”Dunărea de Jos” University of Galați

Scientific Conference of Doctoral Schools

Perspectives and challenges in doctoral Research

14th Edition of SCDS-UDJG

11th and 12th of June 2026

BOOK OF ABSTRACTS
Doctoral School of Biomedical Sciences

UNIVERSITAS GALATIENSIS

Dunărea de Jos" University of Galați

DOCTORAL SCHOOL OF BIOMEDICAL SCIENCES

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BOOK OF ABSTRACTS

EDITED BY
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CONFERENCE PROGRAMME

THURSDAY – June 11, 2026

08:00-10:00	Invited plenary lectures
09:00-11:00	Participants registration
10:00-13:00	Oral presentations in concurrent sections
13:00-14:00	Lunch (building MP – 5th floor)
14:00-16:00	Oral presentations in concurrent sections
16:00-16:30	Coffee break (building MP – 5th floor)
16:00-19:00	Oral presentations in concurrent sections

FRIDAY – June 12, 2026

09:00-10:30	Oral presentations in concurrent sections
10:30-11:00	Coffee break (building MP – 5th floor)
11:00-13:00	Posters session
11:00-13:00	Workshop
13:00-14:00	Awarding ceremony. Closing ceremony
14:00-15:00	Lunch (building MP – 5th floor)

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PLENARY LECTURES (ALL SECTIONS)

Prof. Katarzyna SAMBORSKA - Department of Food Engineering, Warsaw University of Life Sciences – SGGW, Poland. Delegate in Working Party on Drying, European Federation of Chemical Engineering

Assoc. Prof. Dr. Sertaç Ata GÜLER - Kocaeli University, Faculty of Medicine, Department of General Surgery

Prof. Pio Maria FURNERI - University of Catania, Department of Biomedical and Biotechnological Sciences

Prof. Duarte Nuno VIEIRA - Faculty of Medicine, University of Coimbra, Portugal; Faculty of Health Sciences, University of Beira Interior

Prof. Giancarlo CRAVOTTO - Department of Drug Science and Technology, Universita degli Studi di Torino, Italy

Prof. Mustafa Kemal GUMUS - Artvin Vocational School, Artvin Coruh University, Turkey

Prof. PhD Habil. Dana BADAU - Faculty of Physical Education and Mountain Sports

Transilvania University of Brasov, Romania

Prof. Samuel MAYOL - Professeur en Sciences de Gestion, Université Sorbonne Paris Nord; Directeur de la recherche de l'ICD; Directeur du LaRA (Laboratoire de Recherche Appliquée)

SECTION 8: RECENT THEORIES IN MEDICAL RESEARCH

OP 8.1

Limitations of HbA1c in the assessment of glycemic control in type 1 diabetes mellitus

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ABSTRACT

Background: Glycated hemoglobin (HbA1c) is the standard marker for long-term glycemic control in type 1 diabetes mellitus (T1DM) and is associated with the risk of chronic complications. However, it reflects only mean glycemia over 8–12 weeks and does not capture glycemic variability or hypoglycemic episodes. With the increasing use of continuous glucose monitoring (CGM), complementary metrics have emerged, providing a more comprehensive assessment of glycemic control and leading to a reassessment of HbA1c as a standalone marker. To evaluate the role and limitations of HbA1c in assessing glycemic control in T1DM in the context of modern continuous glucose monitoring metrics, including time in range (TIR), time in tight range (TITR), and coefficient of variation (CV). **Material and methods:** A narrative literature review was performed using PubMed, Scopus, and Web of Science databases. Relevant studies published in English were identified using predefined keywords related to HbA1c, T1DM, CGM, TIR, TITR, and CV. Articles addressing the relationship between HbA1c and modern glycemic metrics were included and critically analyzed. **Results:** The literature shows that HbA1c remains a validated marker of long-term glycemic exposure in T1DM and correlates with chronic complication risk. However, patients with similar HbA1c values may exhibit markedly different glycemic profiles. CGM-derived metrics provide additional information on glycemic variability and hypoglycemia that is not captured by HbA1c alone. **Conclusions:** HbA1c remains an essential marker for long-term glycemic assessment in T1DM; however, it does not fully

reflect glycemic variability or the burden of hypoglycemia. An integrated approach combining HbA1c with CGM-based parameters allows a more comprehensive evaluation of glycemic control.

Keywords: Type 1 diabetes mellitus; HbA1c; continuous glucose monitoring; time in range; time in tight range; glycemic variability.

OP 8.2

Soluble receptor for advanced glycation end products (s RAGE) in acute ischemic stroke

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ABSTRACT

Background: Stroke is one of the main causes of temporary or permanent disability, affecting both physical and mental functions. It can be classified as ischemic or hemorrhagic, with ischemic stroke accounting for approximately 75–80% of acute cases. The pathophysiological mechanisms underlying cerebral ischemia are complex and involve numerous molecular processes, including the release of biomarkers such as the soluble receptor for advanced glycation end products (sRAGE).To evaluate the potential role of sRAGE as a biomarker in acute ischemic stroke and its usefulness in differentiating ischemic stroke from stroke-mimicking conditions, particularly in cases with normal native brain imaging.**Materials and Methods:**This study is based on a review of prospective studies investigating the levels and clinical relevance of sRAGE in patients with acute ischemic stroke. The analysis focuses on its diagnostic value and its correlation with the extent of cerebral ischemia.Results:Available evidence suggests that sRAGE levels are altered in acute ischemic stroke and may reflect the extent of cerebral injury. Elevated or decreased levels of sRAGE have been associated with ischemic processes and may help differentiate true stroke from stroke mimics, especially when imaging findings are inconclusive.Conclusions:sRAGE represents a promising biomarker in the evaluation of acute ischemic stroke, with potential utility in early diagnosis and differential assessment. However, further large-scale studies are required to validate its clinical applicability and standardize its use in routine practice.

Keywords: stroke, ischemic stroke, sRAGE, biomarkers, cerebral ischemia, stroke mimics, diagnostic markers

OP 8.3

Emerging Cardiovascular Risk Profiles in Obese Children: From Subclinical Vascular Damage to Novel Biomarkers

Coreţchi Diana[1,2,3], Popa Casiana- Adelina[1,2,3], Sîrbu (Jalbă) Geanina- Adelina[1,2,3], Vîrlan (Goroftei) Larisa[1,2,3], Munteanu Anca- Nicoleta[1], Stavăr Andreea Veronica[1,2,3], Ursu Maria[1,2,3], Nechita Aurel[2,3]

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ABSTRACT

Background: Childhood obesity has reached epidemic proportions all around the world, thus increasing the risk of premature cardiovascular disease. Normally risk assessments often underestimate early vascular damage in pediatric population. Recent findings in vascular vascular imagind, multi-omics andliquid biopsy techniques highlighted subclinical cardiac and arterial changes long before clinical manifestations appear. **Materials and methods:** We conducted a review of studies published in the last years that evaluated vascular structure and function, myocardial mechanics, epigenetic signatures, and circulating molecules in obese versus normal-weight paediatric populations. Innovative tools such as speckle-tracking echocardiography, pulse wave velocity (PWV), metabolomics, and microRNA panels were prioritised. **Results:** New findings reveal that obese children as young as 6–8 years exhibit significantly increased arterial stiffness (elevated PWV) and reduced left ventricular global longitudinal strain, independent of blood pressure. A distinct panel of circulating microRNAs (miR-122, miR-33a, miR-320a) and inflammatory metabolites (trimethylamine N-oxide, succinate) was consistently associated with early endothelial dysfunction. Moreover, epicardial adipose tissue thickness measured by echocardiography emerged as a strong, independent predictor of coronary microvascular dysfunction in this age group. Longitudinal data indicate that these changes are partially reversible with intensive lifestyle intervention, but an "obesity legacy" effect may persist in vascular smooth muscle cell epigenetic memory. **Conclusions:** The cardiovascular impact of childhood obesity extends beyond classical risk factors, involving intricate immune-metabolic-epigenetic crosstalk. Novel imaging and circulating biomarkers now allow detection of subclinical damage a decade earlier than conventional methods. Incorporating these findings into paediatric risk stratification could redefine preventive cardiology in the young. Future research should validate

integrated multi-marker panels in prospective cohorts and evaluate whether early pharmaco-nutritional strategies can erase the vascular scar of early-life obesity.

Keywords: childhood obesity, cardiovascular risk, arterial stiffness, epicardial fat, microRNA, speckle-tracking echocardiography, vascular ageing

OP 8.4

The Role of Holter Monitoring in the Early Detection of Arrhythmias in Children

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ABSTRACT

Background: Arrhythmias in the pediatric population are increasingly recognized, yet their intermittent and often subtle presentation—ranging from palpitations to syncope—poses a significant diagnostic challenge. While standard 12-lead electrocardiography (ECG) captures only a brief cardiac rhythm snapshot, 24-hour ambulatory Holter monitoring provides continuous, real-world data that is essential for correlating transient symptoms with electrophysiological events. **Materials and methods:** This review synthesizes recent evidence (2023–2025) on the utility, diagnostic yield, and emerging innovations of Holter monitoring in children. **Results:** Recent studies reaffirm the high diagnostic yield of ambulatory monitoring. In a cohort of 192 low-risk children presenting to the emergency department with symptoms suggestive of arrhythmia, Holter monitoring provided an overall diagnostic yield of 60.4%, detecting clinically significant "silent" arrhythmias—most commonly supraventricular tachycardia—in 6.3% of patients. In patients referred for palpitations, combined 24-hour and extended-wear monitors identified tachyarrhythmias (atrial fibrillation, non-sustained ventricular tachycardia, etc.) in approximately 13% of cases. A large retrospective analysis (n=1,670) further corroborated these findings, revealing that Holter monitoring uncovered tachyarrhythmias in 24.4% and bradyarrhythmias in 5.1% of patients, underscoring its value for both diagnosis and treatment planning. **Conclusions:** In conclusion, 24-hour Holter monitoring remains a cornerstone non-invasive tool for the early detection of arrhythmias in children. Its diagnostic yield is

substantial, particularly when guided by appropriate clinical indications. The establishment of pediatric reference norms, coupled with emerging AI-enhanced analysis from wearable devices, holds promise for improving diagnostic precision and enabling earlier, more personalized therapeutic interventions.

Keywords: Holter monitoring, pediatric arrhythmia, early detection, ambulatory ECG, artificial intelligence

OP 8.5

From Classification to Computation: A Modular Approach to Hepatic Resection Coding

Robert Daniel Ciortan[1,3], Ioana Teodora Ciortan (Popa)[1,3], Irina Bălescu[1,3], Oana Porumbița[1,3], Carmen Tiutiuca[2], Mădălina Nicoleta Matei[2], Nicolae Bacalbașa[,3], Virgil Brașoveanu[3], Irinel Popescu[2,3]*

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ABSTRACT

Background: Hepatic resections are described using established systems such as Couinaud segmentation, Brisbane 2000 terminology, and more recent frameworks like the New World classification. These systems standardize surgical communication but remain difficult to translate into structured data, limiting their use in modern analytical and artificial intelligence–based applications. In particular, the lack of modular decomposition prevents consistent and scalable data representation. **Materials and Methods:** This study explores a modular approach to hepatic resection coding, designed to transform existing anatomical classifications into a structured and computationally usable format. A retrospective cohort of 200 major hepatectomies (≥3 segments) was analyzed. Surgical procedures, initially described using conventional classifications, were re-encoded using a modular anatomical structure in which each resection is defined as a combination of discrete units. Data variability was evaluated using Shannon entropy, and a proof-of-concept predictive model was developed using logistic regression, with performance assessed by ROC-AUC. **Results:** Conventional classification resulted in high variability (entropy 5.12), reflecting multiple ways of describing similar resections. The modular approach reduced entropy to 2.08, providing a consistent and simplified representation. In predictive modeling, modular coding improved performance compared to

conventional descriptors (ROC-AUC 0.78 vs 0.61). **Conclusions:** These results suggest that current classification systems are conceptually robust but limited in their computational applicability. Introducing modular structure enables direct integration into databases and analytical models, supporting reproducible research and future development of data-driven surgical tools.

Keywords: hepatic resection, classification, modular coding, data entropy, artificial intelligence

OP 8.6

Evolution of Imaging Markers from 2D to 3D (CBCT) in the Screening and Statistical Prediction of Pediatric OSA: A Systematic Review

Elena Constandache (Stan)[1], Nicolae Sârbu[2], Silvia Fotea[2], Doinel Gheorghe Rădeanu[c3], Iuroaea Diana-Elena[4], Toporas Vlad-Catalin[4], Mădălina Nicoleta Matei[2]

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ABSTRACT

Background: Pediatric Obstructive Sleep Apnea (OSA) is a prevalent breathing disorder (1–5% in the general population) that requires early diagnosis to prevent severe neurocognitive and cardiovascular sequelae. In the Romanian clinical context, where access to the gold-standard polysomnography (PSG) is often limited by high costs and infrastructure gaps, craniofacial imaging assessment becomes a vital screening tool. This paper analyzes the transition from conventional 2D lateral cephalometry to Cone Beam Computed Tomography (CBCT), a state-of-the-art investigation allowing for superior 3D volumetric evaluation of the upper airway. To perform a comparative evaluation of the diagnostic accuracy of 2D and 3D imaging markers and to identify the statistical parameters—specifically the Odds Ratio (OR)—with the highest relevance in predicting OSA severity and therapeutic success. **Materials and methods:** A systematic review of the literature was conducted (PubMed, Scopus, Web of Science), targeting studies that correlate linear/angular 2D parameters (SNA, SNB, ANB, hyoid position) and 3D volumetric measurements with the Apnea-Hypopnea Index (AHI). The analysis focused on statistical performance indicators, including Pearson/Spearman correlations, Area Under the Curve (AUC), and logistic regression models for

determining OR values. **Results:** Evidence indicates that while 2D cephalometry remains a cost-effective screening tool for identifying mandibular retrognathism (reduced SNB) and adenoid hypertrophy (A/N ratio), CBCT provides critical data regarding the narrowest airway segments and 3D soft tissue collapsibility. Current studies report significantly more robust Odds Ratios (OR) for CBCT-derived volumetric measurements in predicting the failure of adenotonsillectomy compared to plane measurements. However, the use of CBCT must be carefully balanced against the ionizing radiation dose in pediatric patients. **Conclusions:** The integration of CBCT into the diagnostic protocol offers superior precision in craniofacial phenotyping, which is essential for personalizing interdisciplinary treatment. For the Romanian healthcare system, we propose an algorithmic workflow: initial screening via clinical examination and 2D imaging, followed by 3D (CBCT) assessment for complex cases or candidates for ortho-surgical interventions.

Keywords: Pediatric OSA, CBCT, 2D Cephalometry, Airway Volume, Odds Ratio (OR).

OP 8.7

Salivary Galectin-3 and Electrochemical Immunosensing Approaches for the Early Diagnosis and Monitoring of Heart Failure

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ABSTRACT

Background: Heart failure is a major public health problem that requires early, accessible, and non-invasive diagnostic strategies. Saliva is a promising diagnostic fluid because it can be collected easily and safely, while reflecting systemic pathological changes. **Materials and Methods:**Recent studies suggest that salivary biomarkers may support the detection and monitoring of systolic heart failure. Galectin-3 is of particular interest due to its role in inflammation, fibrosis, cardiac remodeling, and disease progression. Electrochemical immunosensors based on screen-printed electrodes provide a sensitive, rapid, and portable approach for galectin-3 detection in saliva.**Results:**These biosensing platforms may contribute to the

development of point-of-care tools for early diagnosis and monitoring of heart failure. **Conclusions:**Further clinical validation is required before routine implementation.

Keywords: heart failure, salivary biomarkers, galectin-3, electrochemical immunosensors, point-of-care diagnostics

OP 8.8

Etiological profile and clinical course of Mycoplasma pneumoniae co-infections: A retrospective study in pediatric patients

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ABSTRACT

Background: Mycoplasma pneumoniae is one of the most frequent etiological agents of community-acquired pneumonia in pediatric population, but the emergence of respiratory coinfections poses significant challenges in terms of clinical management and severity of disease progression. The aim of this research is to analyze epidemiological and etiological aspects of M. pneumoniae coinfections in children, as well as the clinical evolution of these patients. **Materials and Methods:** This retrospective study included 113 children hospitalized with pneumonia at "Sf. Ioan" Children's Emergency Clinical Hospital in Galati, between April 2023 and November 2025. Multiplex PCR panels were performed from nasopharyngeal swab samples, with several viruses and bacteria being detected simultaneously. **Results:** In the study group, 46.9% (n=53) had M. pneumoniae single infections, and 53.1% (n=60) had co-infections. The most common pathogens found in co-infections were H. influenzae and HRV A/B/C (n = 22, 19.5% for each pathogen), followed by S. pneumoniae (n = 15, 13.3%). Mono-infections predominated in an older age group, with a mean of 10.37 ± 4.23, while the youngest age group, with a mean of 3.2 ± 3.07, was prone to co-infections with viruses and bacteria ($p < 0.001$). More than half of M. pneumoniae co-infections with viruses (71%) progressed to respiratory failure ($p = 0.035$). **Conclusions:** The complexity of pathogenic interactions in Mycoplasma

pneumoniae pneumonia in children remains an under-analyzed subject, highlighting the urgent need for further research to better understand its impact on clinical outcomes.

Keywords: Mycoplasma pneumoniae, pneumonia, co-infections, children

OP 8.9

The Efficacy of Therapeutic Strategies for Acute Respiratory Infections in Children

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ABSTRACT

Background: Acute respiratory infections are among the most common reasons for pediatric visits and are associated with increased morbidity, substantial use of healthcare resources, and frequent antibiotic use, underscoring the need for careful evaluation of treatment strategies.This meta-analysis aimed to evaluate the effectiveness of therapeutic strategies used in the management of acute respiratory infections in children, with a focus on symptomatic treatment, antiviral therapy, antibiotic therapy, and adjunctive interventions. **Materials and methods:** A systematic PRISMA-based search of PubMed, Scopus, Web of Science, and the Cochrane Library identified randomized and observational studies (2015–2025) in children with acute respiratory infections. Effects were estimated using relative risk and standardized mean differences with 95% confidence intervals under a random-effects model, and heterogeneity was assessed using I^2. **Results:** A total of 28 studies were included, involving 12,486 pediatric patients. Properly administered symptomatic treatment reduced the duration of symptoms by an average of 1.3 days (95% CI: 0.8–1.9). Early antiviral therapy was associated with a 22% reduction in the risk of complications (RR = 0.78; 95% CI: 0.66–0.92). Empirical antibiotic therapy did not demonstrate significant benefits in infections without clear bacterial criteria (RR=0.96; 95% CI: 0.88–1.05). Heterogeneity among studies was moderate (I^2ⓜ=48%). **Conclusion:** Individualized treatment strategies, based on severity and probable etiology, are the most effective in the management of acute respiratory infections in children. The results support reducing unnecessary antibiotic therapy, applying clinical guidelines, and educating parents about the natural course of pediatric respiratory infections.

Keywords: acute respiratory infections in pediatrics; therapeutic strategies in pediatrics; symptomatic treatment in pediatrics; antimicrobial resistance in pediatrics; pediatric management.

OP 8.10

Advances in Early Detection and Screening of Diabetic Retinopathy: The Role of Modern Imaging Techniques

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ABSTRACT

Background: Diabetes mellitus represents a major global public health issue, being a leading cause of morbidity and mortality worldwide. Its prevalence is continuously increasing, with projections estimating a rise from 463 million cases in 2019 to approximately 700 million by 2045. Among its complications, diabetic retinopathy is one of the most common microvascular disorders and a significant cause of visual impairment and blindness in the working-age population. Importantly, the disease often remains asymptomatic in early stages, making early detection essential for preventing irreversible damage. Screening programs play a crucial role in identifying retinal changes before clinical symptoms appear. International organizations recommend periodic screening intervals ranging from one month to two years, depending on disease severity. Early diagnosis allows timely intervention and significantly reduces the risk of blindness. **Materials and Methods:** A wide range of diagnostic methods is available for screening and monitoring diabetic retinopathy. Traditional techniques include direct and indirect ophthalmoscopy, fundus biomicroscopy, and retinal photography. Although widely used, these methods present limitations such as reduced sensitivity, need for pupil dilation, or inability to detect subtle microvascular changes. **Results:** Advanced imaging technologies have improved diagnostic accuracy. Optical coherence tomography (OCT) enables detailed visualization of retinal structures, particularly useful in detecting macular edema. Angio-OCT, a newer non-invasive technique, allows direct visualization of retinal microvasculature without the need for contrast agents. By analyzing parameters such as the foveal avascular zone and vascular perfusion density, Angio-OCT can identify early microvascular alterations even before clinical signs become apparent. This makes it a valuable tool for early diagnosis and disease monitoring. **Conclusions:** In conclusion, diabetic retinopathy screening is essential for preventing vision loss. The integration of modern imaging techniques, particularly Angio-OCT, alongside traditional methods, can significantly improve early detection and patient outcomes.

Keywords: diabetic retinopathy, screening, angio OCT.

OP 8.11

Oral Epithelial Remodeling Associated with Long-Term Dental Amalgam Contact: A Histopathological and Immunohistochemical Study

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ABSTRACT

Background: Prolonged contact between oral mucosa and dental amalgam restorations may influence local epithelial homeostasis, although the immunohistochemical profile of clinically non-dysplastic mucosa exposed to long-term restorative materials remains insufficiently defined. **Materials and methods:** This study investigated histopathological remodeling and the expression patterns of cytokeratin 19 (CK19), Ki67, and p53 in oral mucosal specimens adjacent to long-standing amalgam restorations. A total of 108 specimens were retrospectively analyzed, including 78 samples from mucosa in direct contact with amalgam restorations and 30 control specimens without amalgam exposure. Exposed cases were categorized according to contact duration: 5–10 years, 11–20 years, and ≥21 years. Epithelial and stromal changes were semi-quantitatively assessed, and immunohistochemical staining was evaluated using predefined scoring criteria. An exploratory Integrated Epithelial Remodeling Score (IERS), combining basal hyperplasia, inflammatory infiltrate, CK19 distribution, and Ki67 proliferative index, was used to estimate cumulative remodeling intensity. **Results:** Longer amalgam exposure was significantly associated with increased inflammatory infiltrate, basal epithelial expansion, suprabasal CK19 expression, and higher Ki67 labeling indices (all $p < 0.001$). CK19 redistribution showed positive associations with both inflammatory intensity and epithelial proliferative activity. IERS values differed significantly among exposure groups ($p < 0.001$), with more pronounced remodeling in intermediate- and long-duration exposure categories. p53 expression showed statistically detectable but heterogeneous variation. No epithelial dysplasia was observed. **Conclusions:** These findings suggest that long-term contact with dental amalgam restorations is associated with a coordinated, non-dysplastic remodeling phenotype of the oral mucosa, characterized by inflammatory activation, CK19 redistribution, and reactive proliferative reinforcement. In this context, suprabasal CK19 expression may reflect adaptive epithelial plasticity rather than preneoplastic transformation.

Keywords: cytokeratin 19; oral mucosa; dental amalgam exposure; epithelial remodeling; chronic inflammation; Ki67; p53; immunohistochemistry

OP 8.12

Dental Amalgam and Oral Biological Responses: A Narrative Review of Current Evidence

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ABSTRACT

Background: Dental amalgam remains widely used in restorative dentistry due to its durability and cost-effectiveness, yet concerns persist regarding potential biological effects related to mercury release. **Materials and methods:** This narrative review critically synthesizes current evidence on oral mucosal alterations and salivary biomarker changes reported in association with amalgam restorations. **Results:** Experimental research supports biological plausibility for oxidative and inflammatory responses to mercury exposure; however, most human evidence derives from observational studies demonstrating heterogeneous associations rather than consistent causal relationships. Reported variations in salivary biomarkers, including interleukin-8 and ceruloplasmin, are generally modest and influenced by confounding factors such as periodontal status, smoking, and systemic inflammation. Histopathological findings adjacent to amalgam restorations include epithelial and inflammatory changes, though many are nonspecific and comparable to other chronic irritative conditions. **Conclusions:** Overall, current clinical and epidemiological data do not indicate uniform or clinically significant adverse effects in the general population attributable solely to dental amalgam. Regulatory phase-down initiatives primarily reflect environmental and precautionary policies. Available evidence supports a balanced and evidence-based interpretation of amalgam-related biological findings in contemporary dental practice.

Keywords: dental amalgam, mercury exposure, oral mucosa, salivary biomarkers, oxidative

OP 8.13

Oculocutaneous dysbiosis and the involvement of Demodex folliculorum in blepharitis

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ABSTRACT

Background: Blepharitis is a common inflammatory disorder of the eyelid margin with a multifactorial etiology, in which the interaction between the ocular and cutaneous microbiome is of increasing importance. In this context, oculo-cutaneous dysbiosis and the excessive proliferation of *Demodex folliculorum* are considered contributing factors to the development and persistence of chronic inflammation. This study aims to analyze current literature data regarding the role of *Demodex* mites in oculo-cutaneous dysbiosis and its involvement in the pathogenesis of blepharitis. **Material and methods:** A narrative review of the literature was performed, including recent articles investigating the relationship between *Demodex folliculorum*, the cutaneous and ocular microbiome, and associated dermatological conditions. **Results**: Demodex folliculorum is commonly present in healthy individuals; however, increased mite density, together with impaired skin barrier function and local immune dysregulation, contributes to cutaneous dysbiosis. This imbalance promotes eyelid margin inflammation and is frequently associated with conditions such as rosacea and seborrheic dermatitis. The interplay between the mite, associated microbiota, and host immune response is central to the pathogenesis of chronic blepharitis. **Conclusions:** *Demodex folliculorum* should not be regarded exclusively as a pathogen but as a component of the oculo-cutaneous microbiome, whose imbalance may contribute to blepharitis. Understanding the mechanisms involved in dysbiosis may open new therapeutic perspectives and support an integrated approach to the management of this condition.

Keywords: Demodex folliculorum, ocular microbiome, chronic inflammation

OP 8.14

Correlations between IgE levels and NLR in atopic dermatitis patients treated with anti-IL-4

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ABSTRACT

Background: Dupilumab is a human monoclonal antibody targeting interleukin (IL)-4 and IL-13, currently in use for patients suffering from moderate to severe atopic dermatitis starting from 6 months old. **Materials and methods:** Twelve patients with atopic dermatitis aged between 9 and 91 years old (average 44), started on dupilumab with complete baseline and 3-month data, were included in the analysis. **Results:** Serum IgE levels decreased in 11 out of 12 patients following dupilumab therapy, indicating a consistent treatment response. Older patients were correlated with a lower IgE decrease, while in younger patients, the IgE levels dropped significantly more after 3 months on dupilumab. The higher baseline IgE was associated with a larger decrease, while lower baseline values had minimal change. In contrast, changes in the neutrophil-to-lymphocyte ratio (NLR) were heterogeneous, with some patients showing decreases while 5 patients exhibited increases. **Conclusions:** These findings suggest that while dupilumab effectively reduces IgE-mediated inflammation, its impact on systemic inflammatory markers such as NLR is variable.

Keywords: dupilumab, atopic dermatitis, immunoglobulin E

OP 8.15

The impact of probiotics on microbiome dynamics and tissue regeneration in experimental burns in a murine model

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ABSTRACT

Background: Severe thermal burns induce a complex systemic inflammatory response associated with immune dysfunction, hypermetabolism, and significant alterations of the cutaneous and intestinal microbiome. Microbial imbalance (dysbiosis) contributes to increased epithelial barrier permeability, promotes bacterial translocation, and delays tissue regeneration processes. In this context, probiotics have been investigated as adjuvant interventions capable of modulating the gut–skin axis and the immune response. The aim of this study is to critically synthesize the existing evidence from the literature regarding the effects of probiotic intervention in experimental burns, with a focus on preclinical studies conducted on murine models. **Materials and methods:** A narrative review was performed based on experimental studies retrieved from major biomedical databases (PubMed, Scopus, Web of Science), evaluating oral and topical administration of probiotics in the context of thermal injuries. **Results:** The analyzed data indicate that probiotic intervention is associated with a reduction in systemic inflammatory response (through decreased levels of proinflammatory cytokines such as IL-6 and TNF-α), restoration of eubiosis, and improvement of intestinal and cutaneous barrier integrity. Additionally, probiotics exert indirect antimicrobial effects by inhibiting pathogenic colonization and biofilm formation. At the tissue level, stimulation of keratinocyte and fibroblast proliferation, increased collagen synthesis, and enhanced angiogenesis were observed, leading to accelerated wound healing. **Conclusions:** Preclinical evidence supports the role of probiotics as a promising therapeutic strategy in burn management through integrated immunomodulatory, antimicrobial, and regenerative effects. However, heterogeneity across studies and the lack of standardization regarding strains, dosages, and routes of administration limit clinical translation, highlighting the need for large-scale randomized clinical trials.

Keywords: thermal burns, probiotics, murine model, microbiome, inflammation, tissue regeneration, gut–skin axis

OP 8.16

Natural bioactive compounds in modulating angiogenesis and wound healing in pediatric obesity

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ABSTRACT

Background: Pediatric obesity negatively affects wound healing through chronic inflammation, oxidative stress, endothelial dysfunction, and impaired angiogenesis. In this context, natural bioactive compounds represent a promising research direction due to their anti-inflammatory, antioxidant, pro-angiogenic, and regenerative effects. **Materials and Methods:** This paper analyzes the role of compounds such as curcumin, flavonoids, aloe vera, *Centella asiatica*, honey, propolis, and vitamins in modulating processes involved in tissue repair. **Results:** These compounds may influence VEGF expression, collagen synthesis, extracellular matrix remodeling, cellular proliferation, and oxidative stress reduction. In addition, modern delivery approaches such as hydrogels, nanofibers, microneedles, and smart controlled-release systems are highlighted as strategies to improve the bioavailability and therapeutic efficacy of these compounds. **Conclusions:** By integrating these data, this work supports the potential of natural bioactive compounds as adjuvant strategies for optimizing wound healing in children with obesity.

Keywords: pediatric obesity; angiogenesis; wound healing; natural bioactive compounds; oxidative stress; inflammation; regenerative medicine; drug delivery systems.

OP 8.17

Nutritional management in severe burns: an integrated clinical approach

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ABSTRACT

Background: Severe burns represent a major form of trauma characterized by an intense systemic hypermetabolic and inflammatory response, associated with increased energy expenditure, accelerated protein catabolism, and immune dysfunction. These alterations significantly contribute to muscle mass loss, delayed wound healing, and an increased risk of infectious complications and mortality. In this context, nutritional management becomes an essential component of integrated therapy. The aim of this study is to critically analyze the role of nutritional interventions in modulating the hypermetabolic and inflammatory response in patients with severe burns and their impact on clinical outcomes. **Materials and methods:** This work is based on a narrative review of the literature, including clinical and experimental studies identified in major biomedical databases (PubMed, Scopus, Web of Science), as well as relevant international guidelines (ESPEN). Nutritional strategies regarding energy intake, macronutrients, micronutrients, and timing of nutritional support initiation were analyzed. **Results:** Available evidence indicates that early initiation of enteral nutrition (within the first 24–48 hours) contributes to maintaining intestinal barrier integrity, reducing bacterial translocation, and decreasing the incidence of infections. Energy requirements are estimated at approximately 25–35 kcal/kg/day and should be adjusted according to burn severity and the phase of injury, while recommended protein intake ranges from 1.5 to 2.5 g/kg/day, playing a crucial role in limiting catabolism and supporting tissue regeneration. In addition, supplementation with micronutrients (vitamins A, C, E, zinc, selenium) and the use of immunonutrition strategies (arginine, glutamine, omega-3 fatty acids) have demonstrated beneficial effects on inflammatory response, oxidative stress, and wound healing processes. Mechanistically, nutritional interventions modulate proinflammatory cytokine levels, improve immune function, and promote angiogenesis and collagen synthesis. **Conclusions:** Nutritional management represents a key therapeutic intervention in severe burns, with a major role in reducing hypermetabolism, modulating inflammation, and improving clinical outcomes. However, variability in

nutritional protocols and heterogeneity of existing studies highlight the need for further clinical research to standardize interventions and optimize therapeutic strategies.

Keywords: severe burns, nutrition, hypermetabolism, systemic inflammation, nutritional support, tissue regeneration.

OP 8.18

Integrating Genomics and Molecular Biology in Understanding Peritoneal Adhesions

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ABSTRACT

Background: Peritoneal adhesions following surgical injury remain a major clinical challenge, often resulting in severe complications, such as intestinal obstruction, chronic pain, and infertility. **Materials and methods:** This review systematically integrates recent genomic and molecular biology insights into the pathogenesis of peritoneal adhesions, explicitly focusing on molecular pathways, including TGF-β signaling, COX-2-mediated inflammatory responses, fibrinolytic balance (tPA/PAI-1), angiogenesis pathways (VEGF, PDGF), and extracellular matrix remodeling (MMPs/TIMPs). Newly conducted transcriptomic and proteomic analyses highlight distinct changes in gene expression patterns in peritoneal fibroblasts during adhesion formation, pinpointing critical roles for integrins, cadherins, selectins, and immunoglobulin superfamily molecules. **Results:** Recent studies indicate significant shifts in TGF-β isoforms expression, emphasizing isoform-specific impacts on fibrosis and scarring. These insights reveal substantial knowledge gaps, particularly the differential regulatory mechanisms involved in fibrosis versus normal reparative reperitonealization. **Conclusions:**Future therapeutic strategies could target these molecular pathways and inflammatory mediators to prevent or reduce adhesion formation. Further research

into precise genetic markers and the exploration of targeted pharmacological interventions remain pivotal next steps in mitigating postoperative adhesion formation and improving clinical outcomes.

Keywords: peritoneum; adhesion; adhesion genes; peritonitis; reintervention

OP 8.19

The Microbiome as a Mediator Between Biocompatibility and Inflammation of Periodontal and Peri-Implant Soft Tissues in Patients with Diabetes Mellitus

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ABSTRACT

Background: Diabetes mellitus is a major systemic condition that alters immune response and disrupts tissue homeostasis, promoting chronic inflammation in oral tissues. In the context of implant and prosthetic therapies, the interaction between biomaterials and host tissues is critical for clinical success. The oral microbiome plays a central role in this interface, acting as a mediator between biocompatibility and inflammatory response. Understanding this relationship is essential for optimizing therapeutic strategies in diabetic patients. **Materials and methods:** The study included patients diagnosed with diabetes mellitus, divided into groups based on the presence of natural teeth or dental implants. Subgingival and peri-implant biofilm samples were collected and analyzed using microbiological and molecular techniques (PCR, sequencing). Clinical evaluation included periodontal and peri-implant indices (plaque index, bleeding on probing, pocket depth). Local inflammatory markers were also assessed using immunohistochemical methods. **Results:** The findings revealed a significant dysbiosis of the oral microbiome in diabetic patients, characterized by an increased prevalence of periodontal pathogenic bacteria. This imbalance was correlated with elevated levels of inflammatory markers and worsening clinical parameters in both periodontal and peri-implant tissues. Furthermore, the interaction between the microbiome and biomaterial surfaces was shown to directly influence tissue response, highlighting the role of biofilm in determining biocompatibility. **Conclusions:** The oral microbiome is a key factor in mediating the relationship between biomaterials and soft tissues in patients with diabetes mellitus. Dysbiosis contributes to enhanced inflammation and impaired tissue integration in both natural teeth and implants. Future therapeutic approaches should incorporate

microbiome modulation strategies to improve clinical outcomes and the biocompatibility of dental treatments in this patient population.

Keywords: oral microbiome; diabetes mellitus; peri-implant tissues

OP 8.20

Potential Role of COL11A1 in Breast Cancer Progression: Preliminary Analysis of 35 Cases

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ABSTRACT

Background: Breast cancer is the most common malignancy among women worldwide. COL11A1, a collagen gene associated with fibroblasts in the tumor microenvironment, may play a role in tumor invasion and progression; however, its clinicopathological significance remains insufficiently clarified. **Materials and methods.** We performed a preliminary analysis of 35 breast cancer cases diagnosed at the Brăila County Emergency Clinical Hospital. COL11A1 expression was assessed by immunohistochemistry. High expression was defined as ≥ 15% of stromal fibroblasts showing cytoplasmic positivity, while low expression corresponds to <15% positivity. Clinicopathological data, including age, tumor subtype, grade, and outcome, were analyzed descriptively. **Results.** The patients' ages ranged from 48 to 81 years. Tumor subtypes included seventeen luminal B carcinomas, nine HER2-enriched carcinomas, eight luminal A carcinomas and one triple negative carcinoma. All cases showed positive COL11A1 expression, predominantly in the stromal compartment. Histologically, twenty five tumors were invasive ductal carcinomas and ten were invasive lobular carcinomas. Seven cases were associated with in situ components and twenty seven cases showed lymph node metastases. Seventeen out of twenty seven cases with lymph node metastasis show high COL11A1 expression. Also sixteen out of twenty five cases with vascular invasion show high COL11A1 expression. These observations suggest a possible association between COL11A1 expression and features of tumor aggressiveness. The main limitation of this study is the small

number of cases, which precludes firm conclusions regarding its prognostic value. **Conclusions.** In our study group, high expression COL11A1 was associated with lymph node metastasis and vascular invasion, supporting its potential role in tumor aggressiveness. However, further studies in larger cohorts are needed to clarify its prognostic significance.

Keywords: breast cancer, COL11A1, tumor microenvironment, stromal fibroblasts, immunohistochemistry, lymph node metastasis, vascular invasion, tumor aggressiveness

OP 8.21

Between vulnerability and resilience: frailty in the elderly in an integrated holistic approach

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ABSTRACT

Background: Over the past few decades, the concept of frailty has evolved from a simple clinical observation into a complex, multifaceted paradigm. It reflects the balance between systemic resilience and biological vulnerability in aging, offering a deeper understanding of how these elements interact throughout the aging process. **Materials and methods:** This study consists of a narrative literature review aimed at synthesizing current evidence on frailty models, mechanisms of resilience, and approaches to geriatric care. The review analyzes data on biological determinants (such as inflammation and sarcopenia), as well as behavioral and environmental influences. Additionally, evidence regarding the effectiveness of multimodal interventions and the role of Comprehensive Geriatric Assessment was examined. **Results:**The literature indicates that frailty is a dynamic and potentially reversible process influenced by both intrinsic and extrinsic factors. Functional and psychological resilience play a key role in modulating its progression. Multimodal interventions and Comprehensive Geriatric Assessment have shown effectiveness in improving outcomes. Compared to established disability, frailty represents a critical window for preventive and restorative

strategies. **Conclusions:** Integrating the concept of resilience into geriatric management enables a more comprehensive perspective on healthy aging. Shifting from organ-based care to a holistic approach supports autonomy, delays functional decline, and provides a strong framework for public health strategies. Frailty management remains a cornerstone of modern geriatrics.

Keywords: quality of life, geriatric frailty, resilience, holistic approach, physiological vulnerability, reversibility

OP 8.22

Artificial Intelligence in Breast Pathology: Current Applications and Clinical Perspectives

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ABSTRACT

Background: This paper presents a comprehensive analysis of the current applications of artificial intelligence (AI) in breast pathology, focusing on its role in diagnostic and prognostic workflows. The study aims to highlight the integration of AI tools into clinical practice and the challenges associated with their implementation. **Materials and Methods:** The study is based on a structured literature review, integrating data from commercially available AI platforms and recent scientific reports. A systematic approach was used to classify AI tools according to their primary clinical functions, including morphological assessment on hematoxylin–eosin (H&E) slides, immunohistochemical (IHC) biomarker quantification, lymph node metastasis detection, and prognostic risk stratification. A comparative and descriptive analysis was performed, evaluating systems based on functionality, clinical utility, and regulatory status (CE-IVD, FDA-approved, or research use only). **Results:**The analysis revealed significant variability in the technological maturity and clinical integration of AI systems across different application domains. IHC-based applications demonstrated a higher degree of standardization and routine clinical implementation. In contrast, H&E-based tools and prognostic models showed lower levels of standardization and require further validation before widespread adoption. **Conclusions:**This study highlights the heterogeneity of breast pathology as a major challenge for AI-based systems, as well as the evolving regulatory landscape reflecting different

stages of clinical adoption. Continued validation and standardization are essential for broader integration of AI into breast pathology workflows.

Keywords: artificial intelligence; digital pathology; breast cancer; biomarker quantification; prognostic assessment; AI platforms

OP 8.23

The Role of Lifestyle and Diet in the Quality of Life of Patients with Rheumatic Diseases: An Integrative Approach

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ABSTRACT

Background: Rheumatic diseases are chronic conditions characterized by a significant impact on physical functioning, emotional well-being, and overall quality of life. Beyond pharmacological treatment, increasing attention has been given to modifiable factors such as lifestyle and diet, which play an essential role in disease management. **Materials and methods:** A cross-sectional study was conducted on a sample of 350 adult patients diagnosed with various rheumatic conditions. Data were collected using a structured questionnaire assessing sociodemographic characteristics, dietary habits, and lifestyle factors (physical activity, sleep quality, smoking, alcohol consumption), as well as self-perceived quality of life measured on a scale from 1 to 10. **Results:**The results showed that lifestyle factors significantly influence quality of life. Sleep quality emerged as the strongest predictor, followed by perceived dietary influence and level of physical activity, explaining a substantial proportion of the variability in quality of life scores. Patients adhering to a specific diet were more likely to report a higher quality of life. In contrast, disease burden was negatively associated with emotional well-being and sleep quality, while dietary influence showed a positive correlation with overall well-being. **Conclusions:**These findings highlight the importance of an integrative approach in the management of rheumatic diseases, combining pharmacological treatment with lifestyle

interventions. Promoting balanced nutrition, regular physical activity, and good sleep hygiene may significantly improve patients' quality of life.

Keywords: rheumatic diseases, lifestyle, diet, quality of life, physical activity, sleep

OP 8.24

Static baropodometric assessment for musculoskeletal rehabilitation: plantar pressure and postural load distribution in young adults

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ABSTRACT

Background: The study investigates the distribution of plantar pressure and postural load among healthy young adults, highlighting the role of static baropodometric assessment in analyzing biomechanical balance and the risk of musculoskeletal dysfunctions. **Materials and methods:** The study was cross-sectional and was conducted on a sample of 113 participants aged between 18 and 35 years, using a digital platform for plantar pressure analysis. Parameters such as contact area, load distribution, mean pressure, and maximum pressure at the forefoot and rearfoot levels were evaluated. **Results:** The results indicate the existence of significant correlations between body weight, body mass index, and plantar load distribution, particularly at the rearfoot level. At the same time, maximum pressure values appear to be influenced more by individual biomechanical factors than by the analyzed anthropometric parameters. Additionally, gender differences were observed, with women showing a more pronounced asymmetry between limbs compared to men. **Conclusions:** The conclusions highlight the importance of baropodometric assessment in the early identification of postural imbalances and abnormal pressure distribution, providing useful reference values for the healthy young population. These results support the integration of advanced plantar pressure analyses into personalized rehabilitation programs, contributing to the prevention and management of musculoskeletal conditions and to the optimization of functional recovery.

Keywords: static baropodometry, plantar pressure, postural load distribution, musculoskeletal rehabilitation.

OP 8.25

The Nutrition–Microbiome–Endothelium Axis in Inflammatory Bowel Disease: Morpho-Clinical Markers of Vascular Involvement and Public Health Implications

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ABSTRACT

Background: Inflammatory bowel disease (IBD) is a chronic, immune-mediated disorder increasingly recognized as involving not only epithelial and immune components but also the intestinal microvasculature. Emerging evidence supports a central role for diet-induced microbiome alterations in modulating endothelial function. The nutrition–microbiome–endothelium axis provides a unifying framework linking environmental exposures to vascular and inflammatory mechanisms in IBD. **Materials and methods.** A narrative synthesis of recent literature (2020–2025) was conducted, including clinical, histopathological, and experimental studies. Sources were selected based on relevance to diet–microbiome interactions, endothelial dysfunction, and morpho-clinical vascular markers in IBD, with emphasis on translational and multi-omics research. **Results.** Western dietary patterns promote gut dysbiosis characterized by reduced microbial diversity, depletion of short-chain fatty acid (SCFA)-producing bacteria, and increased pro-inflammatory metabolites. These changes impair epithelial barrier integrity and enhance immune activation. Endothelial dysfunction in IBD is reflected by increased expression of adhesion molecules, vascular permeability, leukocyte recruitment, and dysregulated angiogenesis, often accompanied by microthrombotic phenomena. Histologically, vascular involvement includes capillary dilation, endothelial swelling, basement membrane thickening, vascular congestion, and microvascular remodeling. These morphological features correlate with disease activity, relapse risk, thromboembolic complications, and therapeutic response variability. The nutrition–microbiome–endothelium axis integrates dietary, microbial, and vascular pathways into a coherent pathogenic model. Microbial metabolites exert bidirectional effects on endothelial homeostasis, with SCFAs demonstrating protective roles and dysbiosis-associated compounds promoting vascular activation and inflammation. Endothelial dysfunction amplifies immune responses, sustaining chronic inflammation and extending disease impact beyond the intestine. Public health factors—including urbanization, dietary westernization, antibiotic exposure, and reduced early-life

microbial diversity—contribute significantly to this axis, supporting the relevance of the hygiene hypothesis in IBD epidemiology. **Conclusions.** The nutrition–microbiome–endothelium axis represents a key integrative paradigm in IBD, linking environmental determinants to microvascular pathology and clinical outcomes. Morpho-clinical vascular markers provide valuable insight into disease severity and progression, with potential applications in risk stratification and targeted therapy. Future directions should focus on microbiome-based interventions, endothelial biomarkers, and preventive strategies addressing modifiable environmental risk factors.

Keywords: Inflammatory Bowel Disease, gut microbiome, endothelial dysfunction, nutrition, microvascular pathology.

OP 8.26

MRSA, MR-CoNS and VRE in Healthcare-Associated Infections: Phenotype–Genotype Correlations

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ABSTRACT

Background: Methicillin-resistant staphylococci, especially methicillin-resistant *Staphylococcus aureus* (MRSA) and methicillin-resistant coagulase-negative staphylococci (MR-CoNS), together with vancomycin-resistant enterococci (VRE), are major Gram-positive pathogens involved in healthcare-associated infections. Their clinical relevance is related to antimicrobial resistance, biofilm formation, persistent colonization, and nosocomial transmission. **Materials and methods:** This presentation is based on a systematic review conducted according to PRISMA 2020 principles. The review included 113 studies published between 2020 and 2025 and qualitatively synthesized data on epidemiology, resistance mechanisms, diagnosis, treatment, infection prevention and control, and antimicrobial stewardship. **Results:** Methicillin resistance in staphylococci is mainly mediated by *mecA* and, less frequently, *mecC*, which encode altered penicillin-binding proteins with reduced affinity for β-lactams. Vancomycin resistance in enterococci is mainly associated with *vanA* and *vanB*, which modify the peptidoglycan precursor target and

reduce vancomycin binding. Rapid microbiological diagnosis, combined with antimicrobial susceptibility testing and molecular detection, supports earlier targeted therapy, isolation, infection control measures, stewardship interventions, and multidisciplinary case management. **Conclusions:** MRSA, MR-CoNS, and VRE are markers of antimicrobial pressure, mobile resistance determinants, and nosocomial transmission. Correlating phenotypic resistance with molecular markers and epidemiological context is essential for healthcare-associated infection surveillance and doctoral research.

Keywords: MRSA; MR-CoNS; VRE; *mecA*; *vanA*; *vanB*; healthcare-associated infections; biofilm; molecular diagnosis; antimicrobial stewardship

OP 8.27

Impact of the COVID-19 Pandemic on the Incidence, Severity, and Clinical Profile of Type 1 Diabetes Mellitus in the Pediatric Population

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ABSTRACT

Background: The COVID-19 pandemic has exerted profound effects on global healthcare systems, with potential implications extending beyond acute infection to the modulation of chronic and autoimmune diseases. Emerging evidence suggests that SARS-CoV-2 infection may act as a trigger for autoimmune responses, potentially contributing to the onset of type 1 diabetes mellitus (T1DM). In pediatric populations, disruptions in healthcare accessibility and delays in medical presentation during the pandemic may have influenced both disease incidence and severity at diagnosis. The present study aims to assess the impact of the COVID-19 pandemic on the incidence of T1DM in children, as well as to evaluate differences in disease severity and clinical presentation at diagnosis compared to the pre-pandemic period. **Materials and methods:** A retrospective comparative study was conducted including pediatric patients newly diagnosed with T1DM during two distinct periods: pre-pandemic and pandemic. Clinical and biochemical parameters were analyzed, including age at onset, blood glucose levels, glycated hemoglobin (HbA1c), presence and severity of diabetic ketoacidosis (DKA), and duration of symptoms prior to diagnosis. Statistical analyses were performed to identify significant differences between groups. **Results:** The pandemic period was

associated with an increased number of newly diagnosed T1DM cases, alongside a higher proportion of patients presenting with moderate to severe DKA. Children diagnosed during this interval exhibited significantly higher glycemic values and more pronounced metabolic decompensation at admission. Additionally, a longer duration of symptoms prior to medical evaluation was observed, suggesting delayed healthcare access. These findings raise the possibility of both indirect effects related to healthcare disruption and potential direct effects of SARS-CoV-2 on pancreatic beta-cell function. **Conclusion:** The findings indicate that the COVID-19 pandemic has had a measurable impact on both the incidence and clinical presentation of T1DM in children, particularly in terms of increased severity at diagnosis. These results underscore the need for improved awareness, timely diagnosis, and resilient healthcare systems capable of maintaining continuity of care during public health crises. Further research is warranted to elucidate the potential pathophysiological links between SARS-CoV-2 infection and autoimmune pancreatic damage.

Keywords: Type 1 diabetes mellitus; COVID-19; pediatric population; disease severity; autoimmune mechanisms

OP 8.28

Mechanism-based antibiotic therapy in bloodstream infections: integrating phenotypic and molecular resistance detection

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ABSTRACT

Background: Bloodstream infections caused by Gram-negative pathogens represent a major clinical threat, with outcomes increasingly compromised by the spread of ESBL-producing and carbapenemase-harboring organisms. The diversity of resistance mechanisms — spanning blaCTX-M-type extended-spectrum beta-lactamases, serine carbapenemases such as KPC, and metallo-beta-lactamases of the NDM and VIM families — demands diagnostic precision beyond conventional susceptibility-based prescribing. Without identifying the operative mechanism, clinicians risk suboptimal agent selection even when in vitro susceptibility appears preserved, undermining treatment efficacy and stewardship. **Materials and methods:** A conceptual framework is proposed for comparing phenotypic and molecular resistance detection in *Enterobacterales* bloodstream infections. Phenotypic characterization encompasses antibiogram interpretation, inhibitor-based synergy assays, MIC profiling, and confirmatory methods such as the

modified carbapenem inactivation method. This is contrasted with multiplex PCR platforms — exemplified by the Allplex Entero-DR assay — detecting ESBL-encoding genes (blaCTX-M, blaSHV, blaTEM) and carbapenemase determinants (KPC, NDM, OXA-48, VIM, IMP), with temporal and interpretive challenges considered. **Results:** Concordance between phenotypic and molecular findings is expected when a single dominant mechanism is expressed. Discordance may arise when carbapenemase genes at low expression levels yield apparent susceptibility, or when ESBL co-production generates ambiguous antibiogram patterns. Molecular detection confers a temporal advantage, enabling mechanism identification within hours and supporting earlier de-escalation. Phenotypic methods remain essential for capturing non-genetic resistance — including efflux pump overexpression and porin loss — beyond current gene panel coverage. **Conclusions:** Integrating phenotypic and molecular resistance data supports a shift towards mechanism-based antibiotic therapy, guiding treatment decisions beyond susceptibility categorization. This can refine agent selection, reduce failure risk from undisclosed mechanisms, and reinforce stewardship by limiting broad-spectrum use. Limitations include restricted gene panel coverage and absence of validated mechanism-to-treatment algorithms. Future research should prioritize prospective validation and decision frameworks for variable clinical settings.

Keywords: bloodstream infections, antimicrobial resistance, antibiotic stewardship

OP 8.29

Lipoprotein(a) in Secondary Cardiovascular Prevention: Bridging Established Evidence, Unresolved Gaps, and Future Research Directions

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ABSTRACT

Background: This paper summarizes emerging evidence on Lp(a) and explores future directions for clinical practice. Lipoprotein(a), an increasingly studied biomarker in cardiovascular medicine, has evolved from an incompletely understood molecule into a relevant tool for risk stratification. However, the paradigm

surrounding this lipid parameter is shifting toward its recognition as an independent, genetically determined and causal contributor to recurrent cardiovascular events, including aortic stenosis and cerebrovascular phenotypes. **Material and methods:** Recent studies suggest that Lp(a) is not just a factor in ASCVD, but an increased Lp(a) level has been observed in sepsis, viral infections and post-surgical states. This hypothesis raises the question whether Lp(a), or one of its molecular components, may serve as an acute-phase marker or simply reflect temporary biological fluctuation in acute inflammatory or post-procedural states. This observation supports the inflammatory pathway in atherosclerosis, particularly through the interaction between Lp(a) and pro-inflammatory cytokine signaling, including IL-6, and opens a new direction for research. It should be noted that the physiological role of this new lipid parameter is not known, at least not yet. **Results**: Observational studies and post-hoc analyses of PCSK9 inhibitor trials show higher rates of recurrent myocardial infarction, coronary revascularization, and progressive multivessel disease among patients with elevated Lp(a), even when LDL-C was within guideline-recommended targets. The literature from the last four years has substantially expanded the understanding of Lp(a), yet several inconsistencies remain. One of the major gaps is that secondary prevention is still approached as a homogeneous entity, despite phenotype-specific mechanisms and therapeutic responses. Recent studies indicate that Lp(a) is an independent risk factor for ASCVD, suggesting that new therapies should be focused on lowering Lp(a) as well and incorporate Lp(a) measurement into risk-scoring models. Another gap is the translation of Lp(a) thresholds into clinical decision-making. Currently, the AHA guidelines from 2026 regarding dyslipidemia and ESC focus update from 2025 for dyslipidemia currently define Lp(a) > 50 mg/dl (105 nmol/L) as a high-risk threshold, but without any therapy for lowering this level and long follow-up periods in order to see the effects, clinicians still lack certainty regarding the clinical implications of this threshold. Recent studies suggest clinically relevant intra-individual variability in selected settings, including post-acute coronary syndrome and patients in the „grey zone" (30-50 mg/dl). These differences open new research directions regarding serial Lp(a) assessment in both primary and secondary prevention. New trials of Lp(a)-lowering therapies have demonstrated marked and sustained reductions in Lp(a) of 80-90% from baseline. However, definitive phase 3 outcome data are expected to establish whether lowering Lp(a) reduces MACE, and which patient characteristics may predict clinical benefit, including inflammatory burden and even genetic ancestry. **Conclusions:** In conclusion, Lp(a) is a lipid-related molecule that should be viewed not only as a marker of residual risk, but also as an emerging precision-medicine target. Future research should focus on phenotype-specific models, ancestry-adjusted thresholds, and optimized testing strategies to enable effective clinical implementation of Lp(a)-targeted therapies.

Keywords: lipoprotein(a), Lp(a), secondary prevention, RNA-targeted therapy, residual cardiovascular risk

OP 8.30

Gut Microbiota, Metabolome, and Cardiovascular Health in Long-Term Hospitalized Patients

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ABSTRACT

Background: Cardiovascular diseases remain the leading cause of global morbidity and mortality, requiring a multidimensional approach that extends beyond traditional risk factors. Recent evidence highlights the essential role of gut microbiota in modulating lipid metabolism, systemic inflammation, and overall cardiovascular risk. The aim of this study is to provide an integrative analysis of the relationships between gut microbiota, metabolomic profile, oral health, and cardiovascular pathology, with a particular focus on patients undergoing long-term hospitalization. **Materials and Methods:** The methodology consisted of a narrative review based on the integration of data from relevant PubMed-indexed studies, aiming to explore the complex interactions within the gut–heart axis. **Results:** The results indicate that intestinal dysbiosis contributes to the development and progression of atherosclerosis through mechanisms involving metabolites such as trimethylamine N-oxide (TMAO), proinflammatory cytokines, and alterations in lipid metabolism. In addition, oral microbiota and periodontal disease are identified as important contributors to systemic inflammation and increased cardiovascular risk. **Conclusions:** The findings support the existence of a systemic network linking gut microbiota, metabolic pathways, and cardiovascular function. This integrative perspective emphasizes the importance of identifying emerging biomarkers and developing personalized therapeutic strategies targeting microbiome modulation. In conclusion, incorporating the assessment of gut microbiota, metabolomic profile, and oral health into cardiovascular risk stratification may contribute to early diagnosis, optimization of patient management, and the implementation of precision medicine in cardiology.

Keywords: cardiovascular

OP 8.31

Drug Resistance of Nontuberculous Mycobacteria: Mechanisms and Detection Methods

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ABSTRACT

Background: This paper aims to provide an integrated perspective on drug resistance of nontuberculous mycobacteria (NMT), emphasizing the need to understand the phenotypic and molecular methods mechanism, in order to optimize diagnosis. NMTs have emerged as a global public health issue, with their incidence steadily rising and the potential to cause serious illness, particularly in immunocompromised patients or those whose pre-existing lung conditions. **Materials and methods:** NMT species exhibit a high-level of both, intrinsic and acquired resistance to numerous conventional antibiotics and standard antituberculosis drugs, which often leads to prolonged treatment regimens and poor clinical outcomes. The intrinsic resistance on NMT is caused both by the unique structure of cell wall and by biofilm formation. **Results:** NMT resistance in pulmonary diseases is determined by a combination of factors: the hydrophobic structure of cell wall (which limits antibiotic diffusion), the presence of efflux pumps, and enzymatic modification of molecular targets. A critical aspect identified is resistance to macrolide, mediated by mutations in the rrl gene or the presence of inducible resistance gene erm, particularly in M. abscessus. Establishing a treatment regime for NMT infections is difficult due to the challenges in determining a susceptibility profile using both phenotypic (pDST) and molecular (mDST) methods. **Conclusions:** Therefore, understanding drug resistance mechanisms is essential for the effective management on NMT infections as well as for the development of specific treatment protocols. By evaluating phenotypic and genotypic methods, the study highlights the importance of rapid and accurate technique for improving the effectiveness of clinical treatment.

Keywords: nontuberculous mycobacteria, drug resistance mechanism.

OP 8.32

Prognostic Value of Inflammatory Biomarkers in Septic Shock in the Emergency Department

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ABSTRACT

Background: Septic shock remains a life-threatening emergency with high mortality, where early recognition and timely intervention are critical. In the emergency department (ED), heterogeneous clinical presentation limits early risk stratification, highlighting the need for reliable adjunctive biomarkers. **Objectives:** To evaluate the prognostic value of inflammatory biomarkers—procalcitonin (PCT), C-reactive protein (CRP), and presepsin—in predicting severity, vasopressor requirement, and short-term mortality in ED patients with septic shock.
Methods: A structured narrative review of high-impact studies (2020–2025) was conducted, including meta-analyses and prospective ED-based cohorts. Biomarkers were assessed at presentation and dynamically within the first 6–24 hours, in relation to 28-day mortality, vasopressor use, and organ dysfunction scores (qSOFA, NEWS2), alongside serum lactate. Prognostic performance was evaluated using AUC-ROC and their incremental value in multimodal models. **Results:** Single biomarker measurements demonstrated moderate prognostic performance (AUC 0.65–0.75), limiting their standalone utility. PCT showed improved prognostic value when assessed dynamically, with reduced clearance associated with increased mortality. CRP exhibited limited utility in early decision-making due to delayed kinetics. Presepsin demonstrated superior early prognostic performance, correlating with vasopressor requirement and severity of organ dysfunction. Multimodal approaches integrating biomarkers with lactate and clinical scores significantly improved predictive accuracy (AUC >0.80), particularly for early identification of patients at risk of refractory septic shock. **Conclusions:** Inflammatory biomarkers have limited prognostic value when used in isolation. However, their dynamic assessment and integration into multimodal, time-sensitive algorithms significantly enhance early risk stratification in the ED and may optimize initial management in septic shock.
Keywords: septic shock, biomarkers, procalcitonin, C-reactive protein, presepsin ,emergency department

OP 8.33

Acute Appendicitis in Children: Conservative versus Surgical Management - The Role of Biomarkers in Severity Stratification

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ABSTRACT

Background: Acute appendicitis is the most common surgical emergency in children, with peak incidence between 6 and 15 years of age. While appendectomy remains the standard of care, non-operative management has gained increasing attention in selected cases of uncomplicated appendicitis. However, accurate patient selection remains a major clinical challenge, requiring reliable tools for early severity stratification. **Material and methods:** A structured narrative review of recent literature was conducted, with focus on meta-analyses, prospective studies and international guidelines. The aim of the study is to compare outcomes of conservative management versus surgical management and the role of inflammatory biomarkers in differentiating uncomplicated from complicated appendicitis. **Results:** Surgical treatment, particularly laparoscopic appendectomy, demonstrates high success rates (exceeding 95–99%), with low morbidity. Conservative management in uncomplicated appendicitis shows initial success rates of 70–90%, but is associated with recurrence rates of 20–30% and early failure in up to 25% of cases, limiting its universal applicability. Inflammatory biomarkers play a significant role in severity assessment. Elevated C-reactive protein (CRP >50–100 mg/L) and leukocytosis are associated with increased risk of perforation. Procalcitonin demonstrates higher specificity for complicated appendicitis, with moderate-to-high predictive performance (AUC 0.75–0.85). The neutrophil-to-lymphocyte ratio (NLR >8–10) correlates with inflammatory severity, while hyperbilirubinemia has emerged as an independent predictor of perforated appendicitis. Integration of these biomarkers into multimodal predictive models improves diagnostic accuracy and supports more precise selection of patients suitable for conservative management. **Conclusions:** Although conservative management represents a viable option in carefully selected cases, appendectomy remains the gold standard. Inflammatory biomarkers, when used in combination, provide valuable support in severity assessment and clinical decision-making. The integration of such biomarkers into clinical algorithms contributes to the individualization of therapy and the optimization of outcomes.

Keywords: acute appendicitis, pediatric, biomarkers, CRP, procalcitonin, NLR, conservative treatment

OP 8.34

Nursing and Nutrition in Sepsis

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ABSTRACT

Background: Sepsis triggers severe catabolism, transforming nutrition from a passive support into a critical therapeutic intervention. Protecting the intestinal barrier and attenuating systemic inflammation through the gut–lung axis are essential components of patient management. **Materials and methods:** This paper integrates an analysis of 10 relevant studies published between 2022 and 2026, focusing on sources that correlate metabolic management with microbiome integrity. Nursing protocols were analyzed, including oral hygiene, strategies for preserving muscle mass, and supporting immune cell synthesis, as well as the need to integrate artificial intelligence for real-time detection of metabolic risks. In addition, a retrospective, observational study was conducted on 120 patients with sepsis admitted to the Clinical Hospital of Infectious Diseases between 2024 and 2025. Within this study, correlations were evaluated between parameters reflecting inflammation (procalcitonin), metabolic dysfunction (blood glucose), and organ dysfunction (qSOFA score), all directly influenced by nutritional status. **Results:** Recent research has demonstrated that nursing interventions, such as probiotic administration and advanced oral hygiene, modulate the pulmonary immune response via intestinal metabolites. The use of indirect calorimetry has enabled adjustment of nutritional substrates to support not only the patient but also the protective microbiome. Data from the study also provide insight into the dynamics of sepsis onset and resolution. **Conclusions:** The management of septic patients involves a complex interaction between the inflammatory response, metabolic disturbances, and clinical severity. Nutritional support, monitoring performed by nursing staff, and emerging artificial intelligence–based tools significantly influence prognosis. The discussion highlights the importance of optimal enteral feeding and the implementation of predictive algorithms for early detection of feeding intolerance and metabolic instability.

Keywords: sepsis, critical care nursing, gut–lung axis, immunonutrition protocol, metabolic monitoring

OP 8.35

The Role of Glycemic Parameters in Guiding Therapeutic Decision-Making in Complex Dento-Periodontal Pathology

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ABSTRACT

Background: This paper analyzes the role of glycemic parameters in substantiating therapeutic decision-making in complex dento-periodontal pathology in patients with diabetes mellitus. The approach is based on a critical evaluation of clinical studies and systematic reviews published between 2016 and 2025, highlighting the interaction between endodontic infection, periodontal inflammation, and systemic metabolic dysfunction. **Materials and methods:** Data from the literature were synthesized to assess the influence of glycated hemoglobin on clinical presentation, tissue repair dynamics, and the predictability of therapeutic outcomes. **Results:** Reported correlations indicate that poor glycemic control is associated with increased prevalence of periapical lesions, persistence of the inflammatory infiltrate, and delayed healing following endodontic and periodontal interventions. The paper outlines two major directions: the impact of metabolic status on prognosis and therapeutic sequencing, and the integration of glycemic parameters into clinical decision-making algorithms. **Conclusions:** The findings support prioritization of endodontic infection control, adaptation of periodontal therapy according to the level of metabolic control, and postponement of elective surgical procedures until adequate glycemic stabilization is achieved. This risk-based approach contributes to improved therapeutic predictability and optimization of clinical management in diabetic patients presenting with complex dento-periodontal pathology.

Keywords: diabetes mellitus; glycated hemoglobin; glycemic parameters; complex dento-periodontal pathology; endo-periodontal lesions; clinical management; metabolic control.

OP 8.36

Predictive Factors of Acute and Late Urinary and Gastrointestinal Toxicity in Modern Radiotherapy for Prostate Cancer – Clinical, Dosimetric, Immunological, and Genetic Factors

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ABSTRACT

Background: Modern radiotherapy represents one of the main therapeutic options for localized and locally advanced prostate cancer. Although technological advances through techniques such as IMRT, VMAT, and SBRT have enabled optimization of dose distribution and reduction of exposure to organs at risk, genitourinary (GU) and gastrointestinal (GI) toxicity continue to represent a significant clinical challenge, with a major impact on quality of life. **Materials and methods:** The present study analyzes the main predictive factors involved in the development of acute and late toxicities following radiotherapy for prostate cancer, with a focus on clinical, dosimetric, immunological, and genetic factors. A narrative review of the specialized literature was conducted regarding predictors of radiation-induced toxicity in prostate cancer, including randomized clinical trials, meta-analyses, and recent research in the field of radiogenomics. **Results:** Current data highlight the multifactorial nature of post-irradiation toxicity. Among the relevant clinical factors are elevated IPSS scores, cardiovascular and metabolic comorbidities, smoking, and anticoagulant treatments. Rectal and bladder dosimetric parameters, particularly V70, V75, and D1cc/D2cc values, are significantly correlated with late toxicity. Inflammatory biomarkers such as IL-6, TNF-α, and TGF-β are involved in radio-induced fibro-inflammatory mechanisms. Furthermore, genetic polymorphisms associated with DNA repair and inflammatory response support the development of radiogenomic predictive models. **Conclusions:** GU and GI toxicity in prostate cancer radiotherapy results from the complex interaction between clinical, dosimetric, and biological factors. The integration of

biomarkers and genomic profiling into predictive models may facilitate the development of personalized radiotherapy, aimed not only at tumor control but also at minimizing toxicity and optimizing quality of life.

Keywords: prostate cancer, radiotherapy, genitourinary toxicity, gastrointestinal toxicity, radiogenomics, biomarkers, IMRT, SBRT

OP 8.37

Longitudinal trajectory of depressive symptoms in patients with localized Prostate Cancer treated with radiotherapy: A prospective longitudinal study

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ABSTRACT

Background: Depressive symptomatology represents a frequent psycho-oncological concern in patients diagnosed with localized prostate cancer, with potential implications for quality of life, treatment adherence, psychological adjustment to illness, and oncological outcomes. Although radiotherapy is a standard therapeutic option in the management of localized prostate cancer, data regarding the longitudinal evolution of depressive symptoms during and after radiotherapeutic treatment remain limited. The present study aims to evaluate the dynamics of depressive symptomatology in patients with localized prostate cancer treated with radiotherapy. **Materials and methods:** A prospective longitudinal study was conducted, including 73 patients with localized prostate cancer recruited from two oncology centers, after excluding cases without informed consent, with incomplete questionnaires, or lost to follow-up. Depressive symptomatology was assessed using the Patient Health Questionnaire-9 (PHQ-9) at four distinct clinical time points: at radiotherapy initiation, at completion of radiotherapeutic treatment, and at two and six months after radiotherapy. Demographic, clinical, and biological variables extracted from medical records were analyzed. **Results:** The descriptive analysis included 73 patients with PHQ-9 assessments available at all four follow-up time points. The mean PHQ-9 score was 6.58 ± 6.04 at radiotherapy initiation, with a slight increase at the end of radiotherapeutic treatment, reaching 7.23 ± 3.19. Subsequently, a progressive reduction in the severity of depressive symptomatology was observed, with lower mean PHQ-9 scores during post-treatment

follow-up. The proportion of patients with clinically significant depressive symptomatology, defined as a PHQ-9 score ≥10, was 22.2% at baseline, 19.4% at the end of radiotherapy, 2.8% at two months, and 1.4% at six months after radiotherapy. From a longitudinal perspective, the data suggest a transient intensification of depressive symptoms during treatment, followed by progressive improvement throughout the post-therapeutic follow-up period. **Conclusions:** Systematic monitoring of depressive symptoms in patients with localized prostate cancer treated with radiotherapy is clinically relevant for the early identification of patients with psycho-oncological vulnerability. Integrating PHQ-9 screening into longitudinal oncological assessment may facilitate the individualization of psychological support, optimization of multidisciplinary management, and improvement of patients' quality of life. As a future perspective, the study aims to identify predictive factors for depression by correlating PHQ-9 score trajectories with clinical, biological, and socio-demographic variables, in order to define a risk profile for the onset or persistence of depressive symptomatology during and after radiotherapy.

Keywords: prostate cancer, depression, anxiety, psychological support, oncological treatment.

OP 8.38

Current advances in the management of cancer pain with opioids and their impact of renal function

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ABSTRACT

Background: This review aims to synthesize current evidence on opioid use in cancer patients with renal dysfunction, highlighting pharmacokinetic differences among opioids, safety considerations, and practical strategies to optimize analgesia while minimizing adverse effects. Cancer-related pain affects the majority of patients with advanced malignancies and represents a major indication for palliative care. Opioids remain the cornerstone of treatment for moderate to severe pain; however, renal dysfunction—frequently encountered in oncology patients—significantly complicates opioid therapy by increasing the risk of metabolite accumulation and toxicity. This review aims to synthesize current evidence on opioid use in cancer patients with renal dysfunction, highlighting pharmacokinetic differences among opioids, safety

considerations, and practical strategies to optimize analgesia while minimizing adverse effects. **Materials and methods:** The analysis of the selected literature identified several major themes relevant to opioid use in cancer patients with renal dysfunction. **Results:** These included the following: the impact of renal impairment on opioid pharmacokinetics and toxicity, the increased risk of opioid-induced neurotoxicity and hyperalgesia in chronic kidney disease, differences in safety profiles among commonly used opioids, and the role of opioid rotation as a key strategy for minimizing adverse effects while maintaining adequate analgesia. Additional themes encompassed dose adjustment according to estimated glomerular filtration rate (eGFR), the selection of opioids with minimal renal elimination in advanced CKD and dialysis, and the importance of an interdisciplinary approach involving palliative care physicians, oncologists, and nephrologists. Emerging evidence regarding the use of ketamine as an adjuvant therapy in refractory pain and opioid-induced hyperalgesia further complemented these core themes. **Conclusions:** Together, these findings highlight the necessity of individualized opioid selection and dynamic treatment adaptation based on renal function and clinical response.

Keywords: Cancer pain; Opioids; Chronic kidney disease; Renal dysfunction; Opioid-induced neurotoxicity; Opioid-induced hyperalgesia; Opioid rotation; Palliative care

OP 8.39

Applications of Er:YAG and Er,Cr:YSGG lasers in pediatric restorative dentistry – a review of recent literature

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ABSTRACT

Background: Erbium laser technologies have gained relevance in pediatric restorative dentistry due to their ability to perform minimally invasive hard tissue ablation, improving patient comfort and outcomes. This study critically evaluates recent literature on the effectiveness and clinical indications of Er:YAG and Er,Cr:YSGG lasers in pediatric restorative treatments.**Materials and methods:**A narrative review was conducted using PubMed, Scopus, and Web of Science, including studies from the last 5 years (clinical trials, RCTs, and meta-analyses), focusing on caries removal, cavity preparation, and enamel/dentin conditioning.**Results:**Both Er:YAG and Er,Cr:YSGG lasers showed efficient selective ablation, reduced intraoperative pain, and decreased need for local anesthesia. They produced micro-retentive surfaces

favorable for adhesion, although bond strength varied depending on parameters and protocols, and also contributed to bacterial reduction.**Conclusions:**Erbium lasers are effective minimally invasive alternatives in pediatric restorative dentistry, enhancing patient compliance. Further research is needed to standardize parameters and confirm long-term outcomes.

Keywords: Er:YAG, Er,Cr:YSGG, pediatric dentistry, restorative dentistry, minimally invasive, adhesion.

OP 8.40

Effects of Anticonvulsant Therapy on Vitamin D and Calcium Homeostasis in Children: Clinical Implications

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ABSTRACT

Background: Anticonvulsant therapy may alter vitamin D metabolism and calcium homeostasis in pediatric patients with epilepsy. This study evaluates vitamin D status and calcium balance under anticonvulsant treatment in children. **Materials and methods**: A retrospective study was conducted on pediatric patients with epilepsy admitted between January 2024 and December 2025 to a Children's Emergency Clinical Hospital „Sf. Ioan„ Galati. Serum 25-hydroxyvitamin D, calcium parameters, anticonvulsant therapy type, nutritional status, and vitamin D supplementation were analyzed using descriptive statistics and Chi-square/Fisher's exact test. **Results m** Vitamin D deficiency was observed in 37.3% of patients, insufficiency in 31.4%, optimal levels in 25.5%, and increased values in 5.9%, with 68.6% showing suboptimal status. Mild hypocalcemia occurred in 7.8% of cases. Monotherapy was used in 90.2% of patients, while 9.8% received polytherapy. All patients on polytherapy had suboptimal vitamin D levels, without statistical significance ($p > 0.05$). Regarding nutritional status, 70.6% were normoponderal and 29.4% had weight abnormalities. All patients with abnormal nutritional status had suboptimal vitamin D levels ($p > 0.05$). Anticonvulsant therapy included levetiracetam (n=18), valproic acid (n=24), oxcarbazepine (n=3), and

carbamazepine (n=1) as monotherapy, while 9.8% of patients received polytherapy combinations, most frequently levetiracetam with valproic acid.Patients with optimal vitamin D levels had received supplementation (500 IU/day), suggesting a protective effect. **Conclusions**: Anticonvulsant therapy is associated with a high prevalence of suboptimal vitamin D status. Vitamin D supplementation appears beneficial, supporting routine monitoring and administration in pediatric patients undergoing long-term treatment.

Keywords: anticonvulsant therapy, epilepsy, vitamin D, calcium metabolism, supplementation, children.

OP 8.41

Clinical Impact of Mycoplasma pneumoniae Infection in Post-COVID-19 Pediatric Patients: A Comparative Study

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ABSTRACT

Background: Atypical respiratory infections represent a frequent cause of hospitalization in pediatric patients. In the context of previous SARS-CoV-2 infection, immune dysregulation may contribute to increased susceptibility and severity of subsequent infections. Mycoplasma pneumoniae is a common pathogen associated with respiratory morbidity in children, but its clinical evolution in post-COVID-19 patients remains insufficiently characterized. **Materials and Methods**: We conducted a retrospective cohort study including 83 hospitalized pediatric patients diagnosed with Mycoplasma pneumoniae infection confirmed by polymerase chain reaction (PCR) from nasopharyngeal samples. Patients were divided into two groups: post-COVID-19 (n=29) and non-COVID (n=54). The primary outcomes analyzed were duration of hospitalization and the incidence of acute respiratory failure (ARF). **Results**: Patients in the post-COVID-19 group presented a longer mean duration of hospitalization compared to the non-COVID group (9.32 vs 8.01 days). Additionally, the incidence of acute respiratory failure was higher in post-COVID-19 patients (51.7% vs 35.2%). These findings indicate a trend toward a more severe clinical course

in children with prior SARS-CoV-2 infection. **Discussion:** The increased severity observed in post-COVID-19 patients may be explained by persistent inflammatory responses and immune system alterations following viral infection. These mechanisms could enhance vulnerability to atypical pathogens and exacerbate respiratory complications. **Conclusion:** Mycoplasma pneumoniae infection in pediatric patients with a history of COVID-19 is associated with more severe outcomes, including prolonged hospitalization and increased risk of acute respiratory failure. Enhanced monitoring and individualized therapeutic strategies are recommended for this population.

Keywords: Mycoplasma pneumoniae, post-COVID-19, pediatrics, acute respiratory failure, hospitalization duration.

OP 8.42

MRI correlation of infratentorial lesions and depression in patients with multiple sclerosis

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ABSTRACT

Background: This paper presents the impact of depressive symptoms on motor performance, as well as their potential interaction. **Materials and methods:** In this prospective observational cohort of patients with MS comprehensive clinical and imaging assessments were performed. Lesion burden within brainstem, cerebellum, and cervical spinal cord regions was quantified using conventional MRI. Analyses were conducted to evaluate independent associations of depression and lesion burden with motor performance, as well as their potential interaction. **Results:** Lesion burden was significantly associated with all motor performance measures. Depression appeared to exacerbate the negative impact of lesion burden on gait, indicating an interaction between structural damage and affective status. No such interaction was observed for upper limb coordination. **Conclusions:** These findings suggest that depression represents a clinically

relevant and potentially modifiable contributor to mobility limitations in MS, with implications for both patient management and the interpretation of gait-related outcomes in research.

Keywords: MRI, infratentorial lesions, depression, motor function

OP 8.43

Suicide attempts among typical children vs. atypical children

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ABSTRACT

Background: Suicide attempts among children and adolescents represent a major public health issue, with a significant increase over the past decade. The literature suggests significant differences between typical and atypical children (e.g., autism spectrum disorders [ASD], ADHD), with the latter presenting an increased risk due to neurobiological vulnerabilities, difficulties with social integration, and psychiatric comorbidities. **Materials and methods:** The study is a multidimensional comparative narrative analysis of the literature published between 2016 and 2025. The analysis focused on three main dimensions: individual factors (psychopathology, neurodevelopment), social factors (family, school, bullying, digital environment) and clinical factors (diagnosis, comorbidities, access to services). Two groups were compared: typical children (without major neurodevelopmental disorders) and atypical children (ASD, ADHD, learning disorders, severe emotional disorders) **Results**: The results highlight significant differences between the two groups: 1.Typical children: Suicide attempts are frequently associated with situational and emotional factors (depression, anxiety, family conflicts, academic pressure, excessive use of social media). Triggering factors are often acutely situational. 2. Atypical children: present a significantly higher, persistent, and multifactorial risk. Studies indicate a 2–4 times higher probability of suicidal behaviors in individuals with autism, independent of trauma or other factors. Other research even suggests much higher risks in certain subgroups. **Conclusions:** Suicide attempts in children represent a complex phenomenon, with different

determinants depending on developmental typicality. Children with atypical development constitute a major risk group, characterized by cumulative biological, psychological, and social vulnerability. While in typically developing children the triggering factors are often reactive and situational, in those with atypical development the risk is chronic and multidimensional. These findings underscore the need for differentiated prevention strategies based on early screening, integrated interventions, and approaches tailored to the neurodevelopmental profile.

Keywords: suicide attempts; typical children; atypical children; autism; ADHD; mental health; risk factors; prevention.

OP 8.44

Hepatitis C in Romania: From Therapeutic Progress to Public Health Challenges

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ABSTRACT

Background: Hepatitis C virus infection remains an important public health concern in Romania, despite major therapeutic progress achieved through direct-acting antivirals. Although treatment outcomes have improved considerably, the broader impact of these advances is still limited by late diagnosis and by the persistence of undiagnosed infections. **Material and Methods:** The analysis is based on available epidemiological data from the scientific literature and on information from relevant national institutional sources, complemented by reports from international organizations. Key aspects considered include disease trends, access to treatment, and factors influencing disease control. **Results:** In recent years, access to antiviral treatment has improved, contributing to higher cure rates. However, challenges persist in early detection, population awareness, and unequal access to healthcare services, particularly in rural areas and among vulnerable groups. These factors limit the population-level impact of therapeutic progress. **Conclusions:** Hepatitis C control in Romania depends not only on treatment effectiveness, but also on strengthening public health interventions focused on active case detection, education, and equitable access

to care. In this context, hepatitis C can be regarded as an indicator of the health system's capacity to translate therapeutic progress into tangible population benefits.

Keywords: hepatitis C, Romania, epidemiology, public health, screening, therapeutic progress.

OP 8.45

Between vulnerability and adaptation: psychological sequelae of COVID-19 in polytransfused patients

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ABSTRACT

Background: The COVID-19 pandemic has had a significant impact not only on physical health but also on the psychological balance of patients, particularly those with complex medical conditions. Polytransfused patients represent a vulnerable group, exposed to both biological risks and psychological stress associated with chronic treatments and repeated hospitalizations. **Materials and methods**: The aim of this study is to analyze post-COVID psychological reactions in polytransfused patients, with a focus on the prevalence of anxiety, depression, and post-traumatic stress symptoms. The research methodology consisted of evaluating a cohort of 98 polytransfused patients who had previously been infected with SARS-CoV-2, using validated psychometric instruments to assess emotional status and quality of life, such as the IES-R (Impact of Event Scale-Revised) and the HADS (Hospital Anxiety and Depression Scale). **Results**: The results indicated a high incidence of anxiety and depressive disorders, with approximately 75,51% of patients (n=74) presenting scores suggestive of anxiety and 66,32% (n=65) of depression. These manifestations were significantly correlated with the severity of COVID-19, the frequency of transfusions, and the level of perceived social support. Additionally, 46,93% of patients (n=46**)** exhibited symptoms consistent with post-traumatic stress, with a higher prevalence observed among those with a history of prolonged hospitalizations. . **Conclusions:** In conclusion, polytransfused patients represent a high-risk group for the development of post-COVID psychological disorders, highlighting the need for the implementation of

integrated monitoring and psychological intervention strategies. A multidisciplinary approach is essential for optimizing prognosis and improving the quality of life of these patients.

Keywords: COVID-19, polytransfused patients, psychological impact, vulnerability, adaptation, resilience, chronic illness.

OP 8.46

Lifestyle Patterns in Children with Special Needs: Toward a More Integrated Approach

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ABSTRACT

Background: Lifestyle behaviors, such as sleep, physical activity, and screen use, are often discussed in relation to children's health and daily functioning. In children with special needs, these patterns tend to be more difficult to interpret due to the diversity of cases. This is due to differences in development and the environments in which children live. In the present study, selected components of lifestyle are considered, namely sleep, physical activity, and screen use. Most studies address these domains separately. This is useful up to a point, but it does not really capture how these behaviors interact in practice or how they accumulate over time. Building on this, the present paper explores an integrated way to examine these components in this population group. **Materials and methods:** The analysis focuses on variables that are typically available in large surveys of children's health, including sleep duration, physical activity, screen exposure, and indicators of general health. The approach examines the interaction of these variables to explore whether consistent patterns can be identified at the population level and how they relate to functional outcomes. **Results:** The integrated analysis suggests that sleep, physical activity, and screen exposure are interconnected lifestyle components that may collectively influence health status and daily functioning in children with special needs. The evaluation of these variables together allowed the identification of broader behavioral tendencies that may not be evident when each component is analyzed separately. **Conclusions:** In this regard, the approach may provide a more practical way to describe variation in these lifestyle components in children with special needs and may serve as a starting point for further empirical work. An

integrated perspective may also contribute to the development of more personalized strategies aimed at improving health-related outcomes and quality of life in this population group.

Keywords: children with special needs, sleep, physical activity, screen use, health-related behaviors devices.

PP 8.1

Risks of Teenage Pregnancy and the Need for Integrated Maternal–Neonatal Monitoring: A Case-Based Perspective

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ABSTRACT

Background: Adolescent pregnancy remains a significant public health concern, associated with increased maternal and neonatal risks, including prematurity, low birth weight, and neonatal morbidity. Romania continues to report relatively high rates of teenage births, highlighting the need for improved surveillance and care.**Materials and Methods**:We present the case of a newborn delivered from a 16-year-old mother with an insufficiently monitored pregnancy and consanguinity, reflecting increased genetic and socio-medical vulnerability.Results:Despite being delivered at term, the newborn presented neonatal adaptation disorders, including weak crying and delayed feeding tolerance.Conclusions:This case highlights the complexity of maternal–neonatal management in adolescent pregnancies, where biological immaturity and lack of prenatal care may negatively influence outcomes. Adolescent pregnancy should be considered a high-risk condition requiring integrated medical and social interventions, with emphasis on early identification, adequate antenatal follow-up, and close neonatal monitoring to reduce preventable complications.

Keywords: adolescent pregnancy, consanguinity, neonatal morbidity, antenatal care, high-risk pregnancy.

PP 8.2

Therapeutic challenges in the management of type 1 diabetes mellitus and acute pancreatitis in children: Clinical considerations on a case

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ABSTRACT

Background: Type 1 diabetes mellitus (T1DM) frequently presents in pediatric patients with diabetic ketoacidosis (DKA), a potentially life-threatening complication. Elevated pancreatic enzymes may accompany DKA; however, distinguishing between secondary enzyme elevation and true acute pancreatitis remains clinically challenging. We report a rare case of concomitant new-onset T1DM, DKA, and acute pancreatitis in a young child, with possible viral triggers. **Materials and Methods:** We describe the case of a 5-year-old female presenting with progressive weight loss, polyuria, polydipsia, and recent somnolence. Clinical evaluation, laboratory investigations, and abdominal ultrasound were performed. Key parameters included blood glucose, acid–base status, HbA1c, pancreatic enzymes, immunological markers (anti-GAD, anti-insulin antibodies), and C-peptide levels. The patient was managed according to standard DKA treatment protocols, alongside supportive care for pancreatitis and associated enteric infection. **Results:** Investigations revealed hyperglycemia (300 mg/dL), metabolic acidosis (pH 6.8), ketonuria, and elevated HbA1c (10.1%), confirming DKA as the initial presentation of T1DM. Autoimmune markers were positive, with low C-peptide levels. Markedly elevated amylase (1042 U/L) and lipase (13,257 U/L), exceeding 10 times the upper normal limit, alongside ultrasound findings of pancreatic enlargement and peripancreatic fluid collections, supported the diagnosis of acute pancreatitis. The patient also tested positive for Norovirus and had SARS-CoV-2 IgG antibodies, suggesting recent infection. Treatment included fluid resuscitation, intravenous insulin infusion, electrolyte correction, bowel rest, and gradual dietary reintroduction. Clinical and biochemical parameters improved progressively, with normalization of pancreatic enzymes and good glycemic control at follow-up (HbA1c 6.69% at 6 months). **Conclusions:** This case underscores the importance of differentiating true acute pancreatitis from enzyme elevation secondary to DKA in pediatric patients. Significant enzyme elevation and imaging confirmation are critical for diagnosis. Viral infections may act as triggers for both autoimmune diabetes onset and metabolic decompensation, highlighting the need for comprehensive evaluation and multidisciplinary management.

Keywords: diabetes mellitus, pancreatitis, paediatrics.

OP 9. 1

Optical Coherence Tomography Biomarkers as Predictors of Treatment Response in Age-Related Macular Degeneration

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ABSTRACT

Background: Age-related macular degeneration (AMD) is one of the leading causes of vision loss in the elderly population. Optical coherence tomography (OCT) imaging has become essential in evaluating retinal structural changes and in monitoring treatment response. The identification and interpretation of OCT biomarkers may contribute to optimizing therapeutic strategies and to individualizing patient management. The purpose of this study is to evaluate the relevance of OCT biomarkers in age-related macular degeneration according to different therapeutic approaches and to analyze their role in assessing treatment response. **Materials and Methods:** The proposed study has an observational design, including patients diagnosed with age-related macular degeneration undergoing various therapeutic regimens. Imaging assessment will be performed using OCT, focusing on biomarkers such as intraretinal and subretinal fluid, central macular thickness, ellipsoid zone integrity, and the presence of subretinal deposits. Data will be correlated with the type of treatment administered and clinical evolution. **Results:** The study is expected to identify specific OCT biomarker patterns associated with different therapeutic strategies, as well as structural changes suggestive of treatment response or disease progression. **Conclusions:** OCT biomarkers have the potential to serve as valuable tools in monitoring and guiding treatment in age-related macular degeneration, facilitating a personalized approach to patient care and improving clinical decision-making.

Keywords: Age-related macular degeneration; Optical coherence tomography; OCT biomarkers; Anti-VEGF therapy; Treatment response; Retinal imaging.

OP 9. 2

Liver resections for recurrent hepatocellular carcinomas after liver transplantation

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ABSTRACT

Background: Hepatocellular carcinomas, particularly multicentric forms, represent a major indication for liver transplantation. Even after this intervention with curative intent, tumors may recur in certain situations. In most cases, recurrence is systemic, making the patient a candidate for palliative treatment. In rare cases, recurrence presents as oligometastatic disease, thus allowing for treatment with curative intent. **Materials and Methods:** At the Fundeni Clinical Institute, between 2012 and 2022, a total of 710 liver transplant procedures were performed, of which 166 patients had hepatocellular carcinoma lesions identified in the explanted liver. During postoperative follow-up, 37 of these patients developed tumor recurrence: in 31 cases the recurrence was systemic, while in 6 cases it was confined exclusively to the transplanted liver. **Results:** The mean age at the time of transplantation was 50.8 years, and the disease-free interval was 22.26 months. In four of the six cases with isolated hepatic recurrence, surgical resection was performed, while in the remaining two cases radiofrequency ablation was used. Subsequently, four of the six patients developed a second hepatic recurrence, which was treated with resection in three cases and radiofrequency ablation in one case. The mean survival was 47 months from transplantation and 24 months from the intervention for the first hepatic recurrence. **Conclusions:** In situations where recurrence presents as oligometastatic disease, hepatocellular carcinoma relapses occurring in the transplanted liver can be treated with curative-intent resection, providing a significant survival benefit.

Keywords: hepatocellular carcinomas, liver transplantation, palliative treatment

OP 9. 3

Laparoscopic versus Open Resection for Hepatic Hemangiomas: A 6-Year Retrospective Comparative Study

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ABSTRACT

Background: Hepatic hemangiomas are the most common benign liver tumors, with surgical resection traditionally reserved for symptomatic or very large lesions. However, the increasing safety and feasibility of laparoscopic liver surgery may challenge current thresholds for intervention. **Materials and Methods:** We conducted a retrospective cohort study including patients who underwent surgical resection for hepatic hemangiomas over a 6-year period at a tertiary center. Indications for surgery, operative approach, and perioperative management were analyzed, with patients stratified according to laparoscopic versus open techniques. The study aims to evaluate whether advances in minimally invasive liver surgery justify reconsideration of current indications for resection and to explore the role of laparoscopic approaches in the management of hepatic hemangiomas within contemporary surgical practice. **Results:** Laparoscopic resection was associated with a significantly shorter length of hospital stay compared to open surgery (median 7 vs 12.5 days, $p < 0.001$). Additionally, postoperative complications were significantly less frequent following laparoscopic surgery (19.2% vs 61.1%, $p = 0.002$), with open surgery associated with a higher risk of complications (OR 6.6, 95% CI 2.0–21.5). **Conclusions:** These findings support the role of minimally invasive surgery in improving perioperative outcomes and suggest that delayed intervention, leading to loss of laparoscopic feasibility, may adversely impact patient recovery.

Keywords: laparoscopic liver resection, hepatic hemangioma, minimally invasive surgery, surgical indications, perioperative outcomes

OP 9. 4

Personalized systemic targeted treatments for breast cancer. Our experience center.

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ABSTRACT

Background: CDK4/6 inhibitors are a standard targeted systemic treatment for hormone receptor positive HER2 negative breast cancer wich inhibit cyclin-dependent kinases 4 and 6, and are combined with hormonal therapy approved for both metastatic and high risk early stage settings to prevent recurrence. **Materials and Methods:** Our study include 165 patients with advanced and metastatic breast cancer treated with CDK4/6 inhibitors in oncology department "Sfantul Apostol Andrei" Emergency Hospital Galati. We evaluate medical and demographic data, histopatological characteristics, previous treatments, therapeutic associations, side effects of the treatment, therapeutic management of toxicity, and we evaluate the progression free survival (PFS) of the patients. **Results:** In our clinical practice, CDK 4/6 inhibitors demonstrating high efficacy, improved PFS, well maintained quality of life, with manageable toxicities and extended survival. **Conclusions:** CDK4/6 inhibitors represent a change in the therapeutic management of HR-positive breast cancer.

Keywords: CDK 4/6 inhibitors; breast cancer; personalised treatment;

OP 9. 5

Current events in the treatment of Alzheimer's dementia

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ABSTRACT

Background: The therapeutic landscape for Alzheimer's disease is undergoing a significant transition, characterized by a paradigm change from treatment focused solely on symptomatic alleviation to novel medicines that alter the disease's progression. This shift reflects a new perspective in dementia regenerative medicine, where the primary objective is to redefine current standards of care through direct intervention on pathogenic pathways. **Materials and Methods:** The current analysis investigates the potential for synergy between non-invasive technologies and the emerging fields of pharmacology. The monoclonal antibodies lecanemab and donanemab, which work by specifically removing beta-amyloid deposits, are at the core of this strategy. The former targets protofibrils, while the latter targets amyloid forms that have already been established in mature plaques. Transcranial magnetic stimulation (TMS), which aims to enhance synaptic connection and cortical excitability, particularly at the level of the dorsolateral prefrontal cortex, adds a dimension based on neuroplasticity to this pharmaceutical vector. **Results:** Phase III clinical trials like Clarity AD and TRAILBLAZER-ALZ 2, which showed a significant reduction in cognitive decline, between 27% and 35%, in patients in the early stages, indicate the effectiveness of these drugs. Periodic intravenous infusions are administered as part of the clinical regimen, which is closely monitored by magnetic resonance imaging to detect early potential amyloid-related imaging abnormalities, or ARIA. **Conclusions:** Personalized medicine, which may concurrently address the pathophysiological substrate and neuronal resilience, is made possible by the merging of these two therapeutic forces, biological and technological. In addition to slowing down cognitive decline, this integrated strategy offers to fundamentally rethink how neural regeneration is handled in the setting of contemporary dementias.

Keywords: palliation, Alzheimer's disease, Trailblazer- ALZ 2

OP 9. 6

Artificial intelligence approaches for early detection of parkinson's disease

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ABSTRACT

Background: Parkinson's disease (PD) is a progressive neurodegenerative disorder in which early diagnosis remains a major clinical challenge due to subtle and heterogeneous initial manifestations. By the time motor symptoms become clinically evident, approximately 60–70% of dopaminergic neurons are already lost, highlighting the urgent need for reliable early detection strategies. Advances in Artificial Intelligence, particularly Machine Learning (ML) and Deep Learning (DL)—have emerged as promising tools for improving diagnostic accuracy. **Material and Methods:** This study is based on a review of recent literature focusing on AI-based approaches in Parkinson's disease. The analysis includes studies utilizing multimodal data such as voice recordings, gait dynamics, handwriting patterns, and neuroimaging features to identify disease-specific signatures. **Results:** A systematic review by Antonio Landolfi et al. reported mean diagnostic accuracies of 90.9% for voice-based analysis and 89.1% for movement data, with peak performances reaching 100% under experimental conditions. Recent DL-based multimodal models have achieved accuracy rates exceeding 99%. Additionally, Athanassios Tsanas et al. demonstrated high discriminative performance using vocal biomarkers in cohorts exceeding 200 subjects, while gait-based ML models have reached accuracy of up to 98%. However, limitations such as dataset heterogeneity and overfitting remain. **Conclusions:** AI-based methodologies represent a promising direction in PD diagnostics, enabling earlier and more objective detection. However, further large-scale validation is required for clinical implementation.

Keywords: Parkinson's disease, Artificial Intelligence, digital biomarkers, neurodegenerative disorder

OP 9. 7

Virologic Cure or Hepatic Recovery? The Importance of Imaging in Chronic Hepatitis C

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ABSTRACT

Background: Chronic hepatitis C virus (HCV) infection remains a major global health concern, being associated with the progression of liver fibrosis, cirrhosis, hepatic failure, and hepatocellular carcinoma. The introduction of direct-acting antiviral therapies has significantly improved the prognosis of these patients, with sustained virologic response leading to reduced disease progression and lower rates of long-term hepatic complications. However, patient monitoring should not rely exclusively on biological and virological parameters, as imaging evaluation plays a crucial role in assessing the structural and functional evolution of liver disease. **Material and Methods:** The present study aims to highlight the importance of imaging monitoring in patients with chronic hepatitis C undergoing antiviral treatment, through the evaluation of hepatic changes and fibrosis progression before, during, and after therapy. The research focuses on integrating clinical, biological, and imaging data, emphasizing the role of abdominal ultrasound, liver elastography, and other imaging techniques in assessing therapeutic response and the risk of liver disease progression. The study analyzes aspects such as changes in fibrosis stage, signs of portal hypertension, evolution of liver and spleen dimensions, presence of focal hepatic lesions, and the dynamics of imaging parameters following sustained virologic response. In addition, correlations between imaging findings and biological markers of inflammation and liver function are evaluated in order to identify predictive patterns associated with favorable or unfavorable outcomes. **Results:** Preliminary findings support the major role of imaging surveillance in evaluating the effectiveness of antiviral therapy and in the early detection of hepatic complications, even after virologic cure has been achieved. The integration of imaging assessment into the standard monitoring of patients with chronic hepatitis C may contribute to individualized therapeutic management, improved patient safety, and optimization of long-term prognosis. **Conclusions:** This research aims to strengthen the multidisciplinary approach in the management of chronic hepatitis C and to emphasize the essential role of imaging techniques in monitoring liver disease evolution during and after antiviral treatment.

Keywords: Chronic hepatitis C virus, imaging monitoring, antiviral treatment

OP 9. 8

Rheumatoid Arthritis and the Gastric Sphere: Between Gastritis, NSAID-Induced Gastropathy and Integrated Gastroenterological Assessment

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ABSTRACT

Background: Rheumatoid arthritis (RA) is a systemic inflammatory disease in which upper gastrointestinal symptoms may arise both through immune-inflammatory mechanisms and through adverse effects of therapy, particularly non-steroidal anti-inflammatory drugs (NSAIDs). The relationship between RA, gastritis and Helicobacter pylori infection remains incompletely elucidated, yet it is of major clinical relevance because of its impact on quality of life, treatment adherence and the risk of digestive complications. **Material and Methods:** The aim of this paper was to critically analyze the interrelationship between RA and gastric pathology, with a focus on the pathophysiological basis of gastritis, the consequences of NSAID use on the gastric mucosa, and the current gastroenterological management framework for rheumatology patients. The methodology consisted of a narrative review of the literature, complemented by an exploratory quantitative meta-analytic synthesis, structured according to clinical subgroups defined by population context, gastric risk profile and the presence of digestive symptoms. **Results:** The findings showed that gastric involvement in patients with RA is predominantly multifactorial, being mainly influenced by NSAID exposure, advanced age, a history of peptic ulcer disease and the association of other gastrotoxic factors. The meta-analytic model included 30 studies, comprising a total of 3,777 patients with RA, of whom 1,489 were positive for H. pylori, resulting in a pooled prevalence of 39.4%. Subgroup analysis showed similar values: 38.5% in general clinical populations, 40.0% in patients exposed to therapeutic gastric risk factors, and 39.7% in those with digestive symptoms. Sensitivity analysis confirmed the stability of the estimate, with a prevalence of 40.3% after exclusion of small studies. **Conclusions:** The study concluded that patients with RA require integrated gastroenterological assessment based on risk stratification, early identification of digestive symptoms, and the implementation of preventive and gastroprotective measures within an interdisciplinary collaboration between rheumatology and gastroenterology.

Keywords: rheumatoid arthritis; gastritis; NSAIDs; *Helicobacter pylori*; gastroenterology

OP 9. 9

Between Sepsis and Cytokine Storm : Bacterial Pneumonia Versus Covid -19 Pneumonia

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ABSTRACT

Background: Community-acquired pneumonia remains one of the leading causes of hospitalization and mortality worldwide, having a major impact on healthcare systems, particularly among elderly patients and individuals with chronic comorbidities. During the COVID-19 pandemic, SARS-CoV-2 infection introduced a new pattern of viral pulmonary involvement characterized by an intense systemic inflammatory response, acute respiratory failure, and multisystem complications, creating significant diagnostic and therapeutic challenges. The present study aims to perform a comparative analysis between bacterial community-acquired pneumonia and viral pneumonia associated with SARS-CoV-2 infection by evaluating the clinical, biological, and evolutionary characteristics of patients admitted to a tertiary care hospital. The research has a retrospective design and includes the analysis of clinical and paraclinical data from both patients diagnosed with bacterial community-acquired pneumonia and patients confirmed with SARS-CoV-2 infection during the 2020–2021 pandemic period. **Material and Methods:** The study evaluates demographic characteristics, associated comorbidities, inflammatory and hematological biomarkers, organ dysfunction, oxygen therapy and ventilatory support requirements, as well as the rate of complications, intensive care admissions, and mortality. Particular attention is given to the comparison between the inflammatory response observed in bacterial pneumonia and that associated with SARS-CoV-2 infection, with the aim of identifying relevant biological and prognostic differences. **Results:** Preliminary findings suggest the existence of distinct features between the two types of pneumonia regarding the intensity of systemic inflammation, multisystem involvement, clinical evolution, and the need for advanced therapeutic support. In addition, advanced age and chronic comorbidities appear to play a major role in the prognosis of both pathological entities. **Conclusion:** This research aims to identify predictive factors associated with severe evolution and unfavorable outcomes, as well as to contribute to the development of clinical management strategies and risk stratification models adapted to each type of pneumonia. The study supports the advancement of knowledge regarding severe respiratory infections and the optimization of therapeutic approaches in current medical practice.

Keywords: Community-acquired pneumonia, COVID-19 pandemic

OP 9. 10

Community-Acquired Pneumonia – Between Systemic Inflammation and Vital Risk

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ABSTRACT

Background: Community-acquired pneumonia remains one of the leading causes of morbidity and mortality worldwide, particularly among elderly patients and individuals with multiple comorbidities, being frequently associated with sepsis, respiratory failure, and the need for intensive care management. The complexity of these cases requires a multidisciplinary approach based on early severity assessment, identification of risk factors, and prompt initiation of appropriate therapy. The present study aims to evaluate the clinical, biological, and evolutionary characteristics of patients diagnosed with community-acquired pneumonia admitted to a tertiary care hospital, with particular focus on the correlation between inflammatory biomarkers, comorbidities, disease severity, and prognosis. **Material and Methods:** The research has a retrospective design and uses clinical and paraclinical data extracted from medical records and laboratory databases, including parameters such as complete blood count, procalcitonin, renal and hepatic function tests, inflammatory markers, and relevant microbiological findings. **Results:** Preliminary analysis highlights a predominance of severe cases among elderly patients with associated cardiovascular, neurological, and metabolic diseases, as well as a high frequency of systemic complications, especially sepsis and multiple organ dysfunction. Elevated inflammatory markers and impaired vital organ function appear to correlate with unfavorable outcomes and the requirement for advanced intensive care support. **Conclusions:** The expected outcomes of this research include the identification of predictive factors for severity and prognosis, optimization of early management strategies for community-acquired pneumonia, and development of institutional approaches aimed at standardizing therapeutic conduct and reducing mortality. This study contributes to the consolidation of evidence-based medical practice and to the development of an integrated approach in the management of severe community-acquired pneumonia.

Keywords: community-acquired pneumonia, sepsis, early management, prognosis

OP 9. 11

The role of medical rehabilitation in delaying surgical indication in knee osteoarthritis

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ABSTRACT

Background: Knee osteoarthritis is a major degenerative condition characterized by the progressive deterioration of the articular cartilage and significant impairment of knee function. Although total knee arthroplasty remains the standard treatment in advanced stages, optimizing the timing of surgical intervention is a current clinical challenge. Medical rehabilitation is considered a key intervention in conservative management, with the potential to influence disease progression.This study aims to evaluate the effectiveness of medical rehabilitation in delaying surgical indication in patients with knee osteoarthritis, by quantifying its impact on pain, functional status, and clinical progression. **Materials and methods:** a prospective observational study was conducted on a cohort of 48 patients diagnosed with stage II–III knee osteoarthritis (Kellgren–Lawrence classification), divided into two groups: Group A (n = 24), which followed a standardized 12-week medical rehabilitation program (individualized kinesiotherapy, physiotherapy, and therapeutic education), and Group B (n = 24), which received conventional management without a structured rehabilitation program. Assessment was performed using WOMAC and VAS scores, as well as joint range of motion (ROM), at baseline, 3 months, and 6 months. **Results:** at 3 months, Group A showed a statistically significant reduction in pain (VAS: −2,1 ± 0.8 vs. −0.7 ± 0.6; $p < 0.01$) and an improvement in functional status as measured by the WOMAC score (−18.2% vs. −5.2%; $p < 0.01$) compared to Group B. Knee flexion range of motion increased by an average of 13° in Group A, compared to 5° in the control group. At 6 months, surgical indication was maintained in 24.5% of patients in Group A, compared to 53.9% in Group B, suggesting a significant delay in the need for arthroplasty ($p = 0.02$). **Conclusions:** Medical rehabilitation represents an effective and measurable therapeutic strategy for delaying the indication of total knee arthroplasty in patients with moderate-stage knee osteoarthritis, without replacing surgical intervention in advanced cases. Early integration of rehabilitation programs into the therapeutic algorithm may contribute to optimizing clinical outcomes and individualizing surgical decision-making.

Keywords: knee osteoarthritis, arthroplasty, rehabilitation programs

OP 9. 12

The Role of Postoperative Rehabilitation in the Outcomes of Patients with Lumbar Disc Herniation

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ABSTRACT

Background: Lumbar disc herniation is a common neuro-musculoskeletal condition, characterized by the displacement of the nucleus pulposus, which may lead to nerve root compression and significantly affect functional status and quality of life. In the context of postoperative management, medical rehabilitation represents a key component in restoring functional capacity. The present study aims to evaluate the impact of rehabilitation treatment on the outcomes of patients undergoing surgery for lumbar disc herniation.
Material and Method: This prospective study was conducted at the Emergency Clinical Hospital "Prof. Dr. N. Oblu" Iași and included patients hospitalized for lumbar disc herniation between January 1, 2025, and December 31, 2025. **Results:** Out of a total of 1105 hospitalized patients, a study group of 705 patients who underwent surgical interventions (discectomy, spinal fusion, and medullary decompression) was selected. The mean age of the study group was 54 years, with a gender distribution of 52% पुरुष (men) and 48% women, and a background distribution of 55% urban and 45% rural. Among them, 564 patients (80%) followed postoperative rehabilitation programs. At the 8-week evaluation, 325 patients (58%) showed a favorable outcome, which was associated with younger age. A total of 102 patients (18%) required continued rehabilitation, particularly those over 55 years of age, while 4% were non-compliant. **Conclusions:** Postoperative rehabilitation plays a crucial role in the favorable recovery of patients with lumbar disc herniation. The findings highlight a correlation between age and response to treatment, suggesting the need for individualized rehabilitation programs. Early initiation of rehabilitation interventions contributes to pain reduction and decreased disability, with a direct impact on functional reintegration.

Keywords: lumbar disc herniation, postoperative rehabilitation, neuro-musculoskeletal.

OP 9. 13

Designing and Implementation of a 4-step Algorithm for Identifying the Optimal Time for Extubation in the Intensive Care Unit.

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ABSTRACT

Background: The use of mechanical ventilation in intensive care units has become almost routine, but the indications of intubation are much clearer than the appropriate timing for extubation. Beyond all the benefits that mechanical ventilation brings with improved alveolar gas exchange, airway protection and decreased respiratory workload of the patient, each day of intubation carries additional significant risks for the patient. Current guidelines recommend active screening at least once a day to identify patients who can be extubated, but there are no universally accepted protocols to guide this decision. This study aims to develop a working protocol to guide physicians in identifying the appropriate time for extubation following an active screening process. **Material and Methods:** We included in the study 67 patients who were mechanically ventilated for at least 48 hours in the Intensive Care Unit. The timing of extubation was decided by an independent physician and before extubation was performed, we collected complex data on pre-existing pathology, patient hemodynamics, ventilator settings including Rapid Shallow Breathing Index, inflammatory tests like CRP, congestive heart failure tests like Nt-ProBNP and Lung Ultrasound Score. Depending on the subsequent evolution, we divided the patients into two categories, those who succeeded and those who failed weaning from the ventilator. Afterwards we compared the collected parameters and selected the most statistically relevant characteristics. **Results:** We identified as relevant, a protocol consisting of 4 parameters: Nt-proBNP, CRP, RSBI and LUS. We thus created an algorithm that can help us evaluate the degree of myocardial congestion, the level of inflammation, the strength of the respiratory muscles and the ultrasound appearance of the lung parenchyma. **Conclusions:** The decision to extubate patients in the Intensive Care Unit based on these additional data could have an impact on increasing survival and decreasing complications and days of hospitalization.

Keywords: extubation, Nt-proBNP, CRP, RSBI, LUS

OP 9. 14

PERFORM-CV: Integrated Cardiovascular Risk Assessment in Non-Cardiac Surgery

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ABSTRACT

Background: Perioperative cardiovascular risk assessment in non-cardiac surgery remains challenging, especially in elderly patients and those with multiple comorbidities. This study aimed to develop and evaluate PERFORM-CV, a new integrated risk score combining clinical, laboratory, and echocardiographic variables to predict in-hospital mortality. **Material and Methods:** A prospective two-center cohort study was conducted on 503 patients with cardiovascular comorbidities undergoing non-cardiac surgery. Clinical data, laboratory parameters, and focused transthoracic echocardiographic measurements were collected preoperatively. The performance of PERFORM-CV was compared with established risk scores, including Lee/RCRI and AUB-HAS2, using ROC analysis. **Results:** In-hospital mortality occurred in 89 patients. Emergency presentation, chronic heart failure, and increased serum creatinine were independently associated with mortality. The PERFORM-CV score included emergency presentation, reduced left ventricular ejection fraction, renal dysfunction, atrial fibrillation, chronic heart failure, anemia, and reduced MAPSE. The score showed good discriminative performance for in-hospital mortality, with an AUC of 0.852, comparable to Lee/RCRI and higher than AUB-HAS2. **Conclusions:** PERFORM-CV is a practical multidimensional score that integrates clinical, laboratory, and echocardiographic data for perioperative cardiovascular risk stratification in non-cardiac surgical patients. It may complement existing risk tools, although further internal and external validation is required before routine clinical implementation.

Keywords: perioperative risk; non-cardiac surgery; MAPSE; in-hospital mortality.

OP 9. 15

Trimethylamine-N-oxide: From Gut to Heart

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ABSTRACT

Background: The gut microbiota is increasingly recognized for its influence beyond the gastrointestinal system, with many of its systemic effects mediated by bioactive metabolites. One such metabolite is trimethylamine N-oxide (TMAO), which is generated by intestinal bacteria from dietary choline—primarily found in animal-derived foods—and has been linked to cardiovascular disease (CVD). Despite this association, there remains a notable lack of robust human clinical trials to determine whether this relationship is truly causal. This presentation aims to summarize the current evidence regarding the gut microbiome, TMAO, and their involvement in cardiovascular pathology, while also outlining future research directions. A key objective is to explore the potential of TMAO as a clinically useful biomarker and to identify strategies that could mitigate its deleterious effects. **Material and Methods:** A comprehensive search of the literature was performed in PubMed, ScienceDirect, and Google Scholar using keywords related to TMAO, the gut microbiome, and cardiovascular disease, with additional sources retrieved directly from journals and publishers when full-text articles were not available in databases. The review included only peer-reviewed human and animal studies published within the past ten years, with a small number of older studies incorporated to fill specific gaps in the evidence, while non-peer-reviewed, duplicate, and low-quality studies were excluded. **Results:** Findings from both animal and human studies support an association between elevated TMAO levels and increased cardiovascular risk. Moreover, experimental data from animal models suggest a possible causal role, as TMAO administration has been shown to increase cardiovascular risk, whereas its suppression appears to confer protective effects. Although these findings cannot be directly translated to humans due to interspecies differences, they provide a valuable framework for designing well-structured clinical trials. Regarding therapeutic approaches, direct targeting of TMAO production—such as inhibition of trimethylamine (TMA) lyase or the use of antisense oligonucleotide (ASO) therapies—has yielded encouraging results in preclinical studies. However, these strategies have yet to be evaluated in human trials. Consequently, current interventions remain largely indirect, focusing on dietary modifications and the use of probiotics. **Conclusion:** Although the association between TMAO and cardiovascular disease has yielded important insights, current human evidence is insufficient to confirm causality, despite supportive findings from animal models, highlighting the need for further clinical research to validate its pathogenic role and to determine whether TMAO can serve as a

reliable and clinically applicable biomarker for gut dysbiosis and cardiovascular risk, while also clarifying the potential of emerging therapies targeting its metabolism.

Keywords: Gut microbiome; TMAO; Cardiovascular disease; Atherosclerosis; Hypertension

OP 9. 16

qRT-PCR in Norovirus Detection: Insights into GI and GII Distribution

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ABSTRACT

Background: Infection with Norovirus is a common cause of acute gastroenteritis in children, being associated with rapid transmission and outbreaks in community settings. The aim of this study was to evaluate the usefulness of the qRT-PCR technique in detecting Norovirus and to analyze the distribution of genogroups GI and GII, in comparison with conventional diagnostic methods. **Materials and methods:** This retrospective study included 40 patients aged between 0 and 10 years, admitted to the "Sf. Ioan" Children's Emergency Clinical Hospital in Galați with symptoms of acute gastroenteritis, between February 2023 and March 2025. The study group consisted of 18 females and 22 males, predominantly from urban areas (30/40), compared to rural areas (10/40). Fecal samples were analyzed using qRT-PCR with a multiplex panel for enteric viruses, and rapid antigen tests were performed in parallel. **Results:** Among the Norovirus-positive samples, 29 belonged to genogroup GII and 11 to genogroup GI. Co-infections with other viral agents, particularly Rotavirus and Adenovirus, were also identified. In comparison, rapid tests detected only 6 positive cases for Norovirus. **Conclusions:** In conclusion, qRT-PCR is a sensitive and efficient method for diagnosing Norovirus infection, also providing valuable information for viral genotyping. The predominance of genogroup GII is consistent with current epidemiological trends. The use of molecular methods can significantly improve the diagnosis and surveillance of viral gastrointestinal infections.

Keywords: acute gastroenteritis, Norovirus, qRT-PCR

OP 9. 17

High-sensitivity C-reactive protein (hs-CRP): Refining Cardiovascular Risk

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ABSTRACT

Background: High-sensitivity C-reactive protein (hs-CRP) is a sensitive biomarker of low-grade systemic inflammation, with a well-established role in the pathophysiology of atherosclerosis. Beyond its diagnostic value, hs-CRP has gained increasing attention as a marker of residual inflammatory risk, particularly in patients with controlled lipid levels but persistent cardiovascular risk.This presentation aims to evaluate the clinical utility of hs-CRP in cardiovascular risk stratification and to explore its role in identifying residual inflammatory risk in patients with or without established atherosclerotic cardiovascular disease. **Materials and Methods:** We performed a structured review of current literature alongside a clinical analysis of patients undergoing cardiovascular risk assessment, including hs-CRP measurement, lipid profile, and functional capacity evaluation (e.g., exercise testing). Correlations between hs-CRP levels and traditional risk factors, as well as functional parameters, were assessed. **Results:** A growing body of evidence demonstrates that elevated hs-CRP levels are independently associated with an increased risk of adverse cardiovascular outcomes, regardless of LDL-cholesterol values. Patients with well-controlled lipid profiles but persistently elevated hs-CRP define a distinct high-risk phenotype, in which inflammation appears to be a key driver of disease progression. This supports a more comprehensive view of cardiovascular risk, integrating both lipid-related and inflammatory mechanisms. From a therapeutic standpoint, hs-CRP provides valuable insights into treatment optimization. Statins, for example, exert pleiotropic effects by lowering both LDL-cholesterol and hs-CRP levels, contributing to their overall cardiovascular benefit. In addition, recent studies investigating targeted anti-inflammatory therapies have shown promising results in further reducing cardiovascular events, highlighting inflammation as a modifiable risk factor. **Conclusions:** hs-CRP may function not only as a marker of risk but also as a guide for therapeutic decision-making. Its incorporation into routine clinical evaluation could facilitate a more individualized approach to prevention, combining lipid-lowering and anti-inflammatory strategies to achieve better cardiovascular outcomes.

Keywords: hs-CRP; inflammation; cardiovascular disease; cardiovascular risk

OP 9. 18

Short-Chain Fatty Acids and Pediatric Allergies: From Immunomodulatory Mechanisms to Clinical Evidence – A Review

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ABSTRACT

Background: The gut microbiome plays a crucial role in the development of immune tolerance in early childhood. Short-chain fatty acids (SCFAs), primarily acetate, propionate, and butyrate, are key metabolites produced by commensal bacteria through the fermentation of dietary fiber. Accumulating evidence suggests that SCFAs act as signaling molecules between the gut microbiome and the host immune system, exerting protective effects against allergic diseases in children. This review aims to synthesize current knowledge regarding the immunomodulatory mechanisms of short-chain fatty acids and to evaluate the clinical evidence associating the levels of these metabolites with pediatric allergies, including atopic dermatitis, food allergy, and asthma or recurrent wheezing. **Material and Methods:** To conduct this review, recent literature was consulted, with a focus on research elucidating mechanisms of action in both animal models and in vitro experiments, as well as observational cohort studies and systematic reviews published in recent years. **Results:** The literature highlights four complementary mechanisms through which short-chain fatty acids exert immunomodulatory effects: activation of G-protein-coupled receptors, inhibition of histone deacetylases with epigenetic consequences, reinforcement of the intestinal barrier, and direct suppression of mast cell degranulation. From a clinical perspective, fecal levels of acetate, propionate, and butyrate are significantly reduced in children with atopic dermatitis, IgE-mediated food allergy, and recurrent wheezing, compared to healthy controls. **Conclusion:** Short-chain fatty acids represent promising mediators of microbiome-induced immune tolerance in pediatric allergies.

Keywords: short-chain fatty acids, gut microbiome, pediatric allergies, postbiotics

OP 9. 19

Clinicopathological Profile of Breast Lesions: A Descriptive Study of a Single-Center Cohort

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ABSTRACT

Background: This study presents a descriptive statistical analysis of breast pathology cases, aiming to characterize the clinicopathological and immunohistochemical profile of a single-center cohort. The dataset includes a total of 223 cases of breast lesions, encompassing both benign and malignant entities, collected between January 1, 2020, and December 31, 2025. **Materials and Methods:** The analysis was systematic and focused on summarizing key variables relevant to histopathological evaluation. Descriptive statistical methods were used to assess patient demographics (age distribution), frequencies and proportions of diagnostic categories, and the distribution of major histopathological parameters, including tumor type, grade, and other relevant features. Additionally, immunohistochemical biomarkers such as estrogen receptor (ER), progesterone receptor (PR), human epidermal growth factor receptor 2 (HER2), and Ki-67 proliferation index were analyzed in terms of expression patterns, scoring systems, and categorical distribution. **Results:** Results are presented using summary tables and graphical representations, including bar charts and histograms, to facilitate data interpretation and visualization. **Conclusions:** The analysis highlights the heterogeneity of breast lesions within the studied cohort and provides an overview of biomarker expression patterns relevant for diagnostic and prognostic assessment.

Keywords: breast pathology; descriptive statistics; immunohistochemistry; ER; PR; HER2; Ki-67; digital pathology; cohort analysis

OP 9. 20

Comparative Evaluation of CAD/CAM Dental Ceramics: Surface Morphology, Roughness, and Wettability in Prosthetic Restorations

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ABSTRACT

Background: The aim of this study was to comparatively evaluate the surface morphology, roughness, elemental composition, and wettability of three CAD/CAM dental ceramics used for fixed prosthetic restorations. **Materials and Methods:** Three CAD/CAM ceramic materials were analyzed: zirconia-reinforced lithium silicate, feldspathic ceramic, and lithium disilicate. Standardized specimens were fabricated using a digital CAD/CAM workflow. The materials were examined by computed tomography for structural integrity, scanning electron microscopy for surface morphology, energy-dispersive X-ray spectroscopy for elemental composition, profilometry for roughness parameters, and contact angle measurements for wettability assessment. **Results:** Computed tomography showed no relevant internal defects or porosities after CAD/CAM processing. Scanning electron microscopy and energy-dispersive X-ray spectroscopy revealed material-specific morphological and compositional features, with all ceramics maintaining chemical stability after processing. Profilometric analysis showed differences in surface roughness among the tested materials, while contact angle measurements demonstrated material-dependent wettability. Zirconia-reinforced lithium silicate presented a favorable surface morphology, whereas lithium disilicate showed increased hydrophilicity. **Conclusions:** The tested CAD/CAM ceramics demonstrated distinct surface and wettability profiles, indicating that they should not be considered clinically interchangeable. Material selection for fixed prosthetic restorations should integrate not only esthetic and mechanical criteria, but also surface roughness, wettability, and chemical stability, as these parameters may influence adhesion, plaque accumulation, wear behavior, and long-term clinical performance.

Keywords: CAD/CAM ceramics, dental restorations, surface roughness, wettability, lithium disilicate, zirconia-reinforced lithium silicate

OP 9. 21

Mechanical Performance and Fracture Behavior of Fixed Dental Prostheses Fabricated from Ceramic-Based Restorative Systems

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ABSTRACT

Background: The aim of this study was to compare the mechanical performance and fracture behavior of different ceramic-based material systems used for three-unit fixed dental prostheses under standardized bending loads. **Material and Methods:** Four groups of three-unit fixed dental prostheses were fabricated: metal-ceramic, zirconia-ceramic, monolithic zirconia, and monolithic lithium disilicate restorations. All specimens were produced according to standardized laboratory protocols and subjected to three-point bending tests until failure. Crack initiation load, maximum load before failure, displacement, and stiffness were recorded. Fracture behavior was further assessed using stereomicroscopy, micro-computed tomography, and scanning electron microscopy. **Results:** Metal-ceramic fixed dental prostheses showed the highest crack initiation load and maximum load before failure, indicating superior resistance under flexural loading. Monolithic zirconia exhibited a brittle fracture pattern, with abrupt crack propagation after crack initiation. Zirconia-ceramic and lithium disilicate restorations demonstrated intermediate mechanical behavior, while lithium disilicate showed greater resistance to catastrophic failure compared with zirconia-ceramic prostheses. Fractographic and micro-computed tomography analyses confirmed material-dependent differences in crack initiation, propagation, and failure mechanisms. **Conclusions:** The mechanical reliability of fixed dental prostheses depends not only on maximum load-bearing capacity, but also on fracture mode, crack propagation behavior, stiffness, and damage tolerance. Metal-ceramic and lithium disilicate systems showed more favorable damage-tolerant behavior under static flexural loading, while monolithic zirconia presented a more brittle response. These findings support a clinically oriented material selection strategy based on both strength and fracture behavior.

Keywords: fixed dental prosthesis, fracture behavior, three-point bending, lithium disilicate, zirconia, metal-ceramic restorations

OP 9. 22

Diagnostic challenges and therapeutic management for suspicious brain oligoprogression in metastatic breast disease

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ABSTRACT

Background: Radiotherapy provides excellent local control for brain metastases, and the risk of experiencing mid to long-term adverse effects associated with SRT has increased as well. Cerebral radiation necrosis (RN) is a late complication that may be seen months to years after treatment and is oftentimes indistinguishable from tumor progression (TP), with a variable clinical presentation. **Material and Method**: Case report and review. **Results:** We present a challenging differential diagnosis between brain radionecrosis and recurrent metastatic disease, with temporary clinical/radiological response to Bevacizumab and later imaging suspicious for oligoprogression- a case of a patient with breast cancer cT2N1M0 and multiple brain metastases occurring at 2 years after diagnosis, who was treated with whole-brain radiotherapy (WBRT) and Stereotactic Radiotherapy (SRT) for tumor progression. Dynamic imaging revealed right parietal post-therapeutic changes in aggravation, requiring differential diagnosis between tumor progression (TP) and brain radionecrosis (BRN). The case presented is a clinically plausible mixed or evolving scenario in which radionecrosis and tumor progression may have coexisted. Brain radionecrosis and tumor progression are difficult to differentiate due to their similar radiological and clinical characteristics. MRI perfusion plays an important role in differentiating the two entities. **Conclusions:** Differentiating radiation necrosis from a recurrent tumor is crucial for appropriate treatment. Multimodal imaging improves diagnostic accuracy and plays an important role in distinguishing BRN from tumor

relapse. When uncertainty exists, MRI perfusion should form part of a standard protocol, and when it is feasible, histopathology should remain the gold standard.

Keywords: brain radiation necrosis; magnetic resonance perfusion; tumor progression; bevacizumab; long-term survival

OP 9. 23

Prognostic Clinical, Molecular, and Immune Determinants of Response to Immune Checkpoint Inhibitors in Advanced and Metastatic Urothelial Carcinoma: Preliminary Findings

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ABSTRACT

Background: Advanced and metastatic urothelial carcinoma (mUC) of the bladder remains a major therapeutic challenge, with limited long-term survival despite recent advances. Immune checkpoint inhibitors (ICIs), targeting the PD-1/PD-L1 axis, have become a cornerstone in the management of this disease. However, variability in treatment response highlights the need to better define prognostic clinical, molecular, and immune-related factors. This paper aims to assess prognostic factors influencing clinical outcomes in patients with locally advanced and metastatic urothelial carcinoma treated with ICIs in a real-world setting. **Material and Methods:** This retrospective cohort study included patients diagnosed with locally advanced and metastatic bladder cancer treated with immunotherapy between 2015 and 2026. A total of 29 patients were analyzed: 6 received atezolizumab, 13 pembrolizumab, and 10 avelumab. Collected data included clinical variables (age, sex, ECOG performance status, metastatic sites, prior systemic therapies), as well as available molecular and immune biomarkers (PD-L1 expression, inflammatory indices such as neutrophil-to-lymphocyte ratio). Primary endpoints were overall survival (OS) and progression-free survival (PFS); secondary endpoints included objective response rate (ORR) and identification of prognostic factors. **Results:** Outcomes varied across treatment groups, reflecting heterogeneity in patient and disease characteristics. Favorable prognostic factors included good performance status (ECOG 0–1), limited metastatic burden, and absence of liver metastases. Elevated baseline inflammatory markers, particularly a high neutrophil-to-lymphocyte ratio, were associated with inferior OS and PFS. PD-L1 expression demonstrated inconsistent correlation with clinical response. Patients receiving pembrolizumab and avelumab showed trends toward improved disease control compared to atezolizumab, though interpretation is limited by small sample size. **Conclusions:** In this cohort, clinical and immune-inflammatory parameters emerged as relevant prognostic indicators in patients with advanced urothelial carcinoma treated with ICIs. Molecular biomarkers such as PD-L1 alone appear insufficient for accurate prognostication. These findings

support the need for integrative prognostic models combining clinical, biological, and immune variables to guide personalized immunotherapy strategies. Larger prospective studies are warranted to validate these observations.

Keywords: Metastatic urothelial carcinoma, immunotherapy, predictive factors

OP 9. 24

Comparative analysis of clinicopathological characteristics in HER2-low, HER2-ultralow, and HER2-null breast cancer: interim results of a 3-year ambispective study

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ABSTRACT

Background: Recent refinements in HER2 assessment have subdivided the HER2-negative breast cancer spectrum into HER2-low, HER2-ultralow, and HER2-null categories, with increasing therapeutic relevance in the era of antibody-drug conjugates. This study aimed to evaluate the distribution and clinicopathological profile of these subgroups in a local cohort of invasive breast carcinoma. **Materials and Methods:** We conducted an ambispective study at "Sf. Ap. Andrei" Clinical County Emergency Hospital of Galati, including female patients diagnosed with invasive breast carcinoma between 2023 and 2025. After excluding cases with incomplete clinical data, non-invasive tumors, male breast cancer, and the absence of informed consent, the final cohort included 287 invasive breast carcinomas. HER2-positive tumors were identified separately, while HER2-negative cases with complete subgroup data were classified as HER2-low, HER2-ultralow, or HER2-null. Clinicopathological variables, including age, histologic type, tumor grade, lymph node status, hormone receptor status, Ki67 index, molecular subtype, lymphovascular invasion, and stage, were compared across the three HER2-negative subgroups. **Results:** Of the 287 invasive breast carcinomas included in the final cohort, 38 cases were HER2-positive. A total of 249 tumors were HER2-negative and had complete data for subgroup analysis. Among these, 101 cases (40.6%) were classified as HER2-low, 139 cases (55.8%) as HER2-null, and 9 cases (3.6%) as HER2-ultralow. The median age was 65 years in the HER2-low group, 67 years in the HER2-null group, and 74 years in the HER2-ultralow group, with no statistically significant difference among the three subgroups. Comparative analysis showed a significant difference in Ki67 expression between HER2-low and HER2-ultralow tumors ($p < 0.05\%$), while the remaining clinicopathological parameters showed no significant differences. **Conclusions:** In this interim cohort, HER2-negative invasive breast carcinomas showed heterogeneous distribution across HER2-low, HER2-ultralow, and HER2-null categories. Although most conventional clinicopathological parameters did not differ significantly between subgroups, the observed variation in Ki67 index suggests

that low-level HER2 categories may be associated with subtle biological differences. Accurate recognition of HER2-low and HER2-ultralow expression remains important, particularly as antibody-drug conjugates expand therapeutic options beyond the traditional HER2-positive setting.

Keywords: HER2-low, HER2-ultralow; HER2-null; breast cancer;

OP 9. 25

Immunological and Inflammatory Profiles in Patients with Post-COVID-19 Syndrome: Differences Between Vaccinated and Unvaccinated Individuals

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ABSTRACT

Background: Post-COVID-19 Syndrome (Long COVID) has emerged as a significant and persistent public health challenge, characterized by prolonged symptomatology lasting months after acute SARS-CoV-2 infection. Mounting evidence implicates chronic low-grade inflammation and sustained immune dysregulation as central pathogenic mechanisms. However, the extent to which prior vaccination modulates the immunological and inflammatory landscape in this post-infectious phase remains incompletely defined. Elucidating these differences is critical for refining risk stratification, optimizing clinical management, and informing the development of targeted, personalized therapeutic interventions. This study aims to comprehensively characterize the immunological and inflammatory profiles of patients with Post-COVID-19 Syndrome by comparatively analyzing vaccinated and unvaccinated cohorts. Specific objectives include: (i) quantification of key inflammatory cytokines (IL-6, TNF-α, IL-1β, CRP); (ii) evaluation of the association between vaccination status and the severity of persistent symptom burden; (iii) correlation of circulating biomarkers with clinical phenotypes; and (iv) development of a predictive model to assess disease trajectory and progression. **Materials and Methods:** An observational, cross-sectional study design will be employed, enrolling two well-defined patient groups diagnosed with Post-COVID-19 Syndrome: vaccinated and unvaccinated. Comprehensive clinical, demographic, and laboratory data will be collected. Biomarker analysis will include inflammatory mediators (IL-6, TNF-α, IL-1β, CRP, kynurenine pathway metabolites) and immunological parameters (CD4/CD8 ratio, anti-Spike IgG titers). These variables will be systematically correlated with clinical symptomatology. Statistical analysis will comprise between-group comparisons, multivariate correlation analyses, and the development of a predictive logistic regression model to identify determinants of disease persistence and severity. **Results:** We hypothesize that vaccinated individuals will exhibit a significantly attenuated inflammatory profile, characterized by reduced cytokine levels and a lower burden of persistent symptoms compared to unvaccinated patients. Additionally, we

anticipate identifying robust associations between specific biomarkers and distinct clinical phenotypes, enabling the delineation of an immunological signature linked to vaccination status and disease expression. **Conclusions:** This study is expected to provide critical insights into the modulatory role of vaccination on post-infectious immune dynamics in Long COVID. The findings may support the integration of immunological biomarkers into routine clinical assessment, facilitating more precise patient stratification and enabling the implementation of individualized management strategies. Ultimately, this approach has the potential to improve clinical outcomes and inform future therapeutic development in this complex and evolving condition.

Keywords: Post-COVID-19 Syndrome; Long COVID; chronic inflammation; cytokines; vaccination; immunological profiling; biomarkers; personalized medicine

OP 9. 26

Neuropathies - epidemiology, socioeconomic impact

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ABSTRACT

Background: Peripheral neuropathies represent a heterogeneous group of disorders affecting the peripheral nerves and currently constitute a significant public health issue, with a major impact on quality of life, work capacity, and healthcare system costs. **Material and Methods:** This paper is a narrative review study based on current scientific evidence obtained through a bibliographic search conducted in PubMed, Scopus, and Web of Science databases, supplemented with relevant sources from Google Scholar and updated clinical guidelines from the last 5 years. The objectives include the evaluation of epidemiological characteristics, identification of factors contributing to the increasing incidence, and analysis of the socio-economic impact, with a focus on quality of life, work capacity, and healthcare-related costs. **Results:** Peripheral neuropathies currently have an estimated prevalence of 2–7% in the general population, increasing to over 20% among the elderly and individuals with diabetes mellitus. The most common form is diabetic neuropathy, the leading cause worldwide (over 50% of diabetic patients develop some form of neuropathy), followed by toxic, inflammatory, autoimmune, and hereditary neuropathies, which are less frequent but associated with significant morbidity. The incidence is rising due to population aging, increasing prevalence of diabetes and obesity, as well as exposure to neurotoxic factors (alcohol, medications, pollutants). The socio-economic

impact includes costs related to diagnosis, chronic treatment, rehabilitation, and complications (ulcers, amputations, neuropathic pain). **Conclusions:** Peripheral neuropathies represent a growing global public health concern. Reducing their impact requires primary and secondary prevention programs (glycemic control, reduction of neurotoxicity, patient education), early diagnosis, and a multidisciplinary approach, as well as public health strategies aimed at reducing disability and supporting patients' professional reintegration.

Keywords: peripheral neuropathies, epidemiology, socio-economic impact, neuro-motor rehabilitation.

OP 9. 27

Polymer–Inorganic Phase Nanocomposites for Bone Tissue Regeneration: Synthesis, Processing and Preliminary Evaluation

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ABSTRACT

Background: Nanocomposite materials designed for bone regeneration represent a promising approach in tissue engineering due to their ability to mimic the structural and biological characteristics of native bone. This study reports the fabrication and characterization of two nanocomposite systems: hydroxyapatite/polylactic acid (HA/PLA) and bio-glass/polycaprolactone (BG/PCL). The synthesis routes, processing techniques, and morphological and functional properties were investigated. The results demonstrate favorable biocompatibility, suitable porous architecture, and osteoconductive potential, supporting the applicability of these materials in bone tissue regeneration. **Material and Methods:** The HA/PLA nanocomposite was fabricated by dispersing nanoscale hydroxyapatite into a polylactic acid solution prepared using a volatile organic solvent. The polymer concentration ranged between 5–15% (w/v), while the inorganic phase content varied from 10–30% (wt%). Homogenization was achieved through mechanical stirring and ultrasonic treatment, followed by casting and solvent evaporation under controlled conditions. The resulting materials were further processed using thermomechanical techniques to enhance structural integrity. For the BG/PCL system, polycaprolactone was dissolved at moderate temperature, and bio-glass particles were gradually incorporated in similar weight fractions. After homogenization, the composite was cast and solidified, followed by post-processing techniques such as extrusion or 3D printing to obtain structures tailored for biomedical applications. **Results:** Morphological analyses revealed a uniform distribution of the inorganic phase within both nanocomposite systems. The HA/PLA composite exhibited an interconnected porous structure, which is advantageous for cell adhesion and proliferation. The presence of hydroxyapatite significantly enhanced the bioactivity of the material, promoting osteogenic

differentiation. The BG/PCL composite demonstrated a strong ability to induce mineralization in simulated environments, indicating pronounced osteoconductive behavior. Additionally, the material showed appropriate mechanical stability and controlled porosity, making it suitable for applications involving critical bone defects. **Conclusions:** The investigated nanocomposites, HA/PLA and BG/PCL, exhibit properties that are highly relevant for bone tissue engineering applications, including biocompatibility, osteoconductivity, and suitable mechanical performance. These findings support their potential use as scaffold materials in regenerative strategies. Further studies are required to evaluate in vivo performance and optimize composition.

Keywords: nanocomposites, bone regeneration, hydroxyapatite, bio-glass, biodegradable polymers

OP 9. 28

Clinical and Epidemiological Profile of Anxiety Disorders in a Public Psychiatric Outpatient Department in South-Eastern Romania: Interim Findings

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ABSTRACT

Background: Anxiety disorders are a major yet often underestimated component of psychiatric burden, particularly in Eastern Europe. Despite established prevalence (~4.4% globally; ~14% in Europe), data for South-Eastern Romania remain limited. This study analyses real-world data from the outpatient psychiatry department (HIOP) of "Anton Cincu" Municipal Hospital, Tecuci. The aim of this study is to assess patient profile, prevalence of anxiety disorders, demographic distribution, diagnostic recognition across healthcare settings, and comorbidity burden. **Material and Methods:** Retrospective–prospective observational study using SIUI administrative data (January 2023 – April 2026). All outpatient psychiatric services were included. Patients were uniquely identified via CNP. Diagnoses were classified using ICD-10, with comparative analysis across public, private, and individual practice settings. **Results:** A total of 14,690 diagnostic episodes were analysed. The active sub-cohort (2025–2026) included 1,502 patients, predominantly female (69.2%), mean age 64.3 ± 16.3 years. Anxiety disorders accounted for 5.6% (825 episodes), with a 2:1 female predominance and younger mean age (58.9 ± 16.0 years). Depressive disorders were most prevalent (89.8%), indicating high comorbidity. Recognition rates varied: ~52% in public care, 64% in private hospitals, and >70% in individual practices, suggesting underdiagnosis in the public sector. Chronic care management was present in 93.7% of cases. **Conclusions:** Anxiety disorders are

underrepresented in public outpatient care (5.6% vs. ~14% European estimates). Findings indicate structural inequities and support the hypothesis of systematic underdiagnosis. Further research using validated screening tools (GAD-7, HADS) is warranted.

Keywords: anxiety disorders, GAD-7, psychiatric epidemiology, South-Eastern Romania, underdiagnosis, sex differences, public vs. private healthcare, depressive comorbidity.

OP 9. 29

Ventilator-Associated Infection: Clinical and Epidemiological Considerations

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ABSTRACT

Background: Healthcare-associated infections (HAIs), also known as nosocomial or hospital-acquired infections, currently represent a major public health concern. Among these, ventilator-associated pneumonia (VAP) is defined as pneumonia that develops at least 48 hours after orotracheal intubation. **Materials and Methods:** The present paper is a narrative synthesis of clinical and epidemiological data regarding VAP, available in relevant studies published over the last five years. **Results:** VAP is considered the leading nosocomial infection reported in intensive care units, accounting for 70–80% of cases of hospital-acquired pneumonia (HAP) in intensive care settings. Its incidence ranges between 5 and 20 cases per 1,000 hospital admissions. The estimated risk of developing VAP is 3% during the first five days of mechanical ventilation, 2% during days 6–10, and 1% after day 10. Among patients admitted to intensive care units, hospital-acquired pneumonia occurs in approximately one quarter of cases, with 70–80% of these cases being secondary to mechanical ventilation. There are certain differences in the incidence rate of VAP across different patient groups, with most recent studies focusing on trauma, immunocompromised, or oncological patients. Among all types of trauma, the relationship between traumatic brain injury and VAP has been studied in particular, as traumatic brain injuries represent the leading cause of both death and long-term disability in patients with polytrauma. Subsequently, in a recent meta-analysis, the authors found that the incidence rate of VAP among patients with traumatic brain injury varies significantly across studies, ranging from 21% to 60%, with higher rates of early-onset VAP episodes compared with late-onset episodes. VAP is common in patients with severe brain injury and represents a risk factor for severe cognitive impairment. Adherence to VAP prevention strategies may help reduce cognitive deficits in this patient population. In Europe, the 2020–2021 point prevalence survey (PPS) conducted in acute care hospitals showed that nosocomial pneumonias were the most frequently identified type of healthcare-associated infection, accounting for 21.4% of cases. In Romania, they represent the second most frequent cause of HAI after urinary tract infections, and 52% of these cases occurred in intensive care units, secondary to mechanical

ventilation. A controversial aspect discussed in recent studies is the overall mortality rate associated with VAP, due to the heterogeneous populations included in different studies. A meta-analysis of studies on VAP prevention identified a mortality rate of 13%, whereas other studies report mortality rates of up to 50%. It is generally accepted that VAP is associated with prolonged duration of both mechanical ventilation and intensive care unit hospitalization. **Conclusions.** VAP is responsible for high morbidity and mortality rates because it occurs in patients who are already critically ill in intensive care units, and the prognosis of these patients depends on their immune status and pre-existing comorbidities.

Keywords: ventilator-associated pneumonia, clinical and epidemiological data.

OP 9. 30

Types of Challenges and Barriers in Accessing Paediatric Palliative Care in Romania: A Qualitative Study Based on Focus Groups Guided by a Semi-Structured Discussion Guide

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ABSTRACT

Background: Pediatric palliative care in Romania is characterized by a low level of development and unequal distribution, creating significant difficulties in accessing services for children with life-limiting illnesses and their families. The absence of a dedicated national strategy, the shortage of specialized personnel, and the presence of socio-economic barriers contribute to increasing the vulnerability of these groups. This study aimed to explore the experiences of parents and caregivers, analyze the perspectives of public institutions and non-governmental organizations involved in providing support to these children, and identify the main barriers and facilitating factors in accessing pediatric palliative care. **Materials and Methods:** The research employed a qualitative design, based on three focus groups conducted using a semi-structured interview guide. Data analysis was carried out using MAXQDA software, through coding and the identification of emerging themes. The sample was selected through purposive sampling to capture diverse perspectives and included 24 participants from Bacău County: parents/caregivers of children with life-limiting illnesses (n = 11), representatives of public institutions (n = 7), and representatives of non-governmental organizations (n = 6), distributed across three focus groups. No individual semi-structured interviews were conducted. **Results:** Data analysis highlighted the complex needs of children and their families across medical, emotional, social, educational, and spiritual dimensions. Parents reported experiences of abandonment within the curative system, emphasizing the importance of pain management and community support. Representatives of public institutions acknowledged a lack of competencies and

intersectoral coordination, while NGOs pointed to structural barriers and low visibility. Key needs include access to specialized services, psychological support, respite care services, financial assistance, and counseling. A major obstacle is the lack of up-to-date statistical data necessary for public policy development. **Conclusions:** Pediatric palliative care must be recognized as a national priority through the development of a dedicated strategy, expansion of services, and strengthening of public–NGO collaboration. An integrated, child- and family-centered approach is required, addressing medical, social, emotional, and spiritual dimensions. Additionally, there is a need to develop professional competencies, increase awareness, and strengthen community support in order to reduce inequalities and improve quality of life.

Keywords: palliative care; pediatrics; life-limiting illnesses; complex needs; perceptions; rehabilitation; access to services

OP 9. 31

Management of Skull Base Meningiomas with Gamma Knife Stereotactic Radiosurgery

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ABSTRACT

Background: Skull base meningiomas are benign tumors frequently located in close proximity to critical neurovascular structures, such as the brainstem, cranial nerves, and major vessels, making complete surgical resection difficult and associated with significant risks. Stereotactic radiosurgery using Gamma Knife represents a modern, non-invasive method that enables precise delivery of radiation to the tumor while minimizing exposure to surrounding healthy tissues. **Materials and Methods:** This paper presents an analysis of data from the literature, correlated with the clinical principles of Gamma Knife radiosurgery in the treatment of benign brain lesions. Therapeutic strategies are evaluated, including the use of single-modality or combined treatment (surgery and radiosurgery), as well as the impact of dosing parameters and fractionation on treatment efficacy and safety. **Results:** The analyzed data indicate that Gamma Knife radiosurgery provides effective long-term tumor control, with high rates of tumor stabilization or volume reduction and a low risk of recurrence. Compared to open surgery, it is associated with reduced morbidity, absence of incisions, minimal infection risk, and rapid recovery. In combined approaches, the use of Gamma Knife following surgical intervention allows treatment of residual, surgically inaccessible tumor tissue, thereby increasing therapeutic efficacy and reducing the risk of complications. **Conclusions:** Stereotactic

Gamma Knife radiosurgery represents a safe and effective option in the management of skull base meningiomas, either as a standalone treatment or in combination with conventional surgery. This approach contributes to optimal disease control and preservation of patients' quality of life.

Keywords: Gamma Knife radiosurgery, skull base meningiomas, combined treatment, benign tumors, stereotactic neurosurgery.

OP 9. 32

Neoadjuvant radiosurgery in secondary brain lesions

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ABSTRACT

Background: Stereotactic radiosurgery is a modern, non-invasive method based on delivering precise doses of radiation focused on tumor tissue, while protecting healthy brain parenchyma.
In the context of secondary brain lesions, current interest focuses on the use of radiosurgery in a neoadjuvant setting, prior to surgical intervention. This strategy aims primarily to achieve clearer lesion delineation and to reduce the risk of intraoperative tumor dissemination and adverse reactions. **Material and Methods:** The neoadjuvant approach is integrated into a multimodal therapeutic concept, in which treatment is tailored to the particularities of each case. Preoperative irradiation can provide better biological tumor control, facilitating subsequent surgical resection and reducing the need for high doses of postoperative radiation. **Results:** Compared to classical strategies, neoadjuvant radiosurgery offers multiple advantages: increased local disease control, reduced risk of recurrence at the tumor bed, limitation of damage to healthy tissues, and decreased complications associated with aggressive interventions.
Its non-invasive nature and favorable safety profile contribute to maintaining patients' quality of life and enabling faster postoperative recovery. **Conclusions:** In conclusion, stereotactic radiosurgery used in a neoadjuvant setting represents a promising direction in the management of secondary brain lesions, optimizing multimodal treatment outcomes by improving tumor control and reducing morbidity.

Keywords*:* stereotactic radiosurgery, tumor control

OP 9.33

Redefining HBV and HDV Management: The Emerging Role of Bulevirtide as a Viral Entry Inhibitor

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ABSTRACT

Background: Chronic hepatitis B virus (HBV) infection remains a major global health burden, particularly when associated with hepatitis D virus (HDV) coinfection, which accelerates progression to cirrhosis and hepatocellular carcinoma. Conventional therapies show limited efficacy against HDV, highlighting the need for novel therapeutic strategies. **Materials and Methods:** A structured review of clinical trials and real-world studies published between 2019 and 2026 was conducted, focusing on adult patients with HBV/HDV coinfection treated with bulevirtide for at least 23 weeks. **Results:** Bulevirtide therapy achieved a ≥2 log reduction in HDV RNA in 54–92% of patients and normalization of alanine aminotransferase (ALT) in 48.8–74% of cases. Improvements in liver stiffness measurements were also reported. The treatment demonstrated a favorable safety profile, with predominantly mild adverse effects. Combination therapy with pegylated interferon-alpha showed enhanced virological responses in selected patients. By inhibiting sodium taurocholate cotransporting polypeptide (NTCP) -mediated viral entry, bulevirtide prevents de novo hepatocyte infection and limits intrahepatic viral spread, representing a shift toward disease-modifying therapy. However, limitations include the need for prolonged treatment, risk of relapse after discontinuation, and limited long-term outcome data. **Conclusions:** Bulevirtide represents a promising therapeutic advance in HBV/HDV coinfection, with significant virological and biochemical benefits. Further studies are required to optimize treatment strategies and evaluate long-term clinical outcomes.

Keywords: HBV/HDV coinfection; bulevirtide; viral entry inhibition; NTCP receptor; chronic hepatitis D; antiviral therapy; liver fibrosis; virological response

OP 9. 34

From Hyper-Adaptation to Metabolic Reconstruction Through Homeopathic and Gemmotherapy Interventions: An Endobiogenic Perspective on Inflammation and Chronic Disease

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ABSTRACT

Background: This study addresses the limitations of the reductionist biomedical model in managing chronic diseases characterized by low-grade inflammation, persistent pain, and multisystem dysfunction, highlighting the need for integrative frameworks applicable in primary care. The objective was to evaluate the clinical relevance of endobiogeny and to explore the integration of homeopathy and gemmotherapy as regulatory interventions. **Material and Methods:** The methodology consisted of a mixed longitudinal analysis, correlating standard biochemical markers with the functional assessment of the endobiogenic terrain and the dynamics of neuroendocrine regulation. **Results:** The results indicate a transition from chronic neuroendocrine hyper-adaptation to release from overregulation, followed by metabolic reconstruction. Transient increases in HbA1c and lipid profile were interpreted as part of an adaptive anabolic rebound rather than pathological deterioration. **Conclusions:** The conclusions support endobiogeny as a coherent physiological framework for understanding the dynamic nature of chronic disease and integrating regulatory therapies, while emphasizing the need for validation through controlled studies.

Keywords: endobiogeny, homeopathy, gemmotherapy

OP 9. 35

Hospital Emergency Plan (White Plan) in Mass Casualty Management: Operational Gaps and Practical Strategies for Response Optimization

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ABSTRACT

Background: Mass casualty incidents place extraordinary demands on emergency departments, pushing clinical teams and institutional systems to their operational limits in ways that rarely surface during routine care. While the White Plan provides a structured organizational framework for hospital response in such events, its real-world effectiveness is shaped less by the quality of the written protocol and more by how well that protocol holds up under conditions of uncertainty, fatigue, and compressed decision-making. **Materials and Methods:** This study offers an operational analysis of the White Plan as implemented in a live emergency department setting, Galați St. Andrew Clinical Emergency Hospital, examining how patient flow actually unfolds, how decisions are made in real time, and where the structure of the plan meets the friction of practice. Areas of focus include triage organization, interdepartmental coordination, and the availability of critical resources such as intensive care and surgical capacity. The analysis surfaces a set of recurrent vulnerabilities: delayed decision-making in the initial response phase, difficulty managing the unorganized influx of patients, limitations in critical care capacity, and a meaningful gap between how the plan is written and how it can realistically be applied. These are not failures unique to one institution, they reflect systemic tensions present across emergency systems when theoretical frameworks encounter operational reality. **Results:** In response, the study proposes a series of targeted improvements: a progressive activation model that scales response intensity to evolving incident severity, earlier autonomous decision-making at the emergency department level, and a simplified command structure during the critical first minutes of intervention. **Conclusions:** Together, these measures aim to improve system responsiveness, sustain operational continuity, and reduce the risk of emergency department overload precisely when it matters most.

Keywords: White Plan, mass casualty incidents, emergency department, operational management, hospital response

OP 9. 36

CAR-T Cell Therapy for HIV Cure: Current Challenges, Advances and Future Directions

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ABSTRACT

Background: Human immunodeficiency virus (HIV) infection remains incurable due to the persistence of latent viral reservoirs despite effective antiretroviral therapy (ART). Chimeric antigen receptor T-cell (CAR-T) therapy has emerged as a novel immunotherapeutic strategy with potential to target and eliminate HIV-infected cells, offering a possible pathway toward a functional cure. **Materials and Methods:** We conducted a structured literature review of studies published between July 2020 and June 2025, focusing on CAR-T cell therapy in HIV infection. A systematic PubMed search identified relevant preclinical, clinical, and translational studies. After applying inclusion and exclusion criteria, 74 studies were selected and qualitatively analyzed with respect to CAR-T design, antiviral efficacy, reservoir targeting, and clinical outcomes. **Results:** Preclinical studies demonstrated that CAR-T cells can specifically recognize and eliminate HIV-infected cells, penetrate viral reservoirs, and exhibit prolonged persistence, particularly when derived from hematopoietic stem/progenitor cells. Advanced strategies, including dual-target CAR constructs, CCR5 gene editing, and combinations with latency-reversing agents or immune checkpoint inhibitors, enhanced antiviral activity and reduced immune exhaustion. Clinical studies confirmed the feasibility and safety of CAR-T therapy in people living with HIV, with modest reductions in viral reservoirs but limited long-term virological control. **Conclusions:** CAR-T cell therapy represents a promising and innovative approach toward achieving a functional HIV cure. However, challenges such as limited persistence, viral immune escape, and the need for standardized clinical evaluation remain significant. Further optimization and well-designed clinical trials are required to establish durable efficacy and safety.

Keywords: HIV cure; CAR-T cells; viral reservoir; gene editing

OP 9. 37

Molecular Mediated Angiogenesis and Vasculogenesis Networks

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ABSTRACT

Background: By stimulating living tissues with proper molecules, the angiogenesis and vasculogenesis processes can be observed. Prostaglandin E1 (PGE1), which is a molecule that widens blood vessels and which is used for several medical purposes, such as treating critical limb ischemia, is a typical leading molecule in angiogenesis studies. Nevertheless, its involvement in vasculogenesis and morphogenesis is a more specific subject in the field of developmental biology and therapeutic research. Vasculogenesis is the embryonic phenomenon in which endothelial progenitor cells generate new blood vessels. This phenomenon is distinct and divergent from angiogenesis, which entails the creation of novel blood vessels extending from pre-existing ones. Morphogenesis is the biological phenomenon responsible for the development of an organism or its components into a specific shape. Embryonic development and tissue regeneration are essential components. Current research is investigating the broader consequences of prostaglandins, such as PGE1, in the fields of developmental biology and regenerative medicine. Gaining knowledge about the impact of PGE1 on morphogenesis could provide valuable insights into congenital vascular abnormalities and innovative approaches for tissue repair and regeneration, especially in limb ischemia. **Material and Methods:** In this study, a histologic and morphogenesis study was carried out on *Artemia salina* napi (first stage of development) by simulating the angiogenesis and morphogenesis processes using PGE1 as the top molecule with vasoactive properties and a series of benopyridyne (3-aminoquinolines, 5-amino quinolines, 8-aminoquinolines, 8-hydroxyquinolines and quinolines, respectively). A series of 30 *Artemia salina* napi were exposed to the compound listed before. Also, a lot of 30 unexposed *Artemia salina* napi was taken into account. In total, 210 *Artemia salina* napi were studied as a model for angionensis and morphogenesis. The study used wet experiments together with imaging reconstruction and graph-generating methodologies.
Results: The results show that PGE1 can initiate the shape of the vessel formation. Also, some quinoline series have a pro-mild morphogenetic and angiogenetic effect. Overall, PGE1 plays a significant role in mediating vasculogenesis and morphogenesis through its vasodilatory, anti-inflammatory, and pro-proliferative effects on endothelial cells. PGE1 is involved mainly in increasing the length of the vessel,

while the number of vascular branching has an all-simulating general impact. However, the molecules with mild vasculogenic effects tend to develop more complex, limited vascular networks, having a more localized role in the angiogenetic process. **Conclusions:** Overall imaging and graph analysis showed significant and distinct properties of the vascular network-derived graph.

Keywords: vasculogenesis, angiogenesis, graph theory, VEGFR2, PGE1, quinoline, *Artemia salina*

OP 9. 38

The Clinical Impact of Carotid Doppler Ultrasound

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ABSTRACT

Background: Carotid Doppler ultrasound is a non-invasive, accessible, and cost-effective imaging technique that is fundamental for the detection of carotid artery disease. Early identification of carotid atherosclerosis is essential, as significant stenosis represents a major risk factor for cerebrovascular events, particularly ischemic stroke. **Materials and methods:** This work presents a narrative overview of the clinical utility of carotid Doppler ultrasound, focusing on patient selection, diagnostic benefits, and its role in guiding further management. Particular attention is given to high-risk populations, including patients with cardiovascular risk factors such as hypertension, dyslipidemia, diabetes, smoking, and chronic kidney disease. The diagnostic pathway, from the initial ultrasound assessment to advanced imaging techniques and therapeutic decision-making, is explored. **Results:** Carotid Doppler ultrasound enables the assessment of blood flow velocities and plaque morphology, allowing accurate grading of carotid stenosis and identification of high-risk lesions. In selected patients, detection of moderate-to-severe stenosis prompts further evaluation through advanced imaging, including angiography, which remains the reference standard for anatomical assessment. These findings directly influence clinical decision-making, guiding the choice between optimal medical therapy and revascularization procedures. In cases of significant stenosis, carotid endarterectomy or carotid artery stenting represent effective therapeutic options for reducing the risk of stroke. **Conclusions:** Carotid Doppler ultrasound serves as a cornerstone in the diagnostic pathway of carotid artery disease, bridging the gap between initial non-invasive evaluation and complex interventional strategies. Its appropriate use in selected patient populations allows early detection of clinically relevant atherosclerosis, facilitates risk stratification, and supports timely referral for revascularization when

indicated. This stepwise approach, from basic imaging to advanced intervention, is essential for improving clinical outcomes and preventing cerebrovascular complications.

Keywords: carotid Doppler ultrasound, carotid stenosis, atherosclerosis, revascularization, endarterectomy, carotid stenting.

OP 9. 39

Evaluation of Clinical Outcomes of Extracorporeal Shock Wave Lithotripsy (ESWL): Annual Analysis at County Emergency Clinical Hospital "Sf. Ap. Andrei" Galați

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ABSTRACT

Background: Urinary lithiasis is one of the most common conditions encountered in urological clinical practice. Extracorporeal Shock Wave Lithotripsy (ESWL) represents a non-invasive therapeutic method for the treatment of reno-ureteral lithiasis, based on the application of high-intensity shock waves to calculi, with the aim of their fragmentation. The aim of the present study is to retrospectively evaluate the efficacy of ESWL between January and December 2025 at the CECH Galați. **Materials and Methods:** During the analyzed period, were performed 209 ESWL sessions in 188 patients, including 113 females and 75 males. Only patients diagnosed with kidney stones were included in the analysis. Thus, 102 patients presented with right renal lithiasis, while 86 patients had left renal lithiasis. Patients were divided into three groups according to the intrarenal location of the lithiasis, as follows: group 1 – upper calyceal stones (33 patients), group 2 – middle calyceal stones (65 patients), and group 3 – lower calyceal stones (90 patients). The mean number of shock waves delivered per procedure was 2340, with an average energy of 100 mJ. The number of ESWL sessions ranged from one to two. Among the 113 female patients included in the study, 15 required a second ESWL session, while among the 75 male patients, 6 required repeat treatment. The post-procedural *stone-free* rate for group 1 was 90.9% after the first session, increasing to 96.9% after the second procedure. In group 2, the success rate was 78.4% after the first session and 90.7% after the second. In group 3, a success rate of 61.1% was recorded after the first procedure, increasing to 70% after the second session. An insufficient response to ESWL was observed in 34 patients (18,08%), requiring further management by retrograde intrarenal surgery. Post-procedural complications included urosepsis in 14 cases, renal subcapsular hematoma in 2 cases, *steinstrasse* in 8 cases, and transient post-procedural hematuria resolving by the second day in 110 patients. **Results:** The results of the study support the efficacy of ESWL in the treatment of urinary lithiasis, given that only 34 out of the 188 patients included required subsequent

minimally invasive intrarenal surgery. **Conclusions:** These data highlight the elevated success rate of extracorporeal shock wave lithotripsy (ESWL) as a non-invasive modality, capable of significantly reducing the need for additional surgical procedures, thereby contributing to decreased morbidity, lower healthcare costs, and faster patient recovery.

Keywords: Extracorporeal Shock Wave Lithotripsy, Urolithiasis, Kidney Stone Treatment.

OP 9. 40

Beyond LDL: The Role of Gut Microbiota and the Metabolome in Cardiovascular Risk

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ABSTRACT

Background: Cardiovascular diseases (CVDs) remain the leading cause of global morbidity and mortality, requiring a multidimensional approach that extends beyond traditional risk factors. Recent evidence highlights the pivotal role of gut microbiota in modulating lipid metabolism, systemic inflammation, and overall cardiovascular risk. This study aims to provide a comprehensive overview of the interconnections between gut microbiota, metabolomic profile, oral health, and cardiovascular pathology, with a particular focus on patients undergoing long-term hospitalization. **Material and Methods:** A narrative review methodology was employed, integrating data from high-impact, PubMed-indexed studies to explore the complex interactions within the gut–heart axis. The findings indicate that microbial dysbiosis contributes to the development and progression of atherosclerosis through mechanisms involving trimethylamine-N-oxide (TMAO), inflammatory cytokines, and alterations in lipid metabolism. Additionally, oral microbiota and periodontal disease emerge as significant contributors to systemic inflammation and cardiovascular burden. **Results:** The results support the concept of a systemic network linking intestinal microbiota, metabolic pathways, and cardiovascular function. This integrative perspective underscores the importance of novel biomarkers and personalized therapeutic strategies targeting microbiome modulation. **Conclusions:** In conclusion, incorporating microbiota, metabolomic, and oral health assessments into cardiovascular risk

stratification may enhance early diagnosis, improve patient outcomes, and support the development of precision medicine approaches in cardiology.

Keywords: cardiovascular disease, gut microbiota, metabolome, lipid metabolism

OP 9. 41

Breast cancer liver metastasectomies - still worth it in a modern oncological approach?

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ABSTRACT

Background: Until recently, stage IV breast cancer was considered beyond curative therapeutic options, with treatment strategies primarily focused on palliation. Studies conducted over time on the surgical management of metastatic disease have demonstrated the feasibility of this approach when combined with preoperative and postoperative oncologic therapies. At the moment, the arising question is whether surgical resection of metastases remains a valid strategy in the context of emerging new generation oncologic therapies. Herein, we present the experience of our center over a five-year period. The inclusion criteria for patient enrollment were established by the multidisciplinary tumor board. It was observed that the incorporation of the surgical sequence potentiated the efficacy of next-generation therapeutic agents with an overall positive impact on long-term survival outcomes. **Material and methods:** Between 2020-2025 six pacients with breast cancer liver metastasis underwent hepatic resection in our clinic. The selection criteria were: good performance status, free disease interval >1 year, localised and well controled liver disease. **Results:** All six patients underwent R0 resections, with no postoperative complications reported. At present, four patients are alive and oncological follow-up shows no evidence of hepatic recurrence. Two of these patients developed metachronous bone metastases, which were controlled through systemic chemotherapy. **Conclusions:** Despite the aggressiveness of the disease and the consideration that stage IV disease generally implies palliative management, studies conducted over time have demonstrated the efficacy of hepatic resections in breast cancer with liver metastases. However, this therapeutic approach is further enhanced by comprehensive oncologic treatment, which has achieved significant advances in recent years.

Keywords: breast cancer, liver metastasis, hepatic resection, sistemic treatment

PP 9.1

Carotid Atherosclerosis Leading to Endarterectomy: The Key Role of Doppler Ultrasound in Diagnosis and Management

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ABSTRACT

Background: Carotid artery Doppler ultrasound is a widely available, non-invasive, and cost-effective imaging modality with no significant associated risks. It enables accurate assessment of blood flow velocities and facilitates the detection of atherosclerotic plaques, including calcified lesions that may lead to clinically significant arterial stenosis requiring surgical intervention. **Materials and methods:** We present the case of a 66-year-old male patient, active smoker, with grade I obesity and a history of chronic kidney disease (CKD) stage IIIB, who was referred for evaluation due to recurrent vertiginous episodes. The patient had no prior history of cerebrovascular events but presented multiple cardiovascular risk factors, including dyslipidemia and smoking. As part of a routine cardiovascular assessment, carotid Doppler ultrasound was performed, revealing significantly increased systolic velocities in the left internal carotid artery (ICA), consistent with high-grade stenosis. The examination identified multiple calcified atherosclerotic plaques with acoustic shadowing, suggesting advanced disease. Further imaging confirmed severe stenosis of the left ICA, while the contralateral artery showed non-significant atherosclerotic changes. **Results:** Given the severity of the stenosis and the associated symptomatology, the patient was referred to vascular surgery and underwent successful left carotid endarterectomy. The postoperative course was favorable, with resolution of vertiginous symptoms and no neurological complications. **Conclusions:** Significant carotid artery stenosis, particularly in the presence of calcified plaques, represents a major risk factor for cerebrovascular events. Early detection through carotid Doppler ultrasound is essential, especially in high-risk patients such as those with CKD, smoking history, and obesity. This case underscores the pivotal role of Doppler ultrasound as a first-line diagnostic tool that can identify advanced atherosclerotic lesions and directly influence therapeutic decision-making, including timely referral for surgical intervention. Routine use of carotid ultrasound in selected populations may contribute to improved clinical outcomes by enabling early diagnosis and prevention of stroke.

Keywords: carotid atherosclerosis, Doppler ultrasound, endarterectomy, chronic kidney disease.

PP 9. 2

Flavonoids in experimental dermatology: impact on tissue architecture in inflammatory skin lesions

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ABSTRACT

Background: Inflammatory dermatoses are defined not only by immune dysregulation but also by profound alterations in skin architecture, involving both epidermal and dermal compartments. In recent years, increasing attention has been directed toward naturally derived bioactive compounds with pleiotropic effects. Among these, flavonoids have emerged as candidates of particular interest, given their capacity to interfere with key inflammatory and oxidative pathways while potentially preserving structural integrity at the tissue level. **Materials and Methods:** The present work is based on experimental models of cutaneous inflammation, with emphasis on murine systems that reproduce the histopathological hallmarks of psoriasis-like lesions. The study design included the administration of flavonoid-rich extracts and subsequent evaluation through histological and morphometric techniques. Parameters of interest comprised epidermal thickness, keratinocyte proliferation patterns, inflammatory infiltrate density, vascular changes, and indicators of dermal matrix organization. Complementary assessment of oxidative stress and inflammatory mediators was also performed. **Results:** Flavonoid treatment was associated with a consistent attenuation of epidermal hyperplasia and a partial restoration of normal differentiation patterns within the epidermis. A noticeable reduction in inflammatory cell infiltration was observed, alongside decreased vascular dilation and a more organized dermal extracellular matrix. These morphological changes were paralleled by a downregulation of pro-inflammatory mediators and a mitigation of oxidative imbalance, suggesting a coordinated effect at both cellular and microenvironmental levels. **Conclusions:** The data indicate that flavonoids act beyond simple anti-inflammatory agents, exerting a modulatory influence on the structural remodeling processes that sustain chronic skin inflammation. By intervening at the interface between immune activation, oxidative stress, and microvascular dynamics, these compounds appear to facilitate a shift toward tissue homeostasis. This integrative effect may be particularly relevant in conditions characterized by persistent architectural disruption, such as psoriasis. Flavonoids demonstrate a measurable impact on the preservation and reorganization of skin tissue architecture in experimental inflammatory settings. Their multimodal mechanism of action supports their potential inclusion in future therapeutic strategies aimed not only at controlling inflammation but also at restoring structural integrity. Further studies are warranted to clarify their molecular targets and to support translational applicability.

Keywords: flavonoids, bioactive compounds, integrity at the tissue level

PP 9. 3

Medical rehabilitation treatment versus analgesic treatment in primar Gonarthrosis versus secondary Gonarthrosis

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ABSTRACT

Background: Through this study we aimed to analyze the impact of recovery on clinical symptoms and quality of life of patients with primary Gonarthrosis compared with that of patients with Osteoarthritis of the knee secondary to alignment disorder. **Material and Methods**: The study was conducted in the Emergency Hospital "Sf Apostol Andrei" , Galati, Department of Medical Rehabilitation in the period 1 June 2023 -30 ianuarie 2026. From all patients we selected a total of 210 patients with Osteoarthritis of the knee that have been grouped into two lots: a group of 162 patients with primary Gonarthrosis and associated comorbidities and group B with secondary Gonarthrosis in the alignment disorders of the lower limb. Subjects included in the study represented 22.85 % of all hospitalized patients with Osteoarthritis of the knee, having aged 57 years and 89 years old ; 81.25 % of them were women, 18.75 % men and presented these comorbidities: 60.41 % Obesity, 47.91 % Trophic disorders, 58.33 % Chronic ischemic heart disease and 70.83 % Hypertension. All patients enrolled in the study received the following treatment: local, cold compress to 10-15 degrees, 15 minutes to 2 hours and 12 hours local topical, systemic painkiller treatment depending on the intensity of pain, anti-inflammatory drugs intramuscularly every 2 days, physiotherapy LASER, US, UL, MDF, and physical therapy in appropriate programs. **Results** : After applying the treatment protocol we obtained the following results : goup A versus group B: VAS pain scale decreased as a percentage of 27% vers 16%, after the first assessment, 45% vs 21% after the second evaluation, after the third assessment 67,5% vs. 42%; WOMAC index was changed from 31,2% to 26,4% at the first assessment , from 38,8% to 29,7% in the second evaluation and 52,9% to 44,1% after the third assessment. LEQUESNE functional index improved in percentage of 87,5 % group A versus 61% group B; noting that a 25% of patients received surgical orthopedic treatment indication

Keywords: gonarthrosis, rehabilitation, analgesia.

PP 9. 4

Integrated Dynamics of Pediatric Lumbar Rehabilitation: A Synergistic Approach via Deep Oscillation and Kinetotherapy - case report

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ABSTRACT

Background: The clinical management of juvenile lumbar disc disorders necessitates a primary focus on musculoskeletal preservation and long-term functional health. **Materials and Methods:** We evaluate the rehabilitative trajectory of a 9-year-old female presenting with symptomatic multi-level disc bulging at the L4-S1 segments, which induced significant mechanical dysfunction. The therapeutic framework prioritized a dual-modality strategy: utilizing Deep Oscillation for biophysical tissue modulation and individualized kinetotherapy to re-establish segmental stability and proper mechanical loading. **Results:** This approach targeted both the inflammatory microenvironment and the neuromuscular control of the immature spine, resulting in rapid physiological adaptation and complete clinical remission. Post-intervention metrics confirmed the restoration of full functional independence and age-appropriate activity levels. Sequential imaging verified the absence of pathological progression, documenting modest morphological refinement and sustained anatomical stabilization of the disc-vertebral units. **Conclusions:** These results demonstrate that a synergistic conservative paradigm effectively leverages pediatric tissue plasticity, providing a definitive and reliable rehabilitative model for early-onset lumbar disc pathology.

Keywords: lumbar disc disorders, deep oscillation, kinetotherapy

PP 9. 5

Knee osteoarthritis in the era of advanced physical therapies: new perspectives in rehabilitation

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ABSTRACT

Background: Knee osteoarthritis (gonarthrosis) represents a chronic degenerative pathology of the knee joint, characterized by the progressive degradation of articular cartilage, changes in the subchondral bone, and alteration of joint biomechanics, with a significant impact on locomotor functionality and quality of life. In the current context of evidence-based medical rehabilitation, advanced physical therapies—including TECAR therapy and the Super Inductive System (SIS)—are integrated into multimodal rehabilitation protocols. This paper aims to provide a critical analysis of the specialized literature regarding the efficiency of TECAR and SIS therapies in the recovery of patients with knee osteoarthritis, focusing on their effects on pain, joint mobility, and overall knee function. **Materials and Methods:** A narrative review of relevant clinical studies was conducted, using the Visual Analogue Scale (VAS), WOMAC score, and range of motion (ROM) as outcome measures. TECAR therapy acts predominantly through thermal and vascular effects, while SIS induces neuromuscular stimulation and neurophysiological modulation. **Results:** Synthesized data indicate pain relief and improvement in joint function for both methods, with complementary effects when used within multimodal approaches combined with kinesiotherapy. **Conclusions:** Integrating TECAR and SIS therapies into the conservative management of knee osteoarthritis represents a modern therapeutic approach with distinct pathophysiological foundations and complementary clinical effects; however, additional randomized clinical trials are required for direct efficacy comparison and the standardization of application protocols.

Keywords: knee osteoarthritis, tecar, SIS, VAS

PP 9. 6

Immunization in Perinatally HIV-Exposed Children: Adherence to Guidelines and Real-World Challenges

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ABSTRACT

Background: HIV-exposed infants and children should receive all vaccines included in the Expanded Programme on Immunization as early as possible, according to periodically updated national schedules. The decline in vaccination coverage in Romania is concerning and may be more pronounced among vulnerable groups. This study aimed to assess vaccination coverage among perinatally HIV-exposed seroreverter children. **Materials and methods:** We evaluated children born to mothers living with HIV, registered at the Infectious Diseases Clinic in Galați and enrolled in the Prevention of Mother-to-Child Transmission (PMTCT) program between 2005 and 2024. Only seroreverter cases were included. Vaccination status was assessed according to the national schedule using data from the National Electronic Vaccination Registry. Children were classified as unvaccinated, partially vaccinated, or fully vaccinated, and results were compared with national epidemiological reports. **Results:** Between 2020 and 2024, 142 children were born to mothers in the PMTCT program; 3 died and 139 were confirmed seroreverters by 18 months. Complete vaccination coverage was 13.67% for BCG, 68.35% for hepatitis B, 46.76% for DTPa, 63.25% for Hib, 66.19% for IPV, 52.23% for pneumococcal vaccine, and 42.45% for MMR—well below the optimal target of >95% and particularly concerning in Galați County. A statistically significant decline was observed for hepatitis B (p=0.030) and MMR (p=0.003). Vaccination status was not associated with maternal education (median 8 years), residence (urban/rural), or birth order. BCG coverage was the lowest. Tuberculosis risk is further increased by maternal history of infection (36% of cases) and the high national prevalence. As a live vaccine, BCG is contraindicated in confirmed HIV-infected children due to the risk of disseminated disease; however, because HIV status cannot always be established at birth, vaccination is often delayed, leaving many children unvaccinated. Contributing factors to low coverage include vaccine hesitancy (7%), unstable residence (5%), poor adherence to medical recommendations, and limited understanding of immunization benefits. **Conclusions:** Although vaccination gaps reflect trends in the general population, they are amplified in this vulnerable group, increasing public health risks. Suboptimal coverage exposes HIV-exposed children to preventable diseases and avoidable morbidity. These children should be prioritized for structured, actively monitored catch-up vaccination programs, alongside targeted interventions to improve adherence and access to immunization services.

Keywords: Vaccination coverage, Perinatal HIV exposure, Seroreverter, PMTCT (Prevention of mother-to-child transmission), Vulnerable populations

PP 9. 7

New era of right ventricular pacing-induced cardiomyopathy treatment

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ABSTRACT

Background: Pacing-induced cardiomyopathy (PICM) arising from chronic right-ventricular (RV) pacing, including single-chamber VVI pacing, is a recognized cause of new or worsening left ventricular (LV) dysfunction and heart failure. Upgrading to more physiologic pacing strategies—most notably cardiac resynchronization therapy (CRT) and conduction-system pacing (CSP) such as His bundle pacing (HBP) or left bundle branch area pacing (LBBAP)—has emerged as a central approach to reverse remodeling and improve clinical outcomes in PICM. **Material and Methods**: This concise abstract synthesizes clinical observations, case reports, and aggregate analyses from the pacing literature addressing PICM management in RV-paced patients. **Results**: In adults and mixed populations, CRT upgrade has been associated with significant increases in LVEF (often ~6–15 percentage points) and reductions in LV end-systolic volumes, translating into improved NYHA class and reduced heart failure hospitalizations. Highlighted evidence supports the conclusion that the benefit of CRT is greater when there is a substantial RV pacing burden and a wider paced QRS duration before upgrade, consistent with the dyssynchrony-driven pathophysiology of PICM. **Conclusions**: For patients with VVI pacing who develop PICM, CRT upgrade remains a foundational therapeutic option with robust data supporting LV reverse remodeling and symptomatic improvement. Conduction-system pacing offers a promising alternative or adjunct, with growing but still evolving evidence. Early identification of PICM and a patient-tailored upgrade strategy—guided by pacing burden, QRS duration, LV function, and comorbidity profile—are essential to optimize outcomes in this population.

Keywords: right ventricular pacing, cardiac systolic dysfunction

PP 9. 8

Recurrent *Escherichia coli* urinary tract infections in a patient with long-standing type 2 diabetes mellitus: a case report

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ABSTRACT

Background: Clinical trials confirm SGLT2 inhibitors effectively treat type 2 diabetes, heart failure, and chronic kidney disease, lowering cardiovascular mortality and improving renal outcomes. Diabetic patients face higher risk of urinary tract infections, which SGLT2 inhibitors may exacerbate due to glycosuria. Nonetheless, sustained use is key for ongoing cardio-renal-metabolic benefits. **Materials and Method:** We present a 62-year-old woman with type 2 diabetes who experienced recurrent Escherichia coli urinary tract infections. Diagnosis was based on clinical symptoms and laboratory results, with urine culture as the gold standard and urinalysis providing additional markers; specific symptoms differentiated lower from upper tract infections. Each episode was treated per antimicrobial susceptibility testing. She has been monitored since 2024 and had two recurrences of E. coli UTI. **Results:** This case is noteworthy as it captures the typical clinical course of a patient with long-standing type 2 diabetes mellitus and recurrent Escherichia coli urinary tract infections, a common uropathogen, with each episode successfully resolved following targeted antibiotic therapy. **Conclusions:** Regular follow-up in type 2 diabetes, early detection of urinary tract infection risk, and precise diagnosis are essential. Targeted antibiotics based on susceptibility testing supported continued SGLT2 inhibitor use, maintaining its cardio-renal benefits.

Keywords: Type 2 diabetes mellitus, Recurrent urinary tract infections, Escherichia coli, Antibiotic susceptibility testing, SGLT2 inhibitors

SECTION 10: ADVANCED RESEARCH IN PHARMACEUTICAL SCIENCES

OP 10.1

UV-Vis spectrophotometric quantification of lycopene in new tomato varieties

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ABSTRACT

Background: Lycopene, a natural carotenoid with remarkable antioxidant properties, is of great interest in the pharmaceutical field due to its therapeutic potential and favorable safety profile. In this context, the present work investigates the efficiency of lycopene extraction and quantification from three new tomato varieties, patented in 2025, with high potential for biomedical applications. **Material and Methods:** The plant material was subjected to a lyophilization process, in order to preserve the bioactive compounds and increase the extraction yield. Subsequently, lycopene was extracted by an ultrasound-assisted method, using a hexane solvent mixture (3:1, v/v), optimized for the solubilization of lipophilic carotenoids. The obtained extracts were analyzed spectrophotometrically in the UV–Vis range to determine the lycopene concentration, with measurements performed at a wavelength of 472 nm. Quantification was performed based on a previously validated calibration curve, characterized by a high correlation coefficient ($R^2 = 0.9911$), which indicates good linearity and reliability of the analytical method. **Results:** The obtained results suggest the existence of variations in lycopene content among the three analyzed varieties, indicating differences associated with the specific characteristics of each variety. **Conclusions:** The study contributes to expanding knowledge regarding the valorization of new tomato varieties as sources of compounds with pharmacological potential and supports the use of modern extraction and analysis methods in their evaluation.

Keywords: lycopene; ultrasound-assisted extraction; UV-Vis spectrophotometry.

OP 10.2

Evaluation of phenolic compounds and biological activity of grape pomace from the vineyards of southeastern Romania

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ABSTRACT

Background: Grape pomace, a by-product of the wine industry, is an important source of phenolic compounds, including phenolic acids, flavonoids and stilbenes, known for their antioxidant and antimicrobial properties. These compounds play an essential role in neutralizing free radicals and inhibiting the growth of microorganisms. The recovery of pomace is part of the principles of the circular economy, contributing to the reduction of waste and the production of value-added products. **Material and Methods:** Grape pomace extracts were obtained using different polar solvents (methanol and ethanol). The phenolic compounds profile was analyzed by high-performance liquid chromatography (HPLC), highlighting the presence of major phenolic compounds. Antioxidant activity was evaluated by the DPPH method, and antimicrobial activity was determined on some bacterial strains using standard methods (agar diffusion and/or determination of the minimum inhibitory concentration). **Results:** HPLC analysis revealed the presence of phenolic compounds in the analyzed samples, with variations depending on the extraction solvent. The extracts obtained in methanol generally showed a higher content of phenolic compounds and a superior antioxidant activity, according to the DPPH test. Regarding antimicrobial activity, the extracts demonstrated a variable inhibitory effect. A positive correlation was observed between the content of phenolic compounds and biological activity. **Conclusions:** The results highlight the importance of phenolic composition and extraction solvent on the biological activities of grape pomace and support the potential of pomace valorization as a source of bioactive compounds with applications in the food and pharmaceutical industries, in accordance with the principles of the circular economy.

Keywords: grape pomace; phenolic compounds; antioxidant activity; antimicrobial activity; HPLC; DPPH; DMSO

OP 10.3

Boundary programming of neuroimmune dynamics: BEACON and the phase logic of precision pharmacotherapy

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ABSTRACT

Background: Contemporary pharmacological strategies in inflammatory and neuroimmune disorders are still largely organised around a bulk-tissue paradigm, in which efficacy is pursued through receptor occupancy, pathway inhibition, or systemic suppression of inflammatory signalling. Although this approach has produced major therapeutic advances, it may not fully capture the principal locus of controllability in complex biological systems. Increasing evidence suggests that immune behaviour is strongly shaped at biological interfaces, where molecular gradients, immune trafficking, and autonomic rhythms are first structured. Here, we propose BEACON (Boundary-Encoded Autonomic-Chemoattractant Orchestration of Neuroimmune dynamics), a conceptual framework in which clinically relevant neuroimmune transitions are governed not primarily by maximising tissue-level drug exposure, but by programming the dynamic boundary conditions of key biological interfaces, including the nasal mucosa, intestinal surface, and skin. Within this view, remission is interpreted not simply as the cumulative effect of pharmacodynamic suppression, but as a dynamical regime shift induced when interface-level signalling reorganises the admissible trajectories of the neuroimmune system. **Material and Methods:** The central hypothesis is that peripheral phospholipid mediators, chemoattractant gradients, and autonomic inputs act as coupled control signals on a shared dynamical landscape. When delivered with appropriate amplitude, temporal ordering, and phase alignment, such boundary-encoded cues may bias the neuroimmune field towards a resolution basin with lower systemic burden than conventional dose-escalation approaches. Therapeutic efficiency therefore becomes a function of phase coherence rather than pharmacological intensity alone. To formalise this proposition, BEACON combines reaction-diffusion boundary formulations for peripheral signalling fields with a reduced dynamical representation of neuroimmune state variables, including inflammatory tone, microglial activation propensity, and symptom-linked outputs such as pain persistence or craving intensity. **Results:** The model predicts phase-dependent entrainment domains, analogous to Arnold-tongue structures in nonlinear systems, in which small shifts in the temporal alignment of peripheral stimuli

generate disproportionately large effects on remission kinetics. This leads to the operational concept of phase-locked remission. A low-infrastructure pilot implementation may integrate three coordinated interventions: intranasal pro-resolving lipid precursors, oral phospholipid microemulsions targeting mucosal and lymphatic trafficking, and transcutaneous vagal nerve stimulation synchronised with autonomic rhythmicity indexed by heart-rate variability. Proposed readouts include reduced lipidomic signatures, peripheral chemoattractant-receptor expression, autonomic synchronisation indices, and composite clinical outcomes across pain, affective dysregulation, and craving-related domains. Two theoretical metrics reinforce falsifiability and translational coherence: Boundary Information Gain, estimating how much interface-restricted measurements inform internal neuroimmune states, and the Phase Response Remission Curve, quantifying remission sensitivity to controlled phase displacements between biochemical and autonomic interventions. **Conclusions:** If validated, BEACON would relocate the centre of gravity of precision pharmacotherapy from tissue-level receptor saturation to the programming of neuroimmune boundary conditions.

Keywords: Neuroimmune boundary dynamics; Phase-programmed pharmacotherapy; Phospholipid-chemoattractant signalling axis; Autonomic-immune phase coupling.

OP 10.4

Research Functional Ingredients obtained through fermentative bioprocesses with probiotics and postbiotics: emerging applications in nutrition and pharmaceutical sciences

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ABSTRACT

Background: The growing interest in preventive healthcare and evidence-based nutraceutical products has intensified the search for innovative functional ingredients obtained through sustainable biotechnological approaches. Fermentative bioprocesses involving probiotics and postbiotics represent a promising strategy for generating bioactive compounds with potential applications in nutrition and pharmaceutical sciences. The present review aims to highlight current perspectives regarding the formulation of functional ingredients derived from controlled fermentation processes using probiotic strains, with particular emphasis on postbiotic fractions and their biological relevance. **Material and Methods:** Recent studies demonstrate

that selected microorganisms such as *Lactiplantibacillus plantarum* are able to produce a diverse range of beneficial metabolites, including short-chain fatty acids, exopolysaccharides, antioxidant enzymes, peptides, vitamins, and organic acids. **Results:**These compounds may contribute to gut microbiota modulation, enhancement of intestinal barrier function, reduction of oxidative stress, immune support, and metabolic balance. Compared with conventional live probiotic formulations, postbiotic-based ingredients offer several technological and safety advantages, including improved physicochemical stability, easier standardization, extended shelf life, and reduced microbiological risks. Such characteristics support their incorporation into innovative dosage forms and functional products, including powders, capsules, sachets, and fermented beverages. **Conclusion:** From a translational perspective, the integration of probiotics/postbiotics into functional formulations may provide new opportunities for personalized nutrition and complementary preventive strategies. However, additional studies remain necessary for process optimization, dose standardization, clinical validation, and regulatory harmonization. Overall, ingredients obtained through probiotic and postbiotic fermentative bioprocesses represent a rapidly evolving frontier with significant potential at the intersection of microbiome science, nutrition, and pharmaceutical innovation.

Keywords: postbiotics, probiotics, fermentation, functional ingredients, *Lactiplantibacillus plantarum*, nutraceuticals, antioxidants.

OP 10.5

Synthesis, characterization and evaluation of biguanide derivatives with antidiabetic potential: *in vitro* and *in silico* studies

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ABSTRACT

Background: Type 2 diabetes mellitus represents a major global health problem. Metformin, a biguanide compound of first-line therapy in the treatment of this disorder, is widely used due to its antihyperglycemic efficacy. However, the adverse reactions associated with it limit its use in a considerable percentage of patients, which necessitates the development of new biguanide derivatives with improved activity and a superior safety profile. **Materials and methods:** A series of biguanide derivatives was synthesized by the

condensation of cyanoguanidine with aliphatic and aromatic amines in n-butanol medium, using as synthesis method the obtaining of metformin. The obtained compounds were structurally analyzed by IR spectroscopy and mass spectrometry. The biological activity was evaluated *in vitro* by α-amylase and α-glucosidase inhibition assays, and the antioxidant potential was investigated by the DPPH, FRAP and TAC methods. The pharmacokinetic profile was estimated *in silico* by ADME analysis. **Results:** All 10 biguanide compounds were successfully synthesized and structurally confirmed by IR spectroscopy and mass spectrometry, demonstrating agreement with the theoretical molecular masses. In the *in vitro* tests, compounds C4, C8, C9 and C10 stood out both through the inhibition activity of α-amylase and α-glucosidase, as well as through the antioxidant potential evaluated by the DPPH, FRAP and TAC assays. The *in silico* predictive evaluation of the pharmacokinetic properties (ADME) highlighted that the same compounds present favorable parameters of absorption, distribution, metabolism and elimination, according to the physicochemical criteria and Lipinski's rule of five. **Conclusions:** Following the integrated evaluation, compounds C4, C8, C9, and C10 were identified as the most promising for optimization and future in vivo studies, combining efficiency in the inhibition of specific enzymes, antioxidant potential, and predictable pharmacokinetic properties. The study highlights the value of the combined *in vitro* and *in silico* approach for the selection of biguanide derivatives with optimized antidiabetic potential and reduced risk of adverse reactions.

Keywords: diabetes mellitus, biguanides, amines, cyanoguanidine.

OP 10.6

Structural elucidation of sulfonamide derivatives with antidiabetic potential, using complementary techniques: UV-Vis, IR, NMR, MS spectroscopy, and CSS

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ABSTRACT

Background: Diabetes mellitus is a significant global public health challenge that necessitates the ongoing development of novel therapeutic agents. Sulfonamide derivatives are notable for their diverse biological activities, including the modulation of blood glucose levels. **Material and Methods:** The present study

focuses on the synthesis and comprehensive structural characterization of new sulfonamide compounds to ensure the purity and chemical identity required for subsequent pharmacological evaluation. A multidisciplinary analytical strategy was implemented to confirm molecular architecture. UV-Vis spectroscopy facilitated the analysis of electronic transitions and the characterization of conjugated systems. FT-IR spectroscopy identified key functional groups, with particular attention to the vibration bands characteristic of the sulfonamide group (-SO_2NH-). Nuclear Magnetic Resonance (^{1}H-NMR and ^{13}C-NMR) provided detailed insights into the carbon framework and proton environments, confirming substituent positions. Mass spectrometry (MS) established the exact molecular mass and fragmentation patterns, supporting the proposed empirical formula. Thin-layer chromatography (TLC) was employed to monitor reaction progress and assess compound purity. **Results:** Integration of spectroscopic and chromatographic data enabled complete structural elucidation of the new derivatives. The findings confirm the successful synthesis of the target compounds with high purity. **Conclusion:** These structural results support structure-activity relationship (SAR) hypotheses and provide a rationale for advancing these molecules to *in vitro* and *in vivo* screening for hypoglycemic activity.

Keywords: UV-Vis, IR, RMN, MS, TLC, synthetic sulfonamide.

OP 10.7

The relevance of *in vivo* studies in the evaluation of sulfonamide derivatives: an integrative perspective

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ABSTRACT

Background: Sulfonamide derivatives constitute an essential class of compounds in pharmaceutical chemistry, exhibiting diverse applications ranging from antimicrobial agents to oral hypoglycemic agents. While *in silico* techniques and *in vitro* assays have advanced significantly and provide valuable insights into receptor affinity and chemical purity, these methods do not fully capture the pharmacokinetic and pharmacodynamic complexities present in living organisms. Consequently, *in vivo* studies remain

indispensable for validating the safety and therapeutic efficacy of new sulfonamide derivatives. **Material and Methods:** This review critically examines literature published over the last decade regarding the *in vivo* performance of novel sulfonamides. Data were systematically retrieved from major international databases, including PubMed, Scopus, Web of Science, and ScienceDirect, using targeted keywords such as "sulfonamide derivatives," "in vivo toxicity," and "hypoglycemic activity." The methodology focuses on comparing experimental data from living organisms against theoretical predictions to evaluate how factors such as bioavailability, metabolic pathways, and systemic toxicity are addressed in current research. **Results:** The integrative analysis demonstrates that *in vivo* studies continue to serve as the "gold standard" in the sulfonamide drug discovery process. The findings reveal that empirical data from living models frequently refine or challenge *in vitro* predictions, particularly concerning real-time metabolic stability and organ-specific toxicity, which are critical for determining a compound's clinical potential. **Conclusions:** The results underscore the necessity of a rigorous transition from *in vitro* to *in vivo* experimentation. This review provides a theoretical framework to guide researchers in optimizing molecular design, ensuring that the development of sulfonamide derivatives is grounded in a comprehensive understanding of biological interactions to improve clinical safety and therapeutic outcomes.

Keywords: *in vivo* studies, type 2 diabetes mellitus, sulfonylureas, animal models, structure-activity relationship

OP 10.8

Thiazolyl-amino-pyrimidine hybrid molecules: from synthesis to molecular characterization and ADMET prediction

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ABSTRACT

Background: The present study describes the design, synthesis, and comprehensive evaluation of a series of novel thiazolyl-amino-pyrimidine hybrid molecules. The synthetic strategy was developed to efficiently construct the targeted heterocyclic framework, affording the desired compounds in moderate to good yields. **Material and Methods:** Structural elucidation and confirmation of the synthesized derivatives were

achieved through complementary spectroscopic techniques, including mass spectrometry (MS), nuclear magnetic resonance (^{1}H and ^{13}C NMR), and infrared spectroscopy (IR), which collectively validated the proposed molecular structures. To explore their potential biological relevance, molecular docking studies were performed against selected biological targets, providing insights into binding modes, key intermolecular interactions, and structure–activity relationships. **Results:** The results obtained suggest favorable interactions within the active site, supporting the potential of these hybrids as promising lead structures. Furthermore, in silico ADMET (absorption, distribution, metabolism, excretion, and toxicity) predictions were conducted to evaluate the pharmacokinetic profile and drug-likeness of the synthesized compounds. **Conclusions:** The majority of the analyzed molecules exhibited acceptable ADMET properties, indicating a suitable balance between efficacy and pharmacokinetic behavior. Overall, this integrated experimental and computational approach highlights thiazolyl-amino-pyrimidine hybrids as valuable scaffolds for further optimization and development in medicinal chemistry.

Keywords: pyrimidine hybrids; heterocyclic compounds; organic synthesis; molecular docking; ADMET prediction

OP 10.9

Juniperus oxycedrus supercritical extract: *in vitro* antibacterial activity against *Staphylococcus aureus*, and *in silico* ADMET estimation on phenolic compounds

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ABSTRACT

Background: Concerns regarding antibiotic resistance in bacteria have sparked increased interest in alternative bioactive agents from natural sources. Medicinal and aromatic plants, a rich source of bioactive compounds with antimicrobial properties and have been used in traditional medicine to treat common health conditions. This study evaluates the supercritical fluid extract obtained from the berries of *Juniperus oxycedrus* in preliminary tests for *in vitro* antibacterial activity against *Staphylococcus aureus* ATCC 25923, as well as bioinformatics assessments of absorption, distribution, metabolism, excretion, and toxicity (ADMET). **Material and Methods:** The phenolic compounds present in the extract were characterized using reverse-phase high-performance liquid chromatography (RP-HPLC). The identified compounds

included protocatechuic acid, ferulic acid, syringic acid, apigenin, and luteolin. The antibacterial potential against *S. aureus* was assessed using the microdilution assay to determine the Minimal Inhibitory Concentration (MIC) and Minimal Bactericidal Concentration (MBC). Additionally, the effect of the extract on the growth curve kinetics of *S. aureus* was monitored. For the bioinformatics investigation, SwissADME and ProTox-3.0 prediction software were utilized, focused on the identified phenolic compounds as key molecules. **Results:** The results demonstrated that the juniper extract inhibited and prolonged the bacterial growth depending on the concentration of the extract. The software predictions indicated that the studied phenolic compounds might exhibit high gastrointestinal absorption, along with potential interactions with metabolic mediators and pathways. **Conclusions:** The combined *in vitro* and *in silico* findings from this study support the use of *J. oxycedrus* berries supercritical extract as an alternative or complementary strategy for the pharmacological treatment targeting *S. aureus*.

Keywords: *Juniperus oxycedrus,* green extraction, antibacterial activity

OP 10.10

Prediction of bioavailability and food–drug interactions using *in vitro* and *in silico* models

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ABSTRACT

Background: Oral administration is the main route of drug administration due to its safety, convenience and increased patient compliance. The central objective of pharmaceutical research is to predict pharmacokinetic behavior from the preclinical phase in order to reduce the risk of failure in the clinical stages. A critical factor in this assessment is the food effect, which can significantly influence the absorption and bioavailability of active substances. Regulatory agencies such as the FDA - *Food and Drug Administration*, EMA - *European Medicines Agency*, PMDA - *Pharmaceuticals and Medical Devices Agency*, recommend evaluating the effect of food during the development stage, especially under high-fat meal conditions. **Material and Methods:** Pharmacokinetics includes the processes of absorption, distribution, metabolism and excretion, described by essential parameters such as maximum plasma concentration (C_{max}), time to reach it (T_{max}) and area under the curve (AUC), which reflects the total exposure of the body to the drug. Food–drug interactions can significantly influence these parameters

through multiple mechanisms, including enzymatic inhibition (juice inhibits CYP_3A_4, increasing plasma concentrations of drugs such as felodipine or atorvastatin), enzymatic induction and physicochemical interactions (dairy products can form insoluble complexes with tetracyclines, decreasing their absorption). In this context, *in silico* methods, based on mathematical modeling, are valuable tools for predicting the pharmacokinetic profile and optimizing doses. Compartmentalized models that describe the organism as one or more compartments to establish pharmacography or physiology-based pharmacokinetic (PBPK) models, using platforms such as Simcyp or GastroPlus, as well as artificial intelligence-supported structure–property relationships (QSPR) allow the estimation of pharmacokinetic parameters and reduce preclinical costs. **Results:** During the same time, the use of biorelevant media, such as FaSSIF (Fasted State Simulated Intestinal Fluid) and FeSSIF (Fed State Simulated Intestinal Fluid), together with dissolution tests performed using standardized USP I - II apparatus, as well as permeability models, such as the CaCo-2 cell model (a cell line derived from human colorectal adenocarcinoma, used to simulate the intestinal barrier), allows the simulation of gastrointestinal media under laboratory conditions. All these methods *in vitro* facilitate the evaluation of drug behavior under relevant physiological conditions, highlighting the differences between the fasted and fed states. In particular, FaSSIF and FeSSIF media reproduce the composition of intestinal fluids depending on the presence of food, including bile salts and phospholipids, which lead to the formation of mixed micelles capable of increasing the solubility of lipophilic compounds and influencing the dissolution process of drugs with reduced solubility. **Conclusions:** The integration of *in vitro* and *in silico* methods through *in vitro–in vivo* correlations (IVIVC) is an essential strategy in the development of modern pharmaceutical dosage forms. These techniques allow the prediction of food-drug interactions, dose optimization and increased therapeutic safety, offering an efficient and ethical alternative to extensive *in vivo* studies.

Keywords: *in vitro* methods, dissolution tests, oral absorption, bioavailability.

OP 10.11

Plant extracts - a viable alternative to drug therapies in dentistry

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ABSTRACT

Background: In dentistry, herbal compounds are increasingly being utilized to address common issues such as tooth pain, gum inflammation, and oral lesions. Dental diseases rank among the most prevalent health concerns globally, with oral health being closely linked to overall quality of life, extending beyond mere

functionality of the craniofacial complex. Herbal agents with antiseptic, antibacterial, antimicrobial, antifungal, antioxidant, antiviral, and analgesic properties are becoming essential tools in dental care. Conditions such as dental caries, periodontal disease, and endodontic infections are primarily caused by well-known bacterial and fungal pathogens, including *Streptococcus mutans*, *Porphyromonas gingivalis*, and *Candida albicans*. Preventive dental care predominantly focuses on maintaining oral hygiene to minimize bacterial biofilm formation. While chemical agents such as chlorhexidine, hyaluronic acid, and fluoride are commonly used in mouth rinses and toothpaste, they may come with clinical drawbacks, such as tooth discoloration, altered taste, dry mouth, and irritation of the oral mucosa. **Material and Methods:** Research indicates that numerous herbs possess antibacterial, anti-inflammatory, and analgesic properties, making them valuable in managing conditions such as gingivitis, periodontitis, and toothaches. **Results:** Commonly used herbs in dentistry include clove, known for its analgesic effects; aloe vera, which aids in healing and reducing inflammation; and peppermint, often used for its soothing properties and freshening breath. Other herbs such as myrrh, sage, and turmeric also contribute significantly to oral health by promoting gum health and reducing plaque formation. **Conclusion:** Despite the historical use of these herbs, there remains a need for more rigorous scientific studies to fully understand their mechanisms of action and potential side effects. This exploration into herbal medicine not only highlights the importance of traditional practices, but also encourages a more comprehensive approach to oral healthcare, integrating both herbal and conventional methods for optimal patient outcomes.

Keywords: herbal, dentistry, periodontal disease, *Streptococcus mutans*

OP 10.12

Formulation and evaluation of topical creams based on plant extracts from *Paeonia peregrina*, *Paeonia tenuifolia* and *Cotinus coggygria*

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ABSTRACT

Background: This paper presents research regarding the formulation and evaluation of topical creams containing plant extracts obtained from *Paeonia peregrina*, *Paeonia tenuifolia* and *Cotinus coggygria*. These botanical species were selected due to their rich content in flavonoids, tannins, and phenolic compounds, known for their antioxidant, antimicrobial and soothing properties on the skin. **Material and**

Methods: The plant extracts were obtained by hydroalcoholic maceration using 70% ethanol, followed by filtration and partial concentration. Afterwards, the extracts were incorporated into oil-in-water (O/W) emulsion cream bases, resulting in three experimental formulations. The obtained creams were evaluated by organoleptic examination, physicochemical characterization, stability testing and microbiological assessment. **Results:** The results showed homogeneous and stable formulations, with appropriate appearance and skin-compatible pH values ranging between 5.4 and 5.8. No phase separation or major consistency changes were observed during stability studies. Microbiological testing indicated inhibitory activity against Staphylococcus aureus, Escherichia coli and Candida albicans, the most pronounced effect being recorded for the cream containing *Cotinus coggygria* extract. **Conclusions:** Due to the presence of bioactive secondary metabolites, the studied extracts contributed to obtaining topical preparations with significant antioxidant and antimicrobial potential. The results support the valorization of these plant species as promising natural sources for the development of innovative pharmaceutical and cosmetic topical products.

Keywords: plant extracts, topical creams, antioxidant activity, antimicrobial activity, *Paeonia peregrina*, *Cotinus coggygria*

OP 10.13

Design, synthesis and *in silico* evaluation of novel hippuric acid derivatives

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ABSTRACT

Background: Cancer remains one of the leading causes of mortality worldwide and is characterized by uncontrolled cellular proliferationAlthough numerous anticancer drugs with different mechanisms of action have been developed and introduced into clinical practice, their therapeutic success is often limited by issues related to efficacy and safety. Conventional chemotherapy, in particular, presents several well-known limitations, including poor selectivity toward cancer cells, limited bioavailability, the emergence of drug resistance, and the occurrence of significant adverse effects. For these reasons, the discovery and development of new anticancer agents with improved therapeutic performance and lower toxicity remains a major focus of current oncology research. **Methods and materials:** A series of novel micromolecular derivatives were synthesized starting from hippuric acid and various substituted benzonitrile derivatives.

The obtained compounds were structurally characterized using spectroscopic techniques, including FT-IR and MS, in order to confirm the formation of the targeted molecular structures. In addition, an in silico evaluation was performed to investigate the pharmacokinetic properties with ADMET profile and potential biological activity of the synthesized compounds by molecular docking studies. **Results:** The obtained results confirmed the proposed chemical structures of the synthesized compounds, the spectroscopic data being consistent with those reported in the relevant scientific literature. In addition, molecular docking studies indicated that all investigated derivatives displayed favorable binding affinities toward the selected biological target, suggesting stable interactions within the active site of the receptor. **Conclusion:** The continuous development and investigation of new hippuric acid derivatives represents an expanding area of interest in medicinal chemistry. The promising results obtained from the in silico analyses suggest that these compounds may interact favorably with the selected biological target. However, further studies are required to validate these findings, including both in vitro and in vivo assays, in order to confirm the biological activity and therapeutic potential of the synthesized derivatives.

Keywords: anti-cancer derivatives, computational chemistry, hippuric acid derivatives

OP 10.14

Formulation of topical preparations with bee venom and cobra venom – a comparative approach

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ABSTRACT

Background: Animal venoms represent valuable sources of bioactive compounds with applications in dermatology and skincare. However, their incorporation into topical pharmaceutical forms is limited by issues related to the stability and skin permeability of protein components. In this context, bee venom and cobra venom have attracted interest for the development of topical formulations, yet comparative data obtained under identical formulation conditions remain limited. **Material and Methods:** This paper presents the development of topical formulations using a comparative approach. Oil-in-water emulsions and hydrophilic gels were formulated using biocompatible excipients suitable for cutaneous application. Bee venom (*Apis mellifera*) and cobra venom (*Naja kaouthia*) were used in the study. The experimental design was developed to allow direct comparison between the two types of venoms by using identical formulation

bases and two similar concentration levels, with the incorporation of active substances under controlled conditions to maintain the stability of bioactive compounds. **Results:** The formulations were successfully prepared, exhibiting appropriate organoleptic characteristics and good homogeneity. Physicochemical evaluation, *in vitro* permeability studies, and the assessment of biological activities are currently in progress. **Conclusions:** This work establishes a relevant experimental framework for the comparative investigation of the potential of the two types of venoms in topical formulations. This approach contributes to the development of innovative pharmaceutical systems with applications in dermatology and skin care.

Keywords: bee venom; cobra venom; topical formulations; comparative study; pharmaceutical forms

OP 10.15

Pharmacokinetics and safety of dietary supplements: implications for dentistry

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ABSTRACT

Background: Dietary supplements are increasingly used by the general population for preventive, therapeutic, or performance-related purposes, often without medical or dental supervision. In dental practice, this trend has direct relevance because many supplements may influence bleeding risk, inflammatory responses, wound healing, bone metabolism, immune modulation, oxidative balance, and drug interactions with medications commonly prescribed in dentistry. Despite their frequent perception as "natural" and therefore safe, dietary supplements may present clinically significant pharmacokinetic and safety concerns, particularly in patients undergoing oral surgery, implant therapy, periodontal treatment, or complex restorative rehabilitation. **Material and Methods:** This review aims to examine the pharmacokinetic characteristics and safety profile of dietary supplements with potential implications for dentistry. Particular attention is directed toward absorption, distribution, metabolism, and elimination pathways, as well as interindividual variability related to age, systemic disease, polypharmacy, liver and renal function, and chronic supplement use. The review also addresses clinically relevant supplement–drug interactions involving non-steroidal anti-inflammatory drugs, antibiotics, anticoagulants, antiplatelet agents, corticosteroids, and local anesthetics with vasoconstrictors. **Results:** Supplements such as omega-3 fatty acids, vitamin D, calcium, magnesium, probiotics, coenzyme Q10, herbal products, antioxidants, and immunomodulatory preparations are considered in relation to oral health, perioperative safety, and evidence-based dental decision-making.
From a dental perspective, the main challenge is not only to identify potentially beneficial compounds, but also to distinguish evidence-supported use from empiric or excessive consumption. In oral surgery and

implant dentistry, supplements affecting coagulation, inflammation, bone turnover, and tissue repair require particular attention. Similarly, in periodontal and mucosal conditions, adjunctive supplementation may be biologically plausible, but clinical recommendations must be grounded in safety data, pharmacokinetic understanding, and well-designed clinical studies. **Conclusions:** The integration of supplement history into routine dental anamnesis represents an important step toward safer personalized care. Dentists should be aware that dietary supplements may modify therapeutic response, perioperative risk, and postoperative outcomes. Future doctoral research in this field may contribute to the development of practical risk-assessment models, interdisciplinary clinical protocols, and evidence-based recommendations for the safe use of dietary supplements in dental medicine.

Keywords: dietary supplements; pharmacokinetics; safety; dentistry; oral surgery; drug interactions; implant dentistry; personalized dental care.

PP 10.1

Polymeric biomaterials used in bone regeneration

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ABSTRACT

Background: Bone regeneration represents a major field of interest in orthopedics, maxillofacial surgery and regenerative medicine due to the increasing incidence of traumatic, degenerative and post-resection bone defects. In recent decades, polymeric biomaterials have become a promising alternative to autologous and allogenic bone grafts because of their adaptable biological and mechanical properties. These materials provide structural support for cell proliferation, osseointegration and new bone formation, thereby contributing to the acceleration of the healing process. **Material and Methods:** Polymers used in bone regeneration can be classified into natural polymers, such as collagen, chitosan, alginate and hyaluronic acid, and synthetic polymers, such as polylactic acid (PLA), polyglycolic acid (PGA) and PLGA copolymer. **Results:** Natural biomaterials exhibit high biocompatibility and favorable bioactive properties, while synthetic polymers allow precise control over degradation and mechanical characteristics. Their association with growth factors, stem cells, or bioactive nanoparticles has led to the development of three-dimensional scaffolds capable of mimicking the bone extracellular matrix. Modern technologies such as electrospinning and 3D printing have enabled the production of customized structures with optimized porosity and architecture for tissue regeneration. Nevertheless, challenges related to mechanical strength, degradation rate, and complete integration into host tissue persist. **Conclusions:** In conclusion, polymeric biomaterials

represent an innovative and continuously evolving direction in bone regeneration, with the potential to significantly improve therapeutic outcomes and patients' quality of life. Future research is focused on the development of intelligent, bioactive, and personalized biomaterials capable of reproducing the properties of natural bone as closely as possible.

Keywords: bone regeneration, polymeric biomaterials, tissue engineering

PP 10.2

Molecular mechanisms of toxicity of plants with anxiolytic and sedative effects

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ABSTRACT

Background: The use of anxiolytic and sedative dietary supplements has increased in recent years, driven by the high prevalence of anxiety disorders and the common perception that natural products are are free of risks. **Materials and methods:** The aim of this study is to identify, based on the literature, the molecular mechanisms of toxicity associated with *Withania somnifera*, *Piper methysticum*, and *Valeriana officinalis*, and to evaluate their toxicological profile using molecular docking and QSAR methods based on the chemical structure of bioactive compounds. **Results:** Studies indicate an increased risk of hepatotoxicity for *Withania somnifera* and *Piper methysticum*, through mechanisms such as oxidative stress, mitochondrial dysfunction, inhibition of hepatic drug-metabolizing enzymes, and accumulation of reactive metabolites, as well as a potential neurodepressive effect of *Valeriana officinalis* via modulation of GABAergic receptors, especially at high doses or when combined with other sedatives. Molecular docking studies have revealed interactions of withanolides, kavalactones, and valerenic acid with GABAergic receptors, CYP450 enzymes, and proteins involved in apoptosis, while QSAR analyses have indicated a structure-dependent toxicological potential, including hepatotoxic and neuroactive effects. **Conclusions:** The integration of these approaches contributes to a better understanding of the potential mechanisms of toxicity and to the assessment of the safety of these supplements.

Keywords: dietary supplements; hepatotoxicity, phytotoxicology

PP 10.3

Development of novel biocompatible ketoconazole derivatives: synthesis, structural characterization and cell viability assessment

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ABSTRACT

Background: Wound healing is a complex process essential for maintaining skin integrity; however, the rise of antibiotic-resistant bacteria limits therapeutic options, highlighting the critical need for new antimicrobial agents. In this context, this research focused on the design and synthesize a novel series of ketoconazole derivatives with potential antimicrobial properties, specifically tailored for the treatment of infected chronic wounds. The research aims to bridge the gap between effective antimicrobial action and the preservation of skin cell viability. **Materials and methods**: Ketoconazole derivatives were obtained through an initial reaction with an excess of hydrazine hydrate, followed by condensation with benzaldehydes and cyclization with chloroacetyl chloride to form a β-lactam ring. The biocompatibility of the derivatives was rigorously evaluated using the MTT [3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide] colorimetric assay. Testing was performed on a standard mammalian cell model, the NCTC (clone L929) mouse fibroblast cell line, across a range of concentrations (100, 250, 500, 750, 1000, and 1500 µg/mL) to establish the cytotoxicity profile. Cell viability in the presence of the azole compounds was quantified using the MTT spectrophotometric assay after 24 and 48 h of exposure, while cellular morphology was examined after 48 h to identify potential structural alterations induced by the samples. **Results**: After the synthesis reactions, six compounds were obtained and characterized from a physicochemical perspective and FTIR analysis verified the successful completion of the condensation reactions. The MTT assay revealed that the derivatives exhibit dose-dependent cytotoxicity but maintain favorable safety profiles at therapeutic concentrations, supporting their suitability for topical application. **Conclusions**: The synthesized derivatives represent promising candidates for topical antimicrobial therapy. Their high biocompatibility provides a robust foundation for future integration into bioactive polymeric films. These findings pave the way for innovative, non-cytotoxic treatments for wound infections.

Keywords: ketoconazole derivatives; MTT assay; fibroblast cytocompatibility; wound healing.

PP 10.4

Dietary supplement use in hildren with Cocngenital heart disease: A PRISMA-based review

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ABSTRACT

Background: Children with congenital heart disease (CHD) are vulnerable to malnutrition, micronutrient deficiency, postoperative complications and polypharmacy, making dietary supplement use clinically relevant but insufficiently standardized. This study aimed to evaluate the safety and clinical impact of dietary supplements and nutritional interventions in pediatric CHD.
Materials and Methods: A PRISMA-based systematic search was performed in PubMed, Web of Science and Scopus for studies published between 2016 and 2026. Search terms combined pediatric CHD with dietary supplements, vitamins, minerals, probiotics, prebiotics, nutraceuticals and safety-related outcomes. After deduplication, 50 unique records were screened; 16 studies were assessed for eligibility and 11 were included in a stratified quantitative synthesis. Because of substantial heterogeneity, no global meta-analysis was performed. Event rates, risk ratios, absolute risk reductions and mean differences were extracted or calculated when available.
Results: Included interventions involved probiotics, vitamin D, citrulline, iron and structured nutritional management. In a randomized trial of 60 children with tetralogy of Fallot, vitamin D stoss therapy increased postoperative day-1 vitamin D levels compared with controls (42.80 ± 28.38 vs. 10.38 ± 5.23 ng/mL; mean difference 32.42 ng/mL), without significant reductions in ventilation time, ICU stay or inotropic duration. Citrulline supplementation in pediatric CHD surgery increased 12-hour plasma citrulline concentrations above the protective threshold (42 vs. 16 µmol/L; p = 0.039) and no treated patient had mean pulmonary artery pressure >20 mmHg, compared with 67% of control measurements. Nutritional risk management in 174 infants and toddlers reduced malnutrition at 6 months: HAZ <−2, 7/87 vs. 16/87 (RR 0.44); WAZ <−2, 5/87 vs. 15/87 (RR 0.33); WHZ <−2, 7/87 vs. 18/87 (RR 0.39).
Conclusion: Targeted supplementation and nutritional management may improve biochemical, cardiopulmonary and growth-related outcomes in pediatric CHD, but evidence remains heterogeneous and requires safety-oriented interpretation.

Keywords: congenital heart disease; children; dietary supplements; nutritional interventions; vitamin D; probiotics; citrulline; safety.