined.

Results: Among 225 stroke patients, environmental factors were the most frequently reported causes of in-hospital sleep disruption, with noise (n=139) being the leading factor, followed by clinical interventions (n=82), lighting (n=36), anxiety/stress (n=23), pain (n=22), and disability (n=19). Despite widespread disturbances, only 13.3% of patients reported discussing sleep issues with their general practitioner post-discharge, and fewer than 10% received any formal management for sleep-related concerns.

Conclusion: This study demonstrates that sleep disturbances are highly prevalent among hospitalised stroke patients with environmental factors, emerging as key disruptors. Sleep is a vital aspect of neurological recovery. The inconsistent acknowledgement and therefore inconsistent management of sleep disturbance reinforce the need for routine assessment, staff education on the importance of sleep, and environmental modifications to enhance rest and facilitate timely rehabilitation. In summary, sleep should be regarded not as an ancillary aspect of care but as a core component of stroke management. Embedding this perspective within stroke pathways offers a tangible means of improving recovery rates, reducing disability, and enhancing quality of life for stroke survivors.



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sciforum-146681: From Local Data toward Global Mapping of Disability Care: Prescriptive Trends for Bedridden Paediatric Patients in Sicily, Italy

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Background: Prolonged immobilization in children with severe disabling conditions carries a high risk of complications, including pressure ulcers and musculoskeletal deterioration. In line with the Italian Essential Levels of Care (LEA), the Local Health Authority (ASP) of the province of Catania provides specialized beds and mattresses free of charge to eligible paediatric patients with severe disorders. This study aimed to stratify all prescriptions of bedridden aids for individuals under 18 years, collected over 18 months (January 2024–July 2025), analyzing patterns by age, sex, diagnosis, healthcare district, and cost, within the ASP's broader digitalization strategy (*Oslo Project*) and *Internationalization Digit-aids* plan.

Methods: An observational analysis was conducted on 27 paediatric prescriptions across the healthcare districts of Catania. Chi-squared tests (χ^2) and contingency coefficients (C) were used to assess associations between demographic, clinical, and economic variables.

Results Most prescriptions involved males (70.4%), clustered in the 7–16 years age range, and concentrated in the *Catania district* (37%). Tetraparesis was the leading diagnosis (40.7%), followed by muscular dystrophy and cerebral palsy (both 11%). Statistically significant associations emerged between age and diagnosis ($\chi^2=182.5$, $p<0.0001$, $C=0.933$), with tetraparesis peaking at 14–16 years and cerebral palsy and muscular dystrophy at age 7. District and age were also associated ($\chi^2=59.3$, $df=40$, $p=0.025$), with younger cases concentrated in *Adrano* and older ones in the *Catania district*. District-level analysis ($\chi^2=104.5$, $p=0.0001$, $C=0.891$) revealed *Adrano* and *Catania* as hotspots for tetraparesis, while *Paternò* showed a distinct profile with cases of muscular dystrophy, pressure ulcers, and tetraparesis. No significant correlation was found between diagnosis and cost ($p=0.472$), reflecting that device reimbursement is standardized under LEA criteria rather than being disease-specific.

Conclusions: Prescription data revealed a non-uniform distribution, with strong diagnostic and age clustering. Digital stratification enables mapping of paediatric disability needs, supporting equitable allocation of resources and scalable international models for long-term care.



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sciforum-145126: Toward Individualized High-Intensity Interval Training in Type 1 Diabetes: A Framework for Safe Implementation

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Introduction: High-Intensity Interval Training (HIIT) emerges as a safe, effective, and time-efficient strategy for individuals with type 1 diabetes (T1D), with positive effects on glycemic control, cardiovascular function, and physical fitness. Studies suggest that HIIT reduces the risk of both acute and late-onset hypoglycemia compared to other exercise modalities, thus promoting adherence. Factors such as prandial state, insulin dosage, and time of day influence glycemic responses. However, there is no clear consensus on the optimal type, structure, or dosage of HIIT for people with type 1 diabetes. The wide variability in protocols, regarding intensity, interval duration, repetitions, rest periods, and weekly frequency, hampers study comparisons and the development of standardized recommendations.

Methods: This study aims to analyze and synthesize current scientific evidence, identifying key parameters for the safe and effective implementation of this approach. A total of 18 studies from MEDLINE and PubMed Central were reviewed and selected based on strict inclusion criteria. Priority was given to HIIT interventions in individuals with T1D, preferably using cycle ergometers, and reporting metabolic, physiological, or neurological outcomes. Data were organized into four main categories: population characteristics, HIIT protocol parameters, reported outcomes, and safety criteria.

Results: The evidence reveals considerable diversity in HIIT configuration. Although no single parameter explains the observed benefits, protocol adherence and individualization appear to be critical factors. Frequent glucose monitoring—ideally via continuous systems—and professional supervision, including virtual formats, are essential.

Conclusions: A preliminary framework is proposed to guide individualized HIIT programming for people with type 1 diabetes, considering intensity, interval duration, weekly frequency, glycemic control, and personal variables.



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sciforum-146510: Virtual Reality in Cognitive Remediation for Bipolar Disorder: A Paradigm Shift in Rehabilitation

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Introduction

Bipolar Disorder (BD) is one of the leading causes of disability worldwide and is frequently associated with persistent cognitive deficits that severely limit functional recovery. Cognitive remediation (CR) is a promising intervention, but traditional approaches face challenges in terms of adherence, patient engagement, and transferability of results to real-life functioning. Virtual reality (VR), through immersive and ecological scenarios, represents an innovative tool able to enhance CR effectiveness and integrate recovery-oriented pathways.

Methods:

In a randomized controlled feasibility trial, patients with BD participated in a VR-based CR program integrated with psychoeducational and recovery-oriented strategies. The intervention lasted 3 months (24 sessions), and cognitive outcomes were assessed post-treatment as well as at 6- and 12-month follow-ups.

Results:

Thirty-six patients completed the follow-ups. Cognitive functions remained stable or improved up to 12 months, with significant gains in language abilities. The intervention was well tolerated and highly acceptable, with low dropout rates. Additional analyses from the research group highlighted the following: (a) improvements in social rhythm regularity and emotional regulation; (b) age-related effects, with young adults benefiting more in complex domains (e.g., working memory) and older adults showing gains in structured functions (e.g., cognitive flexibility); and (c) positive impacts on depressive symptoms and quality of life.

Conclusions:

These findings confirm the feasibility and preliminary efficacy of VR-based CR for BD, with stable long-term outcomes and age-specific benefits. VR represents a paradigm shift in rehabilitation, enhancing engagement, promoting the generalization of cognitive skills to everyday life, and integrating recovery-oriented approaches. Beyond being a technological adjunct, VR emerges as a transformative opportunity in the clinical management of affective disorders. Future multicenter studies with larger samples and extended follow-up are needed to consolidate evidence and establish standardized protocols.



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Session 7. Pulmonology

sciforum-146688: Iatrogenic Pneumothorax Following Nephrectomy: Case Report

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Introduction

Iatrogenic pneumothorax is a rare but serious complication of nephrectomy, especially during open procedures involving subcostal or lombotomy approaches. The anatomical proximity of the kidney, particularly the left upper pole, to the pleura and diaphragm increases the risk of pleural injury. We report a rare case of symptomatic postoperative pneumothorax following left nephrectomy in a young patient, highlighting the diagnostic challenges and therapeutic strategies.

Case Report

A 22-year-old Mauritanian woman with no relevant medical or surgical history presented with chronic intermittent left-sided lumbar pain. Imaging revealed severe left hydronephrosis due to ureteropelvic junction obstruction, with significant parenchymal thinning and no evidence of stones. A non-functional kidney led to the decision to perform a left nephrectomy via subcostal lombotomy.

During surgery, a pleural breach was identified and sutured after lung expansion under positive pressure ventilation. On postoperative day 2, the patient developed acute left-sided chest pain and respiratory distress. Clinical examination revealed signs consistent with a large left-sided pneumothorax. Thoracic CT confirmed the diagnosis. The patient was immediately managed with chest tube drainage, which ensured evacuation of intrapleural air and represented a critical lifesaving intervention in this context. A small-bore anterior drain connected to suction was inserted, resulting in rapid clinical improvement. The drain was removed on day 5. On day 7, upon referral to the pneumology unit, the patient was clinically stable, but chest X-ray revealed a partial residual pneumothorax with minimal effusion. A conservative management strategy with oxygen therapy was adopted. Full re-expansion of the lung was observed by day 10.

Conclusion

Iatrogenic pneumothorax after nephrectomy is rare but clinically significant. Lifesaving chest tube drainage may be required in acute cases, while conservative management can suffice in stable patients, underscoring the importance of early recognition and tailored treatment.



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sciforum-147211: Improving Adherence to Asthma Medication: What are the most Clinically and Cost-Effective Strategies to Improve Medicine Adherence in Adults with Asthma who are Non-Adherent to Prescribed Medicines?

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Background:

Optimal asthma control depends on both pharmacological intervention and self-management, including adherence to treatment, symptom monitoring, correct inhaler use, and managing triggers. Consistent adherence reduces disease burden, hospitalizations, and mortality, while improving quality of life. Poor adherence to treatment strategies and prescribed medication remains a major concern across all age groups. Additionally, asthma imposes a significant economic burden, costing the NHS GBP 300 billion annually, largely from preventable events. Improving adherence is therefore a clinical and economic priority to ensure sustainable and accessible treatment. Strategies include behavioural support and patient education.

Method:

This systematic review was conducted based on PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. The protocol was registered on PROSPERO. Multiple databases were searched using pre-determined terms. Eligible studies included randomized controlled trials and observational studies (case control, cohort, and cross-sectional) that investigated interventions aiming to improve adherence to prescribed asthma medications in adults. Two independent reviewers screened and extracted data. Outcomes reported include asthma control, hospitalizations, exacerbation frequency, and cost-effectiveness.

Results:

Eight included studies tested interventions to improve asthma outcomes and medication adherence, including personalised asthma action plans (PAAPs), digital and educational tools, and specialist follow-up after exacerbations. PAAP improved knowledge and satisfaction ($p0.05$), but not adherence or lung function. Mobile apps and reminder tools showed modest benefit but no significant impact on clinical outcomes. Specialist follow-ups after exacerbations improved adherence ($p0.001$). Additionally, when comparing individualised outcomes to caregiver-assisted approaches, the former showed better asthma control at 3 and 6 months ($p0.01$).

Conclusion:

Interventions showed mixed effects, and adherence remained low overall. Further research is needed to study interventions that show promise, including individualised approaches, education, and follow-up support.



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sciforum-145964: Obesity and Antiviral Outcomes: Is Nirmatrelvir–Ritonavir Effective in Reducing Hospitalization in Obese Patients with COVID-19?

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We conducted a systematic review and meta-analysis entitled "Obesity and Antiviral Outcomes: Is Nirmatrelvir–Ritonavir Effective in Reducing Hospitalization in Obese Patients with COVID-19?"

We compared nirmatrelvir–ritonavir with placebo to assess its impact on hospitalization rates in obese patients diagnosed with COVID-19. Three studies met the inclusion criteria, all comparing nirmatrelvir–ritonavir in outpatients with PCR-confirmed COVID-19 and obesity (body mass index >25 kg/m²) versus placebo.

The primary endpoint was the hospitalization rate. Odds ratios (OR) with 95% confidence intervals (CIs) were calculated. Our analysis showed that nirmatrelvir–ritonavir did not significantly reduce hospitalization rates in obese patients with COVID-19 (OR 0.84; 95% CI 0.57–1.25; p=0.39). Given the high global prevalence of obesity and its role as a risk factor for severe COVID-19, further research into tailored therapeutic strategies for this vulnerable population is needed. Limitations include reduced data availability for obese patients, inclusion of only three observational studies, and potential heterogeneity.

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sciforum-146294: Adherence to Antibacterial Therapy and Associated Factors in Lower Respiratory Infections in War-Affected Areas: A Randomized Controlled Trial

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Background: Lower respiratory tract infections (LRTIs) are one of the leading causes of mortality. Pharmacist-led interventions can enhance adherence to antibiotics; the present study aims to determine adherence to the antibiotics prescribed for LRTIs and related factors. **Methods:** An individual randomized control trial was conducted with 1:1 (intervention=205, control=205) participants aged >18 years recruited. The primary outcomes included adherence to therapy at weeks 1 and 2, awareness of antibiotic use, and appropriate discontinuation as prescribed. The secondary outcome measures were the overall clinical outcomes of the therapy and the effectiveness of educational interventions assessed at the final week 7 (overall assessment checked and treatment was not continued). The data were analyzed using different statistical methods, including descriptive statistics for data summarization and inferential techniques were used. The WHO-PAS and BMQ questionnaires were scored on a 5-point (Likert Scale), with total and domain-specific scores computed and summarised as median (IQR); group comparisons were carried out by Mann–Whitney U statistics, while mean (SD) values were additionally calculated to descriptively summarise group-level differentiations. Finally, 187 patients remained in the intervention group, and a total (n=18) lost to follow-up. The awareness was significantly increased through pharmacist-led interventions (n=106, 56.7%; p=0.01), along with the factors leading to antibiotic resistance knowledge. Overall, adherence to antibacterial therapy for the LRTIs has improved (p≤0.01), and a significant correlation exists between overall MMAS-8 mean scores and other demographic factors; interventions improved [0.441-2.151] with adherence (post-intervention). Higher adherence was found (p≤0.05) among the participants in the intervention group as compared to the control group, and with (OR: 1.050; CI: 0.150-1.024) demographics (education, p=0.05). **Conclusion:** Overall, the intervention group showed better awareness, understanding, and attitudes about antibiotics, and their adherence to antibiotic therapy improved significantly, along with the overall clinical outcomes.



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sciforum-145106: Cases of Malignant Neoplasms of the Bronchi and Lungs, Their Staging and Treatment Time in Brazil: Ten Years of Analysis

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Introduction: Malignant neoplasms of the bronchi and lungs represent one of the leading causes of morbidity and mortality in Brazil, reflecting the high burden of this disease on the healthcare system. Analyzing treatment times for these cases within the Brazilian Unified Health System (SUS) is essential to understanding the challenges related to early diagnosis, access to therapies, and their impact on clinical outcomes. **Objective:** To describe the number of cases according to staging, as well as the treatment time of malignant neoplasms of the bronchi and lungs in Brazil, between 2015 and 2024. **Methods:** This is an ecological, descriptive, and quantitative study, based on the analysis of secondary data extracted from the TABNET/DATASUS platform. **Results:** The analysis showed a total of 93,423 cases between 2015 and 2024, considering stages 0 (carcinoma in situ) to IV, as well as cases without staging information. Stage IV was the most prevalent (50,965 cases), while stage 0 was the least prevalent (2,844 cases), indicating that many patients already present with advanced disease when they arrive at specialized services. Regarding treatment time, the most prevalent interval was 61 to 90 days (13,056 cases). Of note, 1,061 cases had treatment times exceeding two years. No histological information was available in this database. **Conclusion:** Data analysis demonstrates the relevance of malignant neoplasms of the bronchi and lungs in Brazil, revealing not only the heterogeneity in treatment times but also the predominance of advanced-stage disease (stage IV). These findings underscore the need for public policies that aim to facilitate early diagnosis, expand access to therapy, and enhance information recording to reduce inequalities and improve clinical outcomes for patients.



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sciforum-145102: Chronic Obstructive Pulmonary Disease and Precision Medicine: Research Reports

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Introduction: Chronic Obstructive Pulmonary Disease (COPD) is characterized by persistent airway obstruction and is the fourth leading cause of death worldwide. In Brazil, it accounted for 5,010 hospital admissions according to DATASUS, highlighting the importance of early diagnosis and treatment. In this context, precision medicine has emerged as a promising approach in the management of respiratory diseases such as COPD, enabling personalized clinical decisions through the use of biomarkers and epigenetic data. **Methods:** A search was conducted in the MEDLINE database using the descriptors “Precision medicine” and “Chronic Obstructive Pulmonary Disease.” Filters were applied for full-text systematic reviews published in 2024, yielding 3 articles. Data were tabulated using Microsoft Office 2021. **Results:** Growing evidence suggests that epigenetic changes, such as DNA methylation, are associated with COPD and lung function. One systematic review of epigenome-wide association studies identified 17 relevant studies, with 123 genes replicated across blood and respiratory tissue samples, indicating that blood may reflect key molecular alterations present in the lung. This finding has practical implications for non-invasive diagnosis and monitoring. Additionally, biomarkers such as procalcitonin (PCT) have been investigated to guide treatment in patients with pneumonia and COPD exacerbations. A systematic review of randomized clinical trials, including more than 4,700 patients, reported that biomarker-guided antibiotic therapy reduced prescription rates, duration, and exposure to antibiotics, without increasing mortality or adverse clinical outcomes. **Conclusions:** The integration of biomarkers and epigenetics represents a significant step toward precision medicine in COPD, with the potential to improve risk stratification, personalize treatments, and reduce unnecessary interventions. Further research is warranted to support its implementation in clinical practice and to optimize COPD management in Brazil.



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sciforum-126413: Epidemiology of Asthma in Chinese Population from 1990 to 2021: Findings from the Global Burden of Disease Study 2021

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Objective: To analyze the burden due to asthma and its changes in China from 1990 to 2023.

Methods: Using data from the Global Burden of Disease 2023 (GBD 2023) study, we analysed six key indicators: the mortality, prevalence, incidence, disability-adjusted life years, years lived with disability, and years of life lost. Age-standardized rates were analysed using the global age structure as a reference. Joinpoint regression was used to assess the annual percentage change and average annual percentage change.

Results: In 2023, 45,991,602 prevalent cases, with 8,028,745 incidence cases and 23,699 deaths due to asthma, were reported from China. The number crude rates of the prevalence, mortality, disability-adjusted life years, and years lived with disability significantly increased in 2023 compared with 1990. The age-standardized rates per 100,000 were 3066.76 for prevalence (+5.65% from 1990), 717.95 for incidence (-2.18%), 1.11 for mortality (-53.36%), 140.90 for disability-adjusted life years (-14.77%), 120.42 for years lived with disability (5.81%), and 20.47 for years of life lost (-31.40%). The burden of asthma was higher in males than in females during 1990-2023. In 2023, the incidence rate was the highest among individuals under 10 years of age. The prevalence rate, mortality rate, disability-adjusted life years rate, and years of life lost rate were the highest among the population aged 95 and over. The years lived with disability rate was the highest among those aged 70-74.

Conclusion: Between 1990 and 2023, China's asthma burden showed age- and sex-specific trends: crude rates for prevalence, mortality, and disability increased, but age-standardized rates for mortality, disability-adjusted life years, and years of life lost declined. Males faced higher burdens than females. Key age groups included: under-10s (highest incidence), ≥95-year-olds (highest prevalence, mortality, disability-adjusted life years, years of life lost), and 70–74-year-olds (highest years lived with disability). Targeted interventions by age and sex are needed to address these disparities.



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sciforum-144723: Factors Associated with Higher Respiratory Disturbance Index than Apnea–Hyponea Index in Patients with Obstructive Sleep Apnea

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Introduction: Polysomnography is the gold standard test to diagnose obstructive sleep apnea (OSA). The two common polysomnography available: home sleep apnea test (HSAT) or full attended polysomnography. Full attended polysomnography, gold standard test, is an expensive test and has a long waiting list. HSAT is cheap and sensitive, but it has the main limitation of respiratory effort-related arousal (RERA) detection. The presence of RERA results in a higher respiratory disturbance index (RDI) than apnea–hyponea index (AHI). Knowing factors associated with higher RDI than AHI in patients with OSA may reduce numbers of patients required full attended polysomnography which lower cost for OSA diagnosis. This study aimed to evaluate factors associated with higher RDI than AHI in patients with OSA.

Methods: This was a retrospective analytical study. The inclusion criteria were adult patients with OSA and diagnosed with OSA by full attended polysomnography. Clinical factors and polysomnography were collected from the hospital database. Factors associated with higher RDI than AHI were detected by multivariable logistic regression analysis.

Results: There were 72 patients with OSA met the study criteria. Of those, 27 patients (37.50%) had a higher RDI than AHI. There were five factors in the predictive model for higher RDI than AHI including age, sex, hypertension, diabetes, and body mass index. Only body mass index was independently associated with higher RDI than AHI. An adjusted odds ratio of body mass index was 1.10 (95% confidence interval of 1.01, 1.19). A body mass index of 26.03 kg/m² had a sensitivity of 81.48% and specificity of 33.33% in order to detect higher RDI than AHI.

Conclusions: Patients who are suspected for OSA with the body mass index of 26.03 kg/m² may have higher RDI than AHI. These patients may be required full attended polysomnography, while other patients may be tested with HSAT which may report comparable AHI values.



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sciforum-140708: Individual Patient Data Meta-Analysis of Histopathological Patterns and Vaping-Associated Lung Injury: Different Pathophysiology of Nicotine and Marijuana-Based Vaping

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Background:

E-cigarette or vaping-associated lung injury (EVALI) presents with heterogeneous histopathological findings, yet systematic analyses remain limited. Although case reports have documented patterns such as diffuse alveolar damage (DAD) and organizing pneumonia, no prior meta-analysis has examined these findings at the individual patient level or explored how injury patterns differ by vaping substance.

Methods:

This individual patient data (IPD) meta-analysis systematically evaluated histopathological features in e-cigarette or vaping product use-associated lung injury (EVALI), synthesizing evidence from 10 studies comprising 38 cases. Following PRISMA-IPD guidelines, we searched MEDLINE, Embase, PubMed, Scopus, and conference proceedings without restrictions. Eligible studies reported lung biopsy/autopsy findings in CDC-defined EVALI cases. Composite variables were created for inflammation severity (none/mild/moderate-severe), macrophage/lipid abnormalities (present/absent), and dominant pathological patterns (e.g., diffuse alveolar damage [DAD], organizing pneumonia).

Results:

Acute fibrinous pneumonitis (31.6%), organizing pneumonia (23.7%), and diffuse alveolar damage (13.2%) were the most common histopathological patterns. Lipid-laden macrophages were detected in 21.1% of cases. Vape type significantly predicted macrophage/lipid abnormalities ($\chi^2(3)=14.97$, $p=.002$), with the highest prevalence among nicotine-only users (62.5%). In contrast, THC-only users showed a markedly lower prevalence (7.1%). No significant associations were observed between macrophage abnormalities and age, sex, smoking history, vaping duration, or immune cell profiles in bronchoalveolar lavage fluid ($p > .05$).

Conclusion:

This IPD meta-analysis highlights acute fibrinous pneumonitis as the predominant pattern in EVALI and suggests that nicotine-based products may be more strongly associated with lipid-related macrophage abnormalities than THC products. These findings support the hypothesis of substance-specific lung injury mechanisms and underscore the need for tailored diagnostic criteria and regulatory oversight.



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sciforum-135290: Intracranial Pressure and Obstructive Sleep Apnea: Exploring a Complex and Underrecognized Relationship

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Introduction:

Obstructive sleep apnea (OSA) is a highly prevalent sleep-related breathing disorder characterized by repetitive upper airway obstruction during sleep, resulting in intermittent hypoxia, hypercapnia, and marked fluctuations in intrathoracic pressure. These physiological disturbances have systemic consequences and are increasingly recognized for their impact on cerebral hemodynamics and intracranial pressure (ICP). Understanding this relationship is particularly critical in patients with coexisting neurological disorders.

Objective:

This systematic review aims to synthesize current evidence on the bidirectional relationship between OSA and elevated ICP, with an emphasis on underlying mechanisms, clinical implications, and therapeutic considerations across conditions such as idiopathic intracranial hypertension (IIH), traumatic brain injury (TBI), and hydrocephalus.

Methods:

A comprehensive literature search was conducted in accordance with PRISMA guidelines across PubMed, Scopus, Web of Science, and Google Scholar. Search terms included combinations of Medical Subject Headings (MeSH) and Boolean operators, with no date restrictions. Thirty-five studies met the inclusion criteria, covering both clinical and experimental data.

Findings:

Evidence from the reviewed studies suggests that the cyclical hypoxia and intrathoracic pressure changes in OSA may lead to transient elevations in ICP and disrupt cerebrospinal fluid (CSF) dynamics. These effects may exacerbate symptoms or disease progression in patients with underlying intracranial pathology. While CPAP therapy remains the standard of care for OSA, its impact on ICP is variable, with some reports indicating a benefit and others suggesting a potential elevation of ICP, particularly in specific patient populations.

Conclusion:

There is growing support for a complex and potentially bidirectional interaction between OSA and ICP. However, inconsistencies across study methodologies and patient cohorts limit the ability to draw definitive conclusions. Future research should focus on standardized assessment protocols and targeted investigations to better understand how OSA management may influence ICP regulation and neurological outcomes.



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sciforum-145325: Natural Alkaloids as Promising Candidates for Targeted Therapy in Lung Cancer

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The KRAS oncogene (EC 3.6.5.2) is the most frequently mutated gene in non-small cell lung cancer (NSCLC), being present in approximately 25–30% of cases. Among these alterations, the KRAS p.G12C mutation is particularly relevant, occurring in ~12–14% of NSCLC and strongly associated with smoking. This mutation impairs GTP hydrolysis and promotes constitutive activation of the protein, driving uncontrolled cell proliferation. Tumors harboring this mutation usually show poor response to EGFR-targeted therapies, although they may benefit from immunotherapy. More recently, covalent inhibitors have shown clinical efficacy by specifically targeting KRAS G12C; however, both primary and acquired resistance remain significant challenges, highlighting the need for novel therapeutic strategies. In this context, a library of 249 alkaloids was constructed and subjected to virtual screening against the oncogenic KRAS G12C variant (PDB: 4NMM, *Homo sapiens*). Following the docking studies, their toxicity and pharmacokinetic properties were predicted *in silico* using the StopTox platform. Protein preparation included validation of the docking protocol through re-docking of the co-crystallized ligand, 5'-O-[(S)-{[(S)-2-(acetylamino)ethoxyphosphoryl]oxy}(hydroxy)phosphoryl]guanosine. Docking simulations were performed in YASARA using the AutoDock Vina engine. The results identified four alkaloids with binding energies superior to the crystallographic control (-8.40 kcal/mol): Oxoisocoridine (-8.99 kcal/mol), Aporglauquine (-8.67 kcal/mol), Oxyaporphine (-8.60 kcal/mol), and Oxyisocoridine (-8.45 kcal/mol). Toxicity predictions indicated that all candidates are non-toxic orally, non-irritant to the eyes, non-sensitizing, and non-corrosive to the skin, according to computational models. Overall, these findings suggest that alkaloids represent promising scaffolds for KRAS G12C inhibition, combining high predicted binding affinities with a favorable toxicity profile. Nonetheless, experimental validation is essential to confirm their potential as anticancer candidates.



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sciforum-145413: Net Survival Following Lung Cancer Resection in North West England: A Pohar–Perme Estimator Analysis

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Introduction

Long-term survival studies need to be interpreted relative to background population mortality. Net survival, estimated with the Pohar–Perme method, provides an unbiased cancer-specific survival measure by adjusting for competing risks of death. We report population-adjusted long-term survival outcomes after lung cancer resection in a regional cohort undergoing curative-intent lung resection.

Methods

We analysed a consecutive cohort of patients with primary lung cancer treated surgically between 2012 and 2019 at two major thoracic centres in North West England. Patient data were linked with UK life tables from the Human Mortality Database to derive expected survival by sex, age, and calendar year. Net survival was estimated using the Pohar–Perme method implemented in the `relsurv` package in R. Follow-up time and patient age were expressed in years, with results reported at 1–5 years post-surgery.

Results

A total of 3,426 patients were included, with a median follow-up of 6.2 years. Stage I and II disease accounted for 37% and 40% of cases, respectively. There were 1,996 (59%) observed deaths versus 871 expected background mortality, corresponding to 1,125 excess deaths. Observed overall survival was 95.9% at 1 year, 79.2% at 3 years, and 62.4% at 5 years. Net survival, adjusted for background mortality, was higher at all timepoints, measuring 98.8% (95% Confidence Interval [CI] 98.2–99.4) at 1 year, 93.7% (95% CI 92.5–94.9) at 3 years, and 85.8% (95% CI 84.1–87.5) at 5 years. The overall standardized mortality ratio (SMR) was 2.29 (95% CI 2.19–2.39).

Conclusion

Population-adjusted net survival highlights the true mortality burden of lung cancer. Our findings show that surgery in carefully selected early-stage lung cancer achieves excellent outcomes, underscoring the sustained benefit of surgical management after adjusting for background mortality. These results provide a robust benchmark for future comparisons across regions and treatment eras.



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sciforum-147539: Plasma Fibrinogen, Fractional Exhaled Nitric Oxide (FeNO), and the Novel Fibrinogen-to-FeNO Ratio (FFR) as Biomarkers in Stable Bronchiectasis

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Introduction: Bronchiectasis is a chronic airway disease characterized by predominantly neutrophilic and occasionally eosinophilic inflammation. We aimed to evaluate the alterations and clinical relevance of plasma fibrinogen as a key player in neutrophilic inflammation, fractional exhaled nitric oxide (FeNO) as an indicator of eosinophilic inflammation, and the fibrinogen-to-FeNO ratio (FFR) as a novel biomarker in bronchiectasis.

Methods: We conducted a two-center, observational, cross-sectional study involving a total of 45 stable, non-cystic fibrosis bronchiectasis patients. Fibrinogen, FeNO, and FFR were measured and investigated in relation to respiratory symptoms, pulmonary function, radiological extension, airway infection, systemic inflammation, and validated disease severity scores.

Results: The 45 patients (33.3% males), with a median (interquartile range, IQR) age of 71 (22.4) years, presented a median (IQR) fibrinogen of 389 (152.7) mg/dL, FeNO of 18 (15.5) ppb, and FFR of 1.2 (1.3). Fibrinogen (1) and FeNO (2) were positively or negatively statistically significantly correlated with the percentage of predicted forced expiratory volume in 1 second (FEV₁%Pred, $r_1 = -0.476/p_1 = 0.002$ and $r_2 = +0.470/p_2 = 0.038$, respectively), total white blood cells (WBC, $r_1 = +0.373/p_1 = 0.012$ and $r_2 = -0.411/p_2 = 0.013$, respectively), and serum C-reactive protein (CRP, $r_1 = +0.750/p_1 = 0.001$ and $r_2 = -0.330/p_2 = 0.057$, respectively). Fibrinogen was additionally correlated with the number of affected lung lobes ($r = +0.308/p = 0.042$) and erythrocyte sedimentation rate ($r = +0.493/p = 0.001$). Interestingly, FFR was found to more strongly correlate with the FEV₁%Pred ($r = -0.606/p = 0.001$), total WBC ($r = +0.471/p = 0.006$), serum CRP ($r = +0.592/p = 0.001$), blood neutrophils ($r = +0.357/p = 0.042$) and eosinophils ($r = -0.390/p = 0.025$), and the severity of airway infection based on the isolated pathogens, including *Pseudomonas aeruginosa* as the cardinal pathogen ($r = +0.444/p = 0.034$).

Conclusions: In the context of the verified clinical importance of fibrinogen and FeNO, FFR is introduced as a novel potential biomarker in bronchiectasis, reflecting the balance between neutrophilic and eosinophilic inflammation and associating with key aspects of disease activity and severity.

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sciforum-124990: Pulmonary Arterial remodelling in smokers and Patients with Early COPD: Potential Drivers of EndMT

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Introduction/Aim: We previously reported pulmonary arterial remodelling and active endothelial to mesenchymal transition (EndMT) in smokers and patients with early COPD. In this study, we aimed to evaluate the role of different drivers of EndMT.

Methods: Immunohistochemical staining for EndMT drivers, TGF- β 1, pSMAD-2/3, SMAD-7, and β -catenin was performed on surgically resected lung tissue from 46 subjects. Twelve were non-smoker controls (NCs), six were normal lung function smokers (NLFS), nine were patients with small-airway diseases (SADs), nine were mild-moderate COPD-current smokers (COPD-CSs), and ten were COPD-ex-smokers (COPD-ESs). Histopathological measurements were taken using Image ProPlus software V7.0.

Results: We observed lower levels of total TGF- β 1 ($p < 0.05$) in all smoking groups than in the non-smoking control (NC). Across arterial sizes, smoking groups exhibited significantly higher pSMAD-2/3 and SMAD-7 expression ($p < 0.05$) in total and individual layers than in the NC group. The ratio of SMAD-7 to pSMAD-2/3 was higher in COPD patients compared to NC patients. Total β -catenin expression was significantly higher in smoking groups across arterial sizes ($p < 0.05$), except for COPD-ES and NLFS groups in small and medium arteries, respectively. Increased total β -catenin was positively correlated with total S100A4 in small and medium arteries ($r = 0.35, 0.50; p = 0.02, 0.01$, respectively), with vimentin in medium arteries ($r = 0.42, p = 0.07$), and with arterial thickness of medium and large arteries ($r = 0.34, 0.41, p = 0.02, 0.01$, respectively).

Conclusion: This is the first study uncovering an active endothelial SMAD pathway independent of TGF- β 1 in smokers, SAD, and COPD patients. Increased expression of β -catenin indicates its potential interaction with the SMAD pathway, warranting further research to identify the deviation from this classical pathway.



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sciforum-135989: Pulmonary Aspergillosis in a Patient with Diabetic Ketoacidosis

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Introduction

Pulmonary mucormycosis is a potential complication in patients with diabetic ketoacidosis. Isolation of filamentous fungus from bronchoscopy specimens of this population may prompt clinicians to include pulmonary mucormycosis in their differential diagnoses and initiate high-dose intravenous liposomal amphotericin (>5 mg/kg/day). Amphotericin is an expensive therapy and is frequently associated with adverse effects such as nephrotoxicity, phlebitis, and acute febrile reaction. We encountered a case in which pulmonary aspergillosis rather than mucormycosis was diagnosed in a patient with diabetic ketoacidosis.

Method

A 36-year-old female with history of type 1 diabetes was admitted to an intensive care unit due to increased work of breathing and decreased Glasgow coma scale (14). She presented with a temperature of 33.4 Celsius, glucose 39 mmol/L, beta-hydroxybutyrate 11.4 mmol/L, and blood gas of pH 6.94, bicarbonate 5 mmol/L, carbon dioxide partial pressure 24, and lactate 1.6 mmol/L. Computed tomography showed extensive parenchymal disease with reticulation and air space opacity and well circumscribed nodules distributed throughout the lungs (largest 14 mm). (**Figure 1** https://drive.google.com/file/d/16_Tw4Uoa2FbavqeM5_u7lomSOTeoMOo0/view?usp=sharing). Bronchoalveolar lavage specimens were sent to the microbiology laboratory, where heavy growth of filamentous fungus was identified on culture plates (**Figure 2** <https://drive.google.com/file/d/1CSIng6R2YYDfAt9evfVnVm6zvLspKvvV/view?usp=sharing>).

Results

The fungus isolates were examined under 400x magnification with lactophenol blue stain and identified as *Aspergillus nigers* (**Figure 3** <https://drive.google.com/file/d/1Qjd-CCylusivBVLfX0uTc2GsijpMp0oV/view?usp=sharing>) and *Aspergillus flavus* (**Figure 4** https://drive.google.com/file/d/1-4nY7_Rlnykv-HWUXuGF-IZ-8VT-E_ra/view?usp=sharing). The patient was given 200 mg intravenous voriconazole every 12 hours, a first-line therapy for aspergillosis. She achieved clinical improvement and was later discharged home.

Conclusion

Like pulmonary mucormycosis, pulmonary aspergillosis could happen in patients with diabetic ketoacidosis and should be kept in the differentials. The first-choice therapy differs for pulmonary mucormycosis and aspergillosis.



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Session 8. Anesthesiology

sciforum-147541: Association of Biochemical Markers with Postoperative Delirium and Cognitive Dysfunction in Elderly Orthopedic Patients

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Background

The growing elderly population has increased susceptibility to postoperative neurocognitive disorders, particularly delirium (POD) and cognitive dysfunction (POCD). POD occurs in 14–60% and POCD in 30–50% of older surgical patients. Emerging evidence implicates neuroinflammation, oxidative stress, and neuronal dysfunction. We hypothesize that Brain-Derived Neurotrophic Factor (BDNF) and Malondialdehyde (MDA) biomarkers may predict POD and POCD risk.

Methods

This prospective observational cohort study (IEC approval: 283/07.05.2021; CTRI/2024/12/077549) enrolled 80 patients >60 years undergoing major orthopaedic surgery. After informed consent, baseline demographics, comorbidities, and laboratory parameters were recorded. Cognitive and neuropsychiatric assessments were conducted pre and postoperatively using standardized psychological scales. Serum levels of biochemical markers, BDNF and MDA were measured using ELISA at both time points.

Results

The cohort had a mean age of 67.67 ± 6.2 years (44 males, 36 females) and mean BMI of 23.08 ± 4.2 . Comorbidities were diabetes (17), hypertension (11), thyroid disorders (8), and hypercholesterolemia (11), where most cases were ASA Grade I (62) with 18 cases of PONV. Cognitive assessments revealed a significant postoperative decline in ACE-III ($p = 0.01$) and DRS-R-98 ($p = 0.0001$) scores with no significant changes in TMT-B, Stroop Test, or Porteus Maze scores. MDA levels demonstrated a near-significant reduction (885.01 ± 891.26 to 670.35 ± 570.41 nmol/mL; $p = 0.07$), indicating a possible decrease in oxidative stress post-surgery.

Conclusion

This study reveals a high risk of POD and POCD among elderly patients undergoing major orthopedic surgery. Significant cognitive decline by ACE-III and DRS-R-98 scores was observed postoperatively. MDA levels suggest a potential role of oxidative stress in cognitive outcomes. These findings highlight the importance of routine cognitive assessment and biochemical monitoring in the perioperative period. Further research is needed to confirm these associations and to develop preventive strategies.



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sciforum-143059: Bispectral Index and Eeg-Based Monitoring During General Anesthesia: Clinical Utility and Safety

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Introduction: Accurate intraoperative monitoring of anesthetic depth is essential to prevent intraoperative awareness, excessive anesthesia, and associated complications. Electroencephalographic (EEG)-based tools, particularly the Bispectral Index (BIS), have emerged as useful adjuncts to guide anesthetic titration and improve clinical outcomes. This review explores the clinical utility, safety, and limitations of BIS-guided anesthesia management in adult surgical patients. **Methods:** A narrative literature review was conducted using the BVS database. Descriptors included “Electroencephalography”, “Bispectral Index”, “Intraoperative Monitoring”, “General anesthesia” and “Consciousness Monitors” combined using Boolean operators. Inclusion criteria encompassed clinical studies and reviews published between 2020 and 2025, available in English, Portuguese, or Spanish. Eleven articles were selected based on relevance to BIS use during general anesthesia in adult surgical patients. **Results:** BIS-guided anesthesia was consistently associated with lower anesthetic consumption, shorter emergence times, and improved postoperative recovery, especially in elderly patients. Studies demonstrated that maintaining BIS values within the 40–60 range helped optimize sedation without compromising hemodynamic stability. BIS values 40 combined with hypotension were linked to increased 90-day mortality. Evidence supports the use of BIS to reduce the incidence of intraoperative awareness, particularly during total intravenous anesthesia (TIVA). However, variability in BIS readings and response to anesthetics between individuals remains a challenge. EEG-based monitoring also shows promise in improving safety in high-risk populations, although some large trials reported no long-term mortality benefit. **Conclusion:** BIS monitoring contributes to more precise anesthetic depth control, reduced drug use, and potentially improved short-term outcomes. While not free from limitations, BIS remains a valuable tool in intraoperative monitoring, especially when used alongside clinical judgment and other physiological parameters. Further research is warranted to standardize protocols and evaluate long-term benefits.



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sciforum-147691: Patient-Controlled Opioid-Free Surgical Pathway: A Quality Improvement Initiative

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Introduction:

Although opioids are often prescribed during surgery, an increasing number of patients are requesting opioid-free surgery (OFS). Perioperative care is often protocol-driven and may not account for individualized preoperative directives. Consequently, patient requests to avoid opioids are not always consistently communicated across the surgical care team. Despite enhanced recovery after surgery (ERAS) protocols that use a multimodal approach and regional anesthesia, completely avoiding opioids to meet patient requests is not consistently achieved. This study aimed to assess the feasibility and outcomes of the Patient-Controlled Opioid-Free Surgical Pathway (PCOFSP) in fulfilling patients' requests for opioid-free surgery

Methods:

The PCOFSP is based on a multimodal approach, regional anesthesia, and the use of complementary techniques. It begins with proper patient identification, education, and coordination among the care team. The pathway was initiated in May 2024 using a Plan-Do-Study-Act framework. Descriptive statistics were used to summarize demographics and outcomes. Continuous variables are reported as medians with interquartile ranges (IQR), and categorical variables as frequencies and percentages.

Results:

Of 1,175 patients screened, 16.1% requested OFS. Median age was 66 years (IQR 58–72); 59% were male. Overall, 74.1% underwent OFS, 18.5% received opioids intraoperatively or in the ACU, and 7.4% withdrew. Success was highest in plastic (100%) and orthopedic surgery (82.4%) and lowest in urology (67.8%). Median length of stay was 1.1 days (IQR 0.6–1.5). Complementary techniques included aromatherapy (n=157), nanotechnology patches (n=15), auriculotherapy and mindful breathing (n=4), and hypnosis or music therapy (n=2). Five patients re-enrolled for a second surgery.

Conclusion:

The PCOFSP enabled 74% of patients to undergo OFS. Our data suggest that by integrating regional anesthesia, multimodal analgesics, complementary therapies, and effective communication, the PCOFSP allows patients to successfully undergo OFS.



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sciforum-147563: The Effectiveness of Perioperative Gabapentin and Ketamine in Managing Postoperative Pain in Adolescent Idiopathic Scoliosis Patients undergoing Spinal Fusion Surgery: A systematic Review and Meta-Analysis

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Introduction: Adolescent idiopathic scoliosis (AIS) is the most common spinal deformity in adolescents, affecting 2–3% of children aged 10–16 years. Severe cases often require posterior spinal fusion (PSF) to correct curvature and improve quality of life. Despite its effectiveness, PSF is associated with significant postoperative pain due to extensive spinal instrumentation and muscle dissection. Opioids remain the mainstay of analgesia but carry risks such as respiratory depression, nausea, and dependence. Increasingly, multimodal analgesic strategies are being explored to reduce opioid use. Among these, gabapentin and ketamine have shown promise as adjuvants for effective perioperative pain management in AIS. The aim of the study is to evaluate the utility of gabapentin and ketamine as adjuvants in adolescent idiopathic scoliosis patients undergoing posterior spinal fusion, with primary focus on postoperative opioid consumption (morphine equivalents) and associated complications.

Methods: Major electronic databases, including PubMed, MEDLINE, Embase, Google Scholar, and the Cochrane Library, were screened till December 2024 for randomized controlled trials (RCTs) and controlled cohort studies. Data was synthesized using the Review Manager 5.4 software using the generic inverse variance method and random model & reported in Standardized mean difference (SMD) and odds ratio (OR).

Results: Eleven studies comprising 520 patients indicated that children receiving gabapentin or ketamine required significantly lower morphine doses at 24 hours (SMD: -0.66; 95% confidence interval [CI]: -.92, -0.40; $I^2 = 13\%$ & SMD: -1.59; 95% CI: -3.09, -0.09; $I^2 = 95\%$, respectively) and 48 hours (SMD: -0.59; 95% CI: -0.88, -0.30; $I^2 = 0\%$, SMD: -0.63; 95% CI: -1.61, 0.35; $I^2 = 91\%$, respectively) compared to the control group. However, no significant differences were observed in terms of period of hospital stay (SMD: -0.10; 95% CI: -0.32, 0.13; $I^2 = 0\%$, incidence of postoperative nausea & vomiting (OR: 0.40; 95% CI: 0.15, 1.06, $I^2 = 56\%$).

Conclusions: Perioperative administration of gabapentin or ketamine significantly reduces opioid consumption within the first 48 hours following posterior spinal fusion in AIS patients.



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sciforum-147631: To Evaluate the Effect of Fibrinogen on Peripartum Hemorrhage in Placenta Accreta Spectrum (PAS) Disorders: A Double-Blind Randomized Controlled Trial

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Background: Placenta accreta spectrum (PAS) disorders are severe obstetric complications associated with abnormal adherence of the placenta to the uterine wall, often leading to massive peripartum hemorrhage and maternal morbidity or mortality. Standard management of PAS involves cesarean hysterectomy, which carries a high risk of intraoperative blood loss and transfusion-related complications. Fibrinogen, a critical coagulation factor, is among the first to reach critical low levels during massive bleeding, and early supplementation may improve hemostatic control. ROTEM-guided studies have shown that fibrinogen levels correlate with clot firmness and that early correction can reduce transfusion requirements. However, evidence regarding the effectiveness of prophylactic fibrinogen administration in obstetric hemorrhage, especially in PAS disorders, remains limited and inconclusive. **Methods:** A double-blind randomized controlled trial was initiated at AIIMS, New Delhi. Patients with confirmed PAS diagnosis (n=14 in year one) were randomized into two groups to receive either 2g fibrinogen (n=7) or placebo (n=7) at the time of cord clamping. Blood samples were collected at baseline, 15 min post-drug, every 500 ml of blood loss, and 24 hours post-administration to assess hemogram, coagulation profile, and ROTEM parameters. Hemodynamic, intraoperative blood loss, and transfusion data were recorded. Data were analysed using t-tests with p0.05 as the significance threshold. **Results:** The fibrinogen group had significantly lower intraoperative blood loss (1950 ± 340.3 ml vs 2342.8 ± 325.9 ml; $p=0.047$) and transfused pRBC volume (464.3 ± 172.5 ml vs 892.9 ± 349.3 ml; $p=0.013$) compared to placebo. ROTEM parameters showed significantly improved clot firmness (MCF) and fibrinogen levels from sample 2 to 5 in the fibrinogen group. No significant differences were observed at 24h post-administration. No thromboembolic events or adverse effects were reported in either group. **Conclusion:** Pre-emptive administration of 2g fibrinogen in PAS patients reduces intraoperative blood loss and transfusion requirement without increasing complications. Findings suggest fibrinogen may be a valuable adjunct in managing PAS-associated hemorrhage and warrant further validation in a larger cohort.



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