UNIVERSITATEA DE MEDICINĂ, FARMACIE, ȘTIINȚE ȘI TEHNOLOGIE „GEORGE EMIL PALADE” DIN TÂRGU MUREȘ

50 de ani de la decernarea premiului Nobel (1974 - 2024)

ZILELE UMFST 2024 G.E. Palade Târgu Mureș

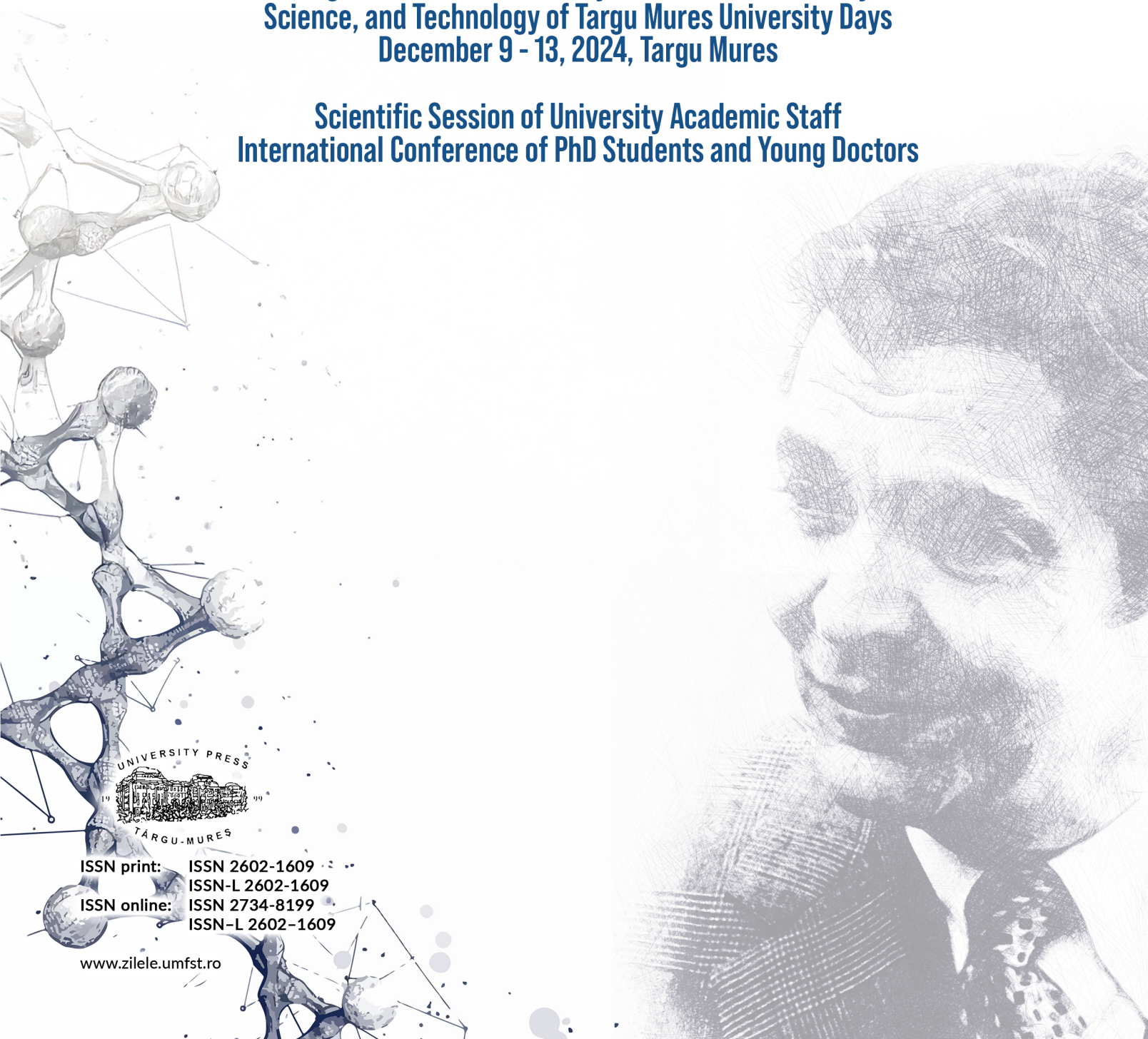
9 - 13 decembrie 2024

# BOOK of ABSTRACTS

No. 7/2024

## George Emil Palade University of Medicine, Pharmacy, Science, and Technology of Targu Mures University Days December 9 - 13, 2024, Targu Mures

## Scientific Session of University Academic Staff International Conference of PhD Students and Young Doctors



UNIVERSITY PRESS 19 99 TÂRGU-MUREȘ

ISSN print: ISSN 2602-1609
ISSN-L 2602-1609
ISSN online: ISSN 2734-8199
ISSN–L 2602–1609

www.zilele.umfst.ro

# BOOK of ABSTRACTS

**No. 7/2024**

## George Emil Palade University of Medicine, Pharmacy, Science, and Technology of Targu Mures University Days
## December 9 - 13, 2024, Targu Mures

## Scientific Session of University Academic Staff
## International Conference of PhD Students and Young Doctors

# Table of contents

# Scientific Session of University Academic Staff Medicine and Pharmacy

George Emil Palade University of Medicine,
Pharmacy, Science, and Technology of Targu Mures
University Days

December 9-13, 2024, Targu Mures, Romania

## Scientific Session of University Academic Staff

### ORGANIZING COMITTEE

Bănescu Claudia
Nicolae Cristina
Pop Anișoara
Pricopie Andreea
Marcu Daniela

### SCIENTIFIC COMITTEE

Ábrám Zoltán
Bara Tivadar
Bălașa Rodica
Bănescu Claudia
Bățagă Simona
Boantă Adrian
Boldea Iulian
Butiurcă Doina
Ciortea Eduard
Cotoi Ovidiu Simion
Cucerea Manuela
Dogaru Lucreția
Fàbiàn Istvàn
Frigy Attila
Georgescu Maria
Göndör Mihaela-Liliana
Gurzu Simona
Hancu Gabriel
Jimborean Gabriela
Lako Cristian
Lazăr Luminița
Lirca Corina
Marcu Nicoleta
Mărginean Oana
Moldovan Iuliu
Năznean Adrian
Neagoș Adriana
Pașcan Marius
Păcurar Mariana
Pop Anișoara
Pop Tudor Sorin
Radu Carmen Corina
Rus Dana
Rus Laura
Russu Octav-Marius
Rusu Aura
Solyom Arpad
Spătăcean Ioan-Ovidiu
Ștefanovici Smaranda
Tătar-Dan Maria
Tripon Florin
Valea Daniela
Voidăzan Septimiu

# MEDICINE AND PHARMACY

# BIOCHEMISTRY

## OBSERVED THERAPEUTIC PRACTICES IN ELDERLY HYPERTENSIVE PATIENTS WITH COMORBIDITIES

Eniko Nemes Nagy[1], Kinga-Ilona Nyulas[1], Tünde Pál[2], Zoltan Preg[3], Marta German-Sallo[3]

[1]Department of Biochemistry, UMFST G.E. Palade Tîrgu Mureş

[2]Department of Internal Medicine V, UMFST G.E. Palade Tîrgu Mureş

[3]Department of Internal Medicine III and Family Medicine, UMFST G.E. Palade Tîrgu Mureş

**Background:** Several elderly hypertensive patients have different comorbidities. Their therapy usually consists of a combination of several pharmaceutical products, polypragmasia (association of 5 or more drugs) being quite frequent. The aim of this study was to reveal the distribution of comorbidities in a group of elderly hypertensive patients and the most frequently used combinations of drugs in their therapy. **Material and methods:** The research was performed on 44 elderly hypertensive (grade 2 or 3) patients admitted to the Cardiovascular Rehabilitation Clinic in Târgu Mureş between 2019-2021. Information regarding comorbidities and medication were obtained from the database of the clinic. **Results:** The average age of the patients was 70.64 years ± 5.09 (SD). The most freqently used antihypertensive therapy was based on drugs acting on the renin-angiotensin system (98%) and beta-blockers in 68% of the patients. ACE inhibitors were used in 41% of the subjects, diuretics (mostly indapamid) in 39% and the combination between amlodipin and valsartan in a single drug in 36% of the subjects. Antihypertensives were often associated with antiaggregant (in 55% of the cases), like low dose acetylsalicilic acid. 80% of the patients followed statin therapy for dyslipidemia and 25% were on metformin therapy for type 2 diabetes. Polypragmasia was present in 98% of the patients. **Conclusions:** Various antihypertensive drugs, acting by different mechanisms, are used in the studied group of elderly hypertensive patients. The high prevalence of comorbidities (dyslipidemia, diabetes mellitus, obesity) in these subjects leads to the necessity of combination therapies and increases the prevalence of polypragmasia.

**Keywords:** antihypertensive therapy, comorbidities, drug combination, elderly patient, polypragmasia

## USAGE OF DIETARY SUPPLEMENTS AND HERBAL PRODUCTS IN HYPERTENSIVE PATIENTS

Eniko Nemes Nagy[1], Kinga-Ilona Nyulas[1], Tünde Pál[2], Zoltan Preg[3], Marta German-Sallo[3]

[1]Department of Biochemistry, UMFST G.E. Palade Tîrgu Mureş

[2]Department of Internal Medicine V, UMFST G.E. Palade Tîrgu Mureş

[3]Department of Internal Medicine III and Family Medicine, UMFST G.E. Palade Tîrgu Mureş

**Background:** Complementary therapy based on dietary supplements and herbal products associated to classic drug treatment is a holistic approach in cardiology. The aim of the study was to evaluate the usage of dietary supplements and herbal products in a group of elderly hypertensive patients. **Material and methods:** The study was performed on forty-four, elderly grade 2 or 3 hypertensive patients (mean age seventy-one years), admitted to the Cardiovascular Rehabilitation Clinic in Târgu Mureș between 2019-2021. Information were obtained based on a questionnaire related to the used complementary therapies. **Results:** Based on the answers given to the questionnare, 46% of the subjects used phytotherapy, complex dietary supplements, or productscontaining only vitamins and minerals. The most frequently used complementary product consumed by these patients was a milkthistle extract (Silybum marianum) in 11% of the subjects. The second most frequent products, each of them used by 9% of thepatients, were supplements containing vitamin D or vitamin B complex (especially in diabetic hypertensives). 5% of the subjectsmentioned that they consume simethicone (an anti-foaming agent), magnesium products or sleep inducers containing herbalproducts and melatonin. Only 2% of the respondents consume complex dietary supplements. **Conclusions:** Herbal products anddietary supplements are used by almost half of the elderly hypertensive patients enrolled in the study, but complex products(containing minerals, vitamins, several compounds with antioxidant properties) are used in rare cases. Efficient association ofcomplementary therapy with classic drugs needs a good collaboration between physicians and their patients to avoid certain sideeffects.

**Keywords:** dietary supplements, herbal products, hypertension, minerals, vitamins

# CARDIOLOGY

## OMI VERSUS STEMI, MORE THAN AN EMERGING CONCEPT

Attila Frigy[1]

[1]Department of Internal Medicine IV, UMFST G.E. Palade Tîrgu Mureş

**Background:** In daily practice, ST-elevation myocardial infarction (STEMI) is in the centre of acute myocardial infarction care, primary PCI (percutaneous coronary intervention) being proven very efficient and beneficial in its treatment. **Material and methods:** However, there is a growing number of cases with NSTEMI (non-ST-elevation myocardial infarction), for whom, according to current Guidelines, primary PCI (percutaneous coronary intervention) is frequently delayed. The concept of OMI (Occlusion Myocardial Infarction) was recently introduced in clinical practice, with the intention of obtaining a more efficient management of patients with acute coronary syndromes. **Results:** It was demonstrated, that almost one third of patients with NSTEMI have total or near total occlusion on coronarography, and these patients have indication of early PCI, for achieving a better outcome. The diagnosis of OMI includes classical (true) STEMI cases, and cases labelled initially as NSTEMI, but with certain ECG patterns, often with subtle changes, which reveal coronary occlusion. **Conclusions:** The authors present a short review of the OMI concept, its current status, illustrating its practical application by a couple of characteristic ECG patterns.

**Keywords:** myocardial infarction, coronary occlusion, STEMI

# DENTAL MEDICINE

## COMPLETE DENTURES AND MANDIBULAR PROGNATHISM: A CHALLENGE FOR BOTH DOCTOR AND TECHNICIAN

Alessandra-Aniela Cerghedi[1], Farcas Bianca-Andreea[1], Iulia Musa[1], Antonela Gaina[1], Stanca-Cristina Molnar-Varlam[1]

[1]Department of Morphology of Teeth and Dental Arches, UMFST G.E. Palade Tîrgu Mureş

**Background:** Complete dentures with attachments represent a modern and widely used alternative in dentistry today for edentulous patients. Due to the prefabricated system, they offer significantly better stability and high adhesion. Demonstrating that the use of attachments for dentures provides better stability, reduces the risk of movement, offers much greater comfort, and ensures superior aesthetics. **Material and methods:** Five cases of subtotal dentition, where everything started with the patient's desire to have a mandibular denture supported by the two remaining teeth and a complete maxillary denture since the previous one had worn down. Root canal treatment was performed, followed by a system and preliminary impressions taken by the dentist in the office. After receiving the impressions, the technician created a distal key on which were constructed the systems for partial dentures. Subsequently, were made the individual trays, ensuring that wax was placed on the mandibular teeth to not be retentive. For better functionalization special compound sticks were used, and for the global impressions were used polieter. The occlusal borders were created for vertical dimension determination and for two of the cases we have a severe mandibular prognathism which we try to reduce by replacing the border on de vestibular side. In the final stage, the partial dentures were finished, and polished. **Results:** As a result of the clinical and laboratory procedures, complete dentures with attachments were obtained, with better stability and suction. All dentures were well adapted to the patient's situation, providing excellent suction and causing no discomfort during wear. **Conclusions:** Due to the very effective retention system, the denture has minimal chances of dislodgment during the patient's daily activities. The dentures integrate well with the facial features, providing a natural appearance.

**Keywords:** prognatism, attachments, complete denture, dental rehabilitation

## COMPLEX REHABILITATION BETWEEN FUNCTION AND AESTHETICS

Alessandra-Aniela Cerghedi[1], Evelin-Beatrix Moldovan[1], Claudia-Bianca Georgescu[1], Daria Tatu[1], Stanca-Cristina Molnar-Varlam[1]

[1]Department of Morphology of Teeth and Dental Arches, UMFST G.E. Palade Tîrgu Mureş

**Background:** Metal-ceramic crowns are one of the most commonly used prosthetic solutions in modern dentistry due to their excellent combination of aesthetics, durability, and functionality. The different types of ceramics offer excellent esthetics without the problems of metal frameworks. **Material and methods:** A group of partially edentulous patients aged between 40-65 years presented to the dental office for comprehensive oral rehabilitation. Several integral esthetic metal-ceramic bridges were realized. In order to obtain the metal framework we needed an accurate impression made at one time with adition silicone material and a perfect gingival sulcus relief with eviction wire. The models were molded from extra-hard gypsum and scanned with a 3d Scan laboratory scanner. With the help of the exocad program, the design of the metal framework was realized and subsequently obtained by selective laser melting. The framework was sandblasted and sent to the office for try-in and necessary adjustments. Small adjustments were made to one of the semicircular points on the framework, but the thickness of the silicone film on the sample was minimal and uniformly transpressed. The last step was the layering of the ceramic, through the thickest base layer, and then the specific morphological construction of each tooth and the use of different combinations to obtain a satisfied esthetic result. The occlusal relationships with antagonists and contact points were carefully followed. **Results:** The adaptation of prosthetic bridges on dental abutments has proven to be superior to conventional methods of obtaining, at the same time reducing the tipping effect of the prosthetic piece. At the same time, human errors in the packaging process of the conventional process were eliminated by sintering. **Conclusions:** Metal-ceramic restorations allow the realization of prosthetic restorations having a balance between mechanical performance, esthetics, and functionality and at the same time offer an affordable price.

**Keywords:** rehabilitation, aesthethics, metal-ceramic

## FUNGICAL STOMATITIS A CHALLENGE FOR BOTH: DENTIST AND PATIENT

Stanca-Cristina Molnar-Varlam[1], Andrada-Elena Costache[1], Delia Costache[1], Alessandra-Aniela Cerghedi[1]

[1]Department of Morphology of Teeth and Dental Arches, UMFST G.E. Palade Tîrgu Mureş

**Background:** Fungal infections are one of the most common pathologies encountered in patients removable prostheses. Monitoring the incidence of infection with the opportunistic pathogen Candida Albicans in the setting of associated pathologies, comorbidities and immunocompromised organisms from different environments. **Material and methods:** A group of partially or totally edentulous patients with removable and mobilizable prostheses, most of them from the intensive care unit of the Pneumophysiology and Infectious Diseases Clinical Hospital in Brasov, were submitted to sampling for candidal infection. For sampling, sterile exudate swabs were used to scrape from the muco-nasal surface of the prostheses, which were subsequently inoculated onto Agar Saboroud culture medium, specific for the incriminated fungus. Cultures were incubated at 36.6 degrees and read after 48h. A specific Vaitek apparatus was used to confirm fungal infection. Thus, the frequency of fungal infection was analyzed epidemiologically by sex, age groups and environment of origin as well as the number of comorbidities and their type per patient. **Results:** Persistent infections are found in the male group with more than one comorbidity and predominantly of respiratory cause. 56.6% of fungi were identified, the most common culprit being Candida Albicans. It was observed that subjects with urban environments were more affected, these having more than five comorbidities associated, among the most frequent being COPD, hypertension, heart failure, diabetes, and malnutrition. The age groups most affected are between 54 and 98 years. **Conclusions:** Elderly and immunosuppressed people are at increased risk of developing fungal infections, so rigorous hygiene including disinfection with 0.2% chloramine disinfection of prosthetic parts can be an adjuvant factor in restoring health

**Keywords:** Candida albicans;, comorbidities, removable prostheses

## INJECTABLE COMPOSITE RESIN TECHNIQUE: THE PROTOCOL-THE KEY OF SUCCESS FOR CORONAL RESTORATIONS

Stanca-Cristina Molnar-Varlam[1], Rarisa Zarojanu[1], Diana-Vasilica Hirjanu[1]

[1]Department of Morphology of Teeth and Dental Arches, UMFST G.E. Palade Tîrgu Mureş

**Background:** According to modern developments in dental materials technology, injectable composite resin materials by new generation techniques have taken the place of conventional materials, respecting the working protocol and revealing the importance of errors, mistakes and situations that can have consequences, they are designed by nanotechnology to simplify the working technique and to extend the range of clinical applications. **Material and methods:** The study utilized models for both anterior and posterior teeth using injectable composite resin materials, as well as mock-up made of specially designed silicone material, using the direct restoration technique and the silicone key injection technique. The predictability of the protocol is rendered both by the correct choice of the materials used and by the correct order of their use: extracoronal tooth preparation, sandblasting, operative field isolation technique, acid etching, bonding, material layering, color choice, finishing and final polishing of the restoration with the possibility of checking the adjustments **Results:** The use of a well-established and optimized protocol designed for the new generation techniques resulted in suitable restorations in terms of marginal adaptability, interproximal contact adaptation, substance (enamel, dentin), adhesion, dimensional changes according to material layering, microleakage incidence and esthetics. **Conclusions:** Injectable composite resin materials obtained by the nanotechnology process require protocol compliance because it is a major challenge in influencing the stability and success of coronal restorations. Therefore, the need to maintain indications is indispensable in view of possible defects, imperfections or errors, putting pressure on clinicians who do not master proper protocols.

**Keywords:** composite-injectable, protocol,, errors

## COMPLETE DENTURE SUCCESS= INDIVIDUALIZATION + ESTHETICS

Stanca-Cristina Molnar-Varlam[1], Maria-Alexandra Sandu[1], Alessandra-Aniela Cerghedi[1]

[1]Department of Morphology of Teeth and Dental Arches, UMFST G.E. Palade Tîrgu Mureş

**Background:** The treatment of total edentulous dentition by conventional removable prostheses is, even in the digital dental era, a viable option from the point of view of both clinicians and patients, regardless of esthetic and functional requirements. The use of composite artificial teeth in the fabrication of total dentures offers superior esthetics compared to acrylic resin teeth, especially in cases of edentulous middle-aged patients with increased esthetic requirements. **Material and methods:** A 52-year-old female patient presents to the dental office with a bimaxillary total edentulism. The patient's history shows that her teeth were lost due to periodontal disease progression. The patient would like a conventional treatment, but one that meets her esthetic requirements, with the edentulous condition being as inconspicuous as possible. From the process of making the prosthesis we will mention the suggestive stages for the success of the treatment and for the fulfillment of the patient's wishes: first of all, the choice of artificial teeth - we opted for composite teeth from VIVA filling, color A1, size R45, based on aesthetic, functional and abrasion resistance criteria. Another suggestive step is using a different technique in the realization of the printing, by stamping the prosthesis models with the help of silicone keys, instead of using sinks and plaster paste. Last but not least we mention the atypical mounting technique of artificial teeth, to mask as much as possible the edentulous appearance. We paid special attention to all the clinical-technical stages to achieve the best result. **Results:** The prostheses obtained were in accordance with the patient's requirements, through this treatment she was able to regain the confidence to smile. **Conclusions:** Artificial composite teeth offer increased esthetic possibilities in the prosthetic rehabilitation of the edentulous patient, even when the physiognomic requirements are high.

**Keywords:** complete dentures, aesthethics, artificial teeth

## MODIFICATIONS OF THE ACCURACY OF VIRTUAL MODELS RELATED TO TOOTH PREPARATION - AN IN VITRO STUDY

Kinga Mária Jánosi[1], Izabella Éva Mureșan[1], Aurița Ioana Albu[1], Monica Dora Baloș[1], Diana Cerghizan[1]

[1]Department of Prosthetic Dentistry and Oral Rehabilitation, UMFST G.E. Palade Tîrgu Mureş

**Background:** Intraoral scanning technology has revolutionized the process of creating prosthetic restorations, providing a quick and accurate alternative to traditional methods. In digital dentistry, a thorough knowledge of intraoral scanning technology is essential for obtaining precise impressions that provide a suitable starting point for CAD/CAM technology-based, long-term prosthetic works. The aim of this study is to evaluate the accuracy of intraoral and laboratory scanners by comparing the obtained digital models with a simulator model before and after tooth preparations. **Material and methods:** Simulator casts were scanned with each scanner before preparation. After each initial scan, the same operator prepared four teeth for the upper arch and ten teeth for the lower arch, and the scanning procedures were repeated forty times with each scanner. The obtained virtual models were analyzed through the Zeiss Inspect software, performing 3D measurements in sagittal and transverse planes. We compared the values obtained in the two planes with those from the manual measurements of the reference casts. **Results:** Digital models have shown discrepancies from the reference model. The minor differences were obtained for diagonal distances Dd2 (central fossa of the 1.7 tooth - the most cervical oral convexity of the artificial gingiva of the 2.4 tooth), transverse distances Td1 (central fossa of the 1.7 tooth - central fossa of the 2.7 tooth) in maxillary models, and for dd1 mandibular distances for all lower models except for those scanned with intraoral scanners before tooth preparations, where no statistically significant differences were found. The differences were more evident in how the distance increased from the first scanned tooth. **Conclusions:** Multiple preparations may distort the accuracy of the virtual models. It is essential to choose an adequate scanning protocol for each scanner. The in vitro study results may differ from those obtained in clinical practice, and further in vivo evaluations are required.

**Keywords:** discrepancy, intraoral scanner, tooth preparation, virtual models

## INDICATIONS AND DESIGN PRINCIPLES OF SUBPERIOSTEAL IMPLANTS INMAXILLARY ATROPHY

Szidonia Krisztina Veress[1], Bálint Botond Bögözi[1], Cecilia Petrovan[1], Alina Ormenișan[1]

[1]Department of Oral and Maxillofacial Surgery, UMFST G.E. Palade Tîrgu Mureş

**Background:** Cawood and Howell's Class V and VI atrophies of the upper jaw represents a difficult challenge for dentists and oral surgeons. Subperiosteal implants might be the future first line treatment in patients with compromised alveolar ridges. With the appearance and development of CBCT, intraoral scanning of soft tissues and 3D design and printing or milling, the possibility of producing of customized subperiosteal implants has become possible. However, it does not currently exist consensual guidelines regarding the design of subperiosteal implants. **Material and methods:** Based on the literature data, we tried to map the factors that need to be taken into account when planning subperiosteal implants. The literature data were collected from full text articles published on Researchgate between 2022-2024, which related to digitally designed subperiosteal implants. **Results:** The most important principles that applied to the design of subperiosteal implants were related to osseointegration, stability and functionality. It is necessary to use materials that enable osseointegration (e.g. titanium alloys, PEEK) for implant production, and the inner surface must be rough. For a precise fit, it is necessary to fix the implant to the bone with osteosynthesis screws and the implant must be thick enough not to deform due to masticatory forces, but not to cause dehiscence. Functionality must be taken into account when designing the superstructure.It is possible to check the design with the help of finite element analysis, which enables the simulation of the impact of masticatory forces on the implant. **Conclusions:** The use of subperiosteal implants is a viable option in the treatment of high atrophy of the maxilla. With proper planning and production, it can be successful and certain complications can be prevented.

**Keywords:** subperiosteal implants, maxillary atrophy, customized implants

## CHROMATIC STABILITY OF INTERIM CROWN MATERIALS: A SPECTROPHOTOMETRIC AND VISUAL ANALYSIS.

Diana Cerghizan[1], Monica Dora Baloș[1], Izabella Éva Mureșan[1], Aurița Ioana Albu[1], Kinga Mariá Jánosi[1]

[1]Department of Prosthetic Dentistry and Oral Rehabilitation, UMFST G.E. Palade Tîrgu Mureş

**Background:** Interim crowns are essential in maintaining the patient's functionality during prosthetic treatments. Dental aesthetics must be restored, even between the prosthetic treatment phases. The study aims to evaluate the color stability of three provisional crown materials when exposed to frequently used beverages using visual and digital methods. **Material and methods:** Three provisional crown materials—Protemp 4 (self-curing), TEMPSMART DC (dual curring), and BRILLIANT EverGlow (light-curing)—were immersed in artificial saliva (control group), Coca-Cola, coffee, and natural juice for eight days at 37°C. Chromatic changes were measured regularly using the Vita Easyshade V digital spectrophotometer and the VITA Classical A1-D4 shade guide. The color stability was assessed by the Delta E (ΔE) method, using a standardized scale that indicates perceptible color differences. **Results:** The results showed that all materials underwent significant color changes depending on the type of solution. Coffee and Coca-Cola had the most significant impact, generating ΔE values ⌧⌧of over 5 for the finished samples and over 10 for the unfinished ones, indicating visible differences. The finished materials showed more excellent resistance to staining than the unfinished ones. TEMPSMART DC and BRILLIANT EverGlow showed better stability compared to Protemp 4. **Conclusions:** These findings highlight the need for advanced, finished crown provisional materials for superior aesthetic performance. Intense exposure to pigmented and acidic solutions should be avoided to prolong the life of provisional crowns and increase patient satisfaction during prosthetic treatment.

**Keywords:** Spectrophotometer, color stability, interim crown

# ENT (OTORHINOLARYNGOLOGY)

## COCHLEAR IMPLANT – SURGICAL PROCEDURE WITH HIGH RISK- HOW WE MANAGE IT

Adriana Neagos[1], Cristian Mircea Neagos[1]

[1]Department of Otorhinolaryngology, UMFST G.E. Palade Tîrgu Mureş

**Background:** The cochlear implant performs hearing rehabilitation in patients with severe or profound sensorineural hearing loss. The surgeon specialized for cochlear implant must inform the patient and his relatives not only about the surgical technique but also about the possible complications. The literature shows a rate of complications that can be evaluated in both adults and children. **Material and methods:** The analysis of several studies related to the complications that can occur after cochlear implantation, demonstrates the fact that cochlear implant, although an intervention recognized as quite simple, presents a series of postoperative risks. Postoperative complications, although considered to be quite rare, are not necessarily related to the surgical technique, but especially to the risk of postoperative, skin or mastoid infections, to which can be added foreign body reactions, implant damage with the risk of extrusion. **Results:** Considering the multiple theoretical and practical aspects related to cochlear implantation, a theoretical and practical training in this field is needed. Knowing intra- and postoperative complications is important, along with knowing the methods to solve them. **Conclusions:** If we summarize everything in one sentence, we can affirm the fact that the surgical limits of the cochlear implant, and its evolution over time, cannot be concretely established, although this intervention is considered to be safe in the medium and long term.

**Keywords:** cochlear implant, extruzion, inner ear malformation, computer tomography, Gusher Syndrome

# ETHICS AND SOCIAL SCIENCES

## PROBLEMATIC SMARTPHONE USE IN YOUNG ADULTS: PATHWAYS ON MENTAL WELL-BEING, ASSESSING EMOTIONS AND FEAR OF NEGATIVE PERCEPTION.

Sándor Csibi[1], Dora Mihaela Cîmpian[2], Cristina-Raluca Bodo[3], Monika Csibi[4], Andreea Sălcudean[3]

[1]Psychology, UMFST G.E. Palade Tîrgu Mureş

[2]Department of Psychiatry, UMFST G.E. Palade Tîrgu Mureş

[3]Department of Ethics and Social Sciences, UMFST G.E. Palade Tîrgu Mureş

[4]other

**Background:** The emerging use of smartphones has multiple effects on people's lifestyles and well-being through the internet and excessive usage of different applications. Some studies show negative aspects of the excessive use of smartphones on children, such as attentional difficulties, poor emotional expressions, difficulties in establishing relationships, and even forms of dependence (internet, games, smartphone addiction), which are more prominent among younger users. Our goal was to explore the effects of excessive smartphone use on mental health factors in young adults. We investigated factors of mental health such as emotional, social, and psychological well-being, emotional regulation, and social anxiety. **Material and methods:** The participants were 400 young adults, where the mean age was 25.9 years (SD 10.9). Distribution by gender includes 104 men (26%), 293 women (73.2%), and three persons (0.8%) with other gender. The research included the following groups of questions: demographic data (gender, age, time spent with smartphone) and psychological measures: a Smartphone Application-Based Addiction Scale (Csibi et al., 2018), a Mental Health Continuum Scale (Reinhardt et al., 2020), an Assessing Emotions Scale (Kun, 2011) and Fear of Negative Perception Questionnaire (Perczel-Forintos and Kresznerits, 2017). **Results:** We find a significant connection between problematic smartphone users and non-problematic smartphone users in global ($t(399) = -2.92$, $p = .004$), psychological ($t(399) = -2.53$, $p = .012$), emotional ($t(399) = -2.54$, $p = .011$) and social ($t(399) = -2.34$, $p = .019$) mental well-being. We showed significant differences between problematic smartphone users and non-problematic smartphone users regarding social anxiety ($t(399) = 4.37$, $p = .001$). The existing differences were not significant on emotional regulation factors. **Conclusions:** Excessive smartphone use can have negative effects on mental health in young adulthood. Users who spend more time using their smartphones rate their mental health more negatively, are more afraid of negative perceptions, and have a higher level of social anxiety.

**Keywords:** excessive smartphone use, mental well-being, assessment of emotions, fear of negative perception

# FORENSIC MEDICINE

## THE FORENSIC APPROACH OF INVESTIGATING A SEXUAL ASSAULT

Timur Hogea[1], Cosmin Carașca[1], Carmen Corina Radu[1]

[1]Department of Forensic Medicine, UMFST G.E. Palade Tîrgu Mureş

**Background:** Sexual assault remains a significant public health and legal issue, often unreported due to societal stigma and victim apprehension. The medico-legal approach plays a crucial role in bridging justice and healing by ensuring thorough examination, evidence collection, psychiatrical and psychological evaluation. This presentation aims to raise awareness about the medico-legal processes involved in sexual assault investigations and to encourage victims to seek professional support and report such incidents. **Material and methods:** The presentation explores the multidisciplinary framework for addressing sexual assault, including:Forensic Examination: Detailed protocols for somatic and genital assessments, with a focus on injury characterization, evidence collection, and the differentiation between consensual acts and assault.Trauma Evaluation: Assessment of physical and emotional trauma, including identifying markers of coercion and incapacitation through biocriminalistic and toxicological investigations. Psychiatric and Psychological Examination: Comprehensive evaluation of the victim's mental health to detect post-traumatic stress, anxiety, or depression, alongside strategies for therapeutic intervention. Legislative and Ethical Considerations: Emphasizing victim rights and the ethical handling of sensitive cases to build trust and foster cooperation. **Results:** Analysis of case studies highlights the importance of timely forensic examinations and the integration of psychological assessments in documenting and validating trauma. Biocriminalistic techniques, such as DNA analysis and toxicological screening, provide critical evidence, while psychiatric support helps victims navigate legal procedures and overcome psychological barriers to seeking justice. **Conclusions:** If we want to lower the incidence of sexual assaults and increase the adresability of the victims we need a victim-centered intervention. Interdisciplinary medico-legal approach is vital for addressing sexual assault effectively. By fostering collaboration among healthcare, forensic, and legal professionals, and emphasizing empathetic care, this approach not only strengthens judicial outcomes but also empowers victims to come forward. Raising awareness about these processes is essential to increase the accessibility and trustworthiness of medico-legal services for survivors.

**Keywords:** forensics, sexual assault, trauma evaluation

## SEXUAL ASSAULTS, TERMINOLOGY AND MEDICO-LEGAL ASPECTS

Cosmin Carașca[1], Timur Hogea[1], Carmen Corina Radu[1]

[1]Department of Forensic Medicine, UMFST G.E. Palade Tîrgu Mureş

**Background:** Sexual assault is an extremely sensitive and complex subject, involving acts of physical, psychological or emotional violence directed against a person without their consent. In general, the term covers a wide range of behaviors and actions - from verbal harassment and intimidation to serious physical assaults and rape. It can have devastating consequences for victims, affecting their mental and physical health, interpersonal relationships and often, their overall quality of life. **Material and methods:** The paper proposes an explanatory approach to commonly used notions and terminology regarding sexual abuse situations. **Results:** Sexual assault includes a wide range of unwanted behaviors and acts in which one person imposes control and privacy on another person without their consent. Forensic involvement in sexual assault cases is essential to gather evidence and assess injuries to support the investigation and legal proceedings. In such cases, the forensic evaluation is complex and involves multiple stages. **Conclusions:** Crucially, sexual assaults are not only a violation of the law, but also a serious violation of basic human rights and dignity. Preventing sexual assaults is a global priority and involves educating communities about respect for the integrity and autonomy of each person.

**Keywords:** sexual assault, terminology, medico-legal aspects

# GENETICS

## THE BENEFITS OF NEXT GENERATION SEQUENCING TECHNOLOGY IN CLINICAL GENETICS

Florin Tripon[1], Alina Boglis[1], Beata Balla[1], Claudia Banescu[1]

[1]Department of Genetics, UMFST G.E. Palade Tîrgu Mureş

**Background:** Next generation sequencing technology significantly improved the clinical genetics by prompt and concise diagnosis, prognosis and therapy. Whole exome sequencing (WES) is a comprehensive technique that allow us to sequence the coding part of our DNA (exom). **Material and methods:** We used WES technology in 90 patients with different clinical manifestations. **Results:** The result of WES are comprehensive, with 200-500 variants / exom. Of course, the majority being benign. In the presentation we will discuss the classification of the variants according to ACMG. We were able to confirm genetic conditions in approximately 60% of our patients. Rare genetic syndromes and different predisposition condition we will discuss. **Conclusions:** Whole exome sequencing offer solution for various patients and can be the gold standard method for several genetic conditions. The cost of this technique decreased and several options are available.

**Keywords:** whole, exome, sequencing, rare, syndrome

## MYELODYSPLASTIC SYNDROME – THE SPECTRUM OF GENETIC ANOMALIES WITH PROGNOSTIC IMPACT

Claudia Banescu[1]

[1]Department of Genetics, UMFST G.E. Palade Tîrgu Mureş

**Background:** Myelodysplastic syndrome (MDS), is a myeloid neoplasm that appears predominantly in older adults and is characterised by clonal acquisition of genetic aberrations that lead to profound cytopenias. MDS is characterised by ineffective hematopoiesis, is commonly found in the elderly and is associated with progression to acute leukemia. **Material and methods:** Genetic (cytogenetic, somatic mutations) anomalies have an important prognostic role, especially for risk-stratification, and clinical management of MDS patients. The new risk stratification prognostic scores such as IPSS-M (Molecular International Prognostic Scoring System) and IPSS-R (International Prognostic Scoring System-Revised) for MDS are based on genetic anomalies. Also, the last edition (5th) of WHO MDS classification includes MDS with defining genetic abnormalities (abnormalities of 5q, mutations of TP53 and SF3B1 genes). **Results:** About 90% of MDS cases present ≥1 mutation and about half of MDS cases present chromosomal abnormalities (that interest the number or structure of the chromosome such as unbalanced aberrations. The progression to AML (acute myeloid leukemia) is observed in more than one-third of MDS cases. The presence of mutations in TP53, NRAS, FLT3, NPM1, DNMT3A, IDH1/2, ASXL1, EZH2, etc) is associated with leukemic progression to acute leukemia and has a negative impact on survival representing a poor prognostic factor while SF3B1 mutation confers a favourable prognosis. **Conclusions:** Genetic abnormalities (cytogenetic aberrations and gene mutations) are important for precise risk-stratifying of MDS cases and for their management and also for therapy decisions to prevent progression to leukemia and also for improving the outcome of MDS cases.

**Keywords:** MDS, cytigenetic, gene mutation, risk stratification, prognosis

## GENETIC PREDICTORS OF PROGNOSIS IN CHRONIC LYMPHOCYTIC LEUKEMIA: THE ROLE OF CYTOKINE POLYMORPHISMS IN SURVIVAL OUTCOME

Beata Balla[1], Florin Tripon[1], Claudia Banescu[1]

[1]Department of Genetics, UMFST G.E. Palade Tîrgu Mureş

**Background:** Cytokines play key roles in immune regulation and inflammation, which are critical in cancer progression. IL-10, known for its immunosuppressive and tumor-promoting properties, may affect tumor growth and immune response, while TNF-α is a pro-inflammatory cytokine associated with both tumor progression and immune response. This study investigated the potential role of cytokine gene polymorphisms in chronic lymphocytic leukemia (CLL), studying IL-10 (rs1800896, rs1800872) and TNF-α (rs361525, rs1800750) single nucleotide polymorphisms (SNPs). **Material and methods:** Data were collected from 125 CLL patients and 239 healthy controls. Genetic analysis included TaqMan SNP genotyping assays for IL-10 (rs1800896, rs1800872) and TNF-α (rs361525, rs1800750) polymorphisms. Statistical methods assessed associations between genetic markers and clinical outcome. **Results:** While IL-10 and TNF-α SNPs alone did not show a direct association with CLL risk, specific combinations of genetic factors were significant. Notably, the presence of the IL-10 rs1800896 variant allele, when coupled with unmutated IGHV status and CNVs , was associated with a shorter OS. This suggests that IL-10 polymorphisms may influence disease prognosis indirectly by interacting with other risk factors. Additionally, although the TNF-α SNPs were not significantly associated with OS, their occurrence in combination with other genetic abnormalities needs further research. **Conclusions:** Although IL-10 and TNF-α polymorphisms do not independently affect CLL prognosis, their interactions with other genetic alterations, may exacerbate disease severity and reduce survival. These findings underline the complexity of cytokine gene involvement in CLL and suggest that multifactorial genetic profiling, including cytokine polymorphisms, could enhance prognostic accuracy and treatment strategies.

**Keywords:** CLL, IL-10, TNF-α, Polymorphisms

---

## ENCEPHALOCELE WITH CHIARI III MALFORMATION - THE IMPORTANCE OF BEGINNING THE EARLY COMPLEX RECOVERY THERAPY

Anamaria Todoran Butila[1]

[1]Department of Genetics, UMFST G.E. Palade Tîrgu Mureş

**Background:** Encephalocele represents a rare congenital malformation, a neural tube defect (NTD) that causes an incomplete closure of the skull which the brain tissue and the meninges herniate. The most common localization is the occipital. **Material and methods:** I present the case of a child of 3 years old, patient of the Pediatric Neurology and Psychiatry Clinic in Târgu Mureş, already on his fourth hospitalization in this Clinic. In the 7th month of intra-uterine development, on the ultrasound was noticed a tumor formation in the occipital region. Postpartum, on the MRI examination the diagnosis of occipital encephalocele associated with Chiari III malformation was established, for which a surgical intervention was performed at the age of 2 month. Despite of the favorable post-surgery evolution, the patient develops a severe neuro-psycho-motor retard, and the recovery program was hardly started at the age of 2 years and 5 months. **Results:** The late onset of a complex recovery plan (kinesiology, physical therapy, multi-sensorial stimulation associated with a neuro-roborant medication treatment) represents an unfavorable factor, in our case the child in question shows an involution towards a severe retard regarding his psychical, physical and speech development, his level of development being comparable with that of a child of 5 months. **Conclusions:** The main factors which determine the prognostic and evolution of this malformation are represented by the size of the hernia sac, the association of the hydrocephaly and/or microcephaly, of infections and other associated malformations. The specialty literature show that the rate of mortality is of 30%. Even if they survive, the neuro-psycho-motor retard is present in 75% of the cases, and the early inclusion in complex recovery programs is needed.

**Keywords:** Encephalocele, neuro-psycho-motor redard, brain malformation

---

## POLYMORPHISMS OF MATRIX METALLOPROTEINASE GENES IN BICUSPID AORTIC VALVE

Amalia Făgărăşan[1], Andrei Crauciuc[2], Claudia Bănescu[3]

[1]Department of Pediatrics III, UMFST G.E. Palade Tîrgu Mureş

[2]UMFST G.E. Palade Tîrgu Mureş

[3]Department of Genetics, UMFST G.E. Palade Tîrgu Mureş

**Background:** Bicuspid aortic valve (BAV) is the most common congenital cardiac anomaly, with an incidence of 1-2%. It is frequently associated with complications such as valvular stenosis and/or regurgitation, which increase the risk of aortic aneurysm,

dissection, and infective endocarditis. Matrix metalloproteinase (MMP) genes encode inactive proenzymes. These enzymes facilitate the degradation of specific extracellular matrix components, including type IV and V collagens. The aim of this study was to evaluate the association between MMP single-nucleotide polymorphisms (SNPs) and BAV, as well as the risk of aortic dilatation in these patients. **Material and methods:** The study included 73 patients diagnosed with BAV, patient group and 203 healthy individuals, the control group. All subjects underwent echocardiographic assessment, and genotyping was performed for the following SNPs: rs1799750 MMP1, rs2285053 MMP2, and rs3918241 MMP9. Genotyping was performed using the ABI 7500 Real-Time PCR system. **Results:** The gender distribution was similar between the two groups 75% male, 24.7% female in patients' group, 67.6% male, 32.4% female in control group. No significant association was observed in the distribution of the studied SNPs between the patient and control groups. Additionally, there was no statistically significant association when comparing patients with aortic dilatation (Z score > 2) to controls in terms of genotype distribution. **Conclusions:** Our results suggest that there is no association between the studied SNPs (rs1799750 in *MMP1*, rs2285053 in *MMP2*, and rs3918241 in *MMP9*) and the presence of BAV. Furthermore, aortic dilatation associated with BAV does not appear to correlate with the heterozygous or homozygous variant genotypes of the investigated SNPs. **Acknowledgment:** This work was funded by the University of Medicine, Pharmacy, Science and Technology "George Emil Palade" of Târgu Mureş Research, grant number 163/1/10.01.2023.

**Keywords:** bicuspid aortic valve, matrix metalloproteinase, aortic dilatation

## NEXT GENERATION SEQUENCING IN CONGENITAL HEART DISEASE

Andrei Crauciuc[1], Florin Tripon[2], Amalia Făgărăşan[3], Claudia Bănescu[2]

[1]Advanced Medical and Pharmaceutical Research Center, UMFST G.E. Palade Tîrgu Mureş

[2]Department of Genetics, UMFST G.E. Palade Tîrgu Mureş

[3]Department of Pediatrics III, UMFST G.E. Palade Tîrgu Mureş

**Background:** Congenital heart defects (CHDs) represent the most common congenital anomalies identified at birth, with an incidence of 1-1.2% among newborns. While syndromic forms of CHDs have more established genetic underpinnings, the genetic causes of isolated, non-syndromic forms remain less well-defined, despite these representing the majority of CHDs. The aim of this study was to conduct a comprehensive genetic analysis using next-generation sequencing (NGS) technology to identify genetic variants potentially contributing to the etiopathogenesis of CHDs. **Material and methods:** The present study included 40 patients diagnosed with CHD, specifically atrial septal defect, ventricular septal defect, and tetralogy of Fallot. A gene panel targeting 16 genes (CRELD1, TLL1, NKX2-5, DNAJB6, GATA4, EXT1, TBX5, TBX20, MYH6, MYH7, ACTC1, SRCAP, NOTCH3, RECQL4, CCDC22, and CRELD1) was utilized, generating amplicons of 125-275 base pairs with 100% coverage. **Results:** The sequencing panel identified a total of 144 variants across the 40 patients analyzed. After filtering the variants using the ClinVar database (ClinVar(20201121)__1) and aligning to the hg19 reference genome, one pathogenic variant and four variants of uncertain significance (VUS) were identified in the *GATA4, TBX5*, and *MYH6* genes. **Conclusions:** Next-generation sequencing (NGS) offers valuable insights into the etiopathogenesis of non-syndromic congenital heart defects. However, its application remains a significant challenge due to the complexity of the molecular mechanisms underlying cardiogenesis.

**Keywords:** congenital heart defects, next-generation sequencing, etiopathogenesis

## CYSTIC NEPHROMA- A RARE PATHOLOGY WITH DIVERSE EVOLUTIONS

Carmen Muntean[1], Mihaela Chincesan[1], Claudia Banescu[2]

[1]Department of Pediatrics I, UMFST G.E. Palade Tîrgu Mureş

[2]Department of Genetics, UMFST G.E. Palade Tîrgu Mureş

**Background:** Cystic nephromas are rare renal lesions characterized by a multilocular structure, predominantly occurring in childhood. While some cases are sporadic, others may exhibit a familial component and are associated with various neoplasms. **Material and methods:** The authors present the case of an female teenager diagnosed with recurrent pediatric cystic nephroma, surgically treated at the ages of 4 and 9, who subsequently developed multinodular goiter, a right apical pulmonary cyst, and, ultimately, a massive vaginal tumor (8.5 x 14 cm) characterized by rapid growth with mass effect, causing bladder obstruction that required permanent catheterization. **Results:** Histopathological analysis revealed the presence of Sertoli-Leydig cells and vaginal rhabdomyosarcoma. The patient's family history indicated a high incidence of diverse neoplasms (thyroid, larynx, etc.) and

multilocular goiter. Genetic testing identified DICER1 syndrome with a previously unknown pathogenic DICER1 mutation. The same mutation was also identified in family members who presented with various neoplasms **Conclusions:** The diagnosis of DICER1 syndrome should be considered in cases of cystic nephromas, multinodular goiter, and genital tumors occurring at a young age.

**Keywords:** kidney, cyst, nephroma, DICER1, neoplasia

# HEMATOLOGY

## A CASE OF APLASTIC ANEMIA TREATED WITH ELTROMBOPAG

Ioan Macarie[1], Smaranda Demian[1], Marcela Candea[1], Bogdana Dorcioman[2], Emoke Horvath[3], Melania Macarie[4]

[1]Department of Internal Medicine II, UMFST G.E. Palade Tîrgu Mureş
[2]Department of Clinical Laboratory, UMFST G.E. Palade Tîrgu Mureş
[3]Department of Pathology, UMFST G.E. Palade Tîrgu Mureş
[4]Department of Internal Medicine I, UMFST G.E. Palade Tîrgu Mureş

**Background:** Aplastic anemia (AA) is a rare disease characterized by acellular or severe hypocellular bone marrow and pancytopenia in the peripheral blood. It is difficult to be differentiated from 10-20% of cases with myelodysplastic neoplasms in which the bone marrow is hypoplastic (hMDN). **Material and methods:** We report a case of a 52 years old man with severe aplastic anemia, successfully treated with immunosuppressive therapy and eltrombopag. The patient was diagnosed in April 2022 in Department of Hematology from Internal Medicine Clinic 1, in Targu Mures Clinical County Emergency Hospital.We report a case of a 52 years old man with severe aplastic anemia, successfully treated with immunosuppressive therapy and eltrombopag. The patient was diagnosed in April 2022 in Department of Hematology from Internal Medicine Clinic 1, in Targu Mures Clinical County Emergency Hospital. **Results:** In April 2022 a 52 years old man came to the ED due to recent onset anemia, with severe fatigue. The cell blood count showed WBC 3900, hemoglobin 6,9g/dL and platelets 10.000. Peripheral blood film was without blasts cells and the bone marrow was with medium cellularity. Many other causes of cytopenia were excluded as iron, folic acid and seric vitamin B12 were normal, paroxysmal nocturnal hemoglobinuria clone was absent by high definition flow cytometry, serology for viral hepatitis and lupus were negative and karyotype was also normal, indicating rather AA than hMDN. The patient became transfusion independent shortly while on treatment with cyclosporine and methylprednisolone, but remained thrombocytopenic. After 3 months eltrombopag was added and an almost full hematologic response was obtained. Patient is well and off treatment for more than one year. **Conclusions:** We concluded that, although allotransplant from a compatible related donor is the treatment of choice, mainly in patients younger than 40 years, many patients can be cured with immunosuppressive therapy.

**Keywords:** aplastic anemia, hypoplastic myelodisplastic neoplasm, immunosuppressive therapy, eltrombopag

## FLOW-CYTOMETRY IN MULTIPLE MYELOMA CASES - ASPECTS IN A SMALL GROUP OF PATIENTS

Smaranda Demian[1], Ioan Macarie[1], Marcela Candea[1], Bogdana Dorcioman[2], Radu Florin Demian[3]

[1]Department of Internal Medicine II, UMFST G.E. Palade Tîrgu Mureş
[2]Department of Clinical Laboratory, UMFST G.E. Palade Tîrgu Mureş
[3]Department of Oncology, UMFST G.E. Palade Tîrgu Mureş

**Background:** To properly diagnose multiple myeloma (MM), the bone marrow aspirate must be evaluated using flow cytometry (FC). Both recent and historical research has identified several FC markers that may have predictive or prognostic significance. **Material and methods:** The study group consisted of 22 MM cases diagnosed in our department between 2022-2024, 7 of which were male and 15 of which were female. The median age was 69 years (extreme values 51-82), the median plasmacytic percentage was 29% (extreme values 10-61), and the marrow aspirate FC was performed at diagnosis (13 cases-59%) or at the first relapse (9 cases-41%). FC cluster of differentiation (CD) markers used were CD20, CD19, CD38, CD138, CD45, CD27, CD81, CD117, CD200, CD56, CD43, cut-off for positivity 30%. **Results:** CD20 was mostly negative (72,73%) and strongly positive (>80%) in 2 cases (positive impact on overall survival OS and progression-free survival PFS in t(11;14) cases). CD19 negativity was prevalent (90,48%), in 1 case high (94%) expression (positive on OS and PFS). CD45 was positive in 7 (31,8%) cases (possible aggressive phenotype but debatable prognostic significance). CD27 was mostly positive, and negative in 5 (22,73%) cases (a risk factor for OS in some studies). Concomitant CD177 negativity and CD81 positivity were detected in 9 (40,91%) cases - potentially negative impact on PFS. CD56 was negative in 9 (40,91%) cases- worse prognosis. Negativity of CD200 was reported for 6 (27,27%) cases (probable increased PFS). 9 (40,91%) cases showed negativity for CD56 (potentially poorer prognostic). A correlation of FC

markers with survival parameters was not feasible because of the small study group. **Conclusions:** FC is a very useful tool in the diagnosis of MM, as it helps to differentiate clonal plasma cells from their normal counterparts. The prognostic or predictive value of FC markers remains uncertain, however, they may provide valuable supplementary data in certain instances.

**Keywords:** multiple myeloma, flow cytometry, diagnosis and prognosis

# HYGIENE

## ASSESSMENT OF HAND HYGIENE KNOWLEDGE AMONG STUDENTS OF GENERAL MEDICINE, DENTISTRY, AND NURSING AT UMFST 'GEORGE EMIL PALADE' IN TÂRGU-MUREȘ

Tabita Ranghiuc[1], Daniela Edith Ceană[1], Abram Zoltan[2], Adela Toma[1], Andrea-Noemi Toth[1]

[1]Department of Public Health and Healthcare Management, UMFST G.E. Palade Tîrgu Mureş
[2]Department of Hygiene, UMFST G.E. Palade Tîrgu Mureş

**Background:** Healthcare-associated infections (HAIs) are a significant threat to patient safety. Hand hygiene is the most effective strategy for minimizing HAIs and combating the spread of antimicrobial resistance in all healthcare settings. The World Health Organization (WHO) has developed evidence-based guidelines aimed at improving the understanding, training, monitoring, and reporting of hand hygiene practices among healthcare staff. Although these guidelines have been widely applied in healthcare professional training, their integration into university curricula remains limited. **Material and methods:** Cross-sectional, observational study conducted on a sample of 162 students, of which 63 were from the General Medicine program, 48 from Dentistry, and 51 from Nursing at the "George Emil Palade" UMFST. The study was conducted using a questionnaire consisting of 11 questions. The questionnaire was developed and adapted from the World Health Organization's model for evaluating hand hygiene knowledge among healthcare personnel. For data processing, Microsoft Excel and GraphPad Prism software were used. Tests used: Descriptive statistics, mean values, standard deviation, T-test, KS normality test, one-way ANOVA test. **Results:** -In this sample, there was a higher incidence of female students.-69.96% of students reported that they had not received formal training on hand hygiene in the last 3 years.-95.53% of students mentioned encountering a lack of hand sanitizer or soap during their internships-Only 40.83% of students recognized that the minimum effective time for a hand sanitizer is 20 seconds.-In all three specialties, an average level of knowledge regarding hand hygiene was observed.-No significant difference was found in the level of knowledge among students from the three specialties p= 0,9198 **Conclusions:** The mediocre scores regarding hand hygiene knowledge suggest that healthcare students need more attention in this area, as well as improvements in associated behaviors and their initial training, including in the university curriculum.

**Keywords:** hand hygiene, medical students, healthcare-associated infections

## HEATWAVES AND HEAT-RELATED ANALYSIS IN TÂRGU MUREȘ DURING JULY-AUGUST 2024

Irina Savu[1], Zoltan Abram[1]

[1]Department of Hygiene, UMFST G.E. Palade Tîrgu Mureş

**Background:** Heatwaves are among the most dangerous hazards, and due to climate change, heatwaves have increased in intensity and are predicted to continue to increase in the 21st century. World Health Organization estimates that with an ageing population and the increasing prevalence of chronic diseases such as diabetes, dementia, kidney, respiratory and cardiovascular diseases, people will become increasingly susceptible to the negative effects of heat in the future. Prolonged exposure to heat causes severe symptoms, heatstroke or death from stroke or severe dehydration. **Material and methods:** Different statistics were made at Târgu Mureș County Emergency Hospital based on patients who were presented at UPU SMURD during July and August 2024. The hospitalization was analyzed according to gender, age, diagnosis and emergencies, according to mean temperature per day. **Results:** The results underline the increase of the number of emergency presentations related to the increased temperature per day. They conclude the impact of heatwaves on people's health during 2024 summer. In July-August 2024 men aged between 36-64 were hospitalized in the highest rate, there was a clear connection between the mean temperature and cardiovascular diseases and between mean temperature and hospitalization. **Conclusions:** In conclusion, it is estimated that there are deaths excesses each year and that safety and protective measures are needed to prevent people from being affected by heatwaves. Administration of drinking fluids, avoiding prolonged exposure to the sun, using short cool showers and being constantly informed about weather warnings are

just some of the measures recommended by WHO. People at high risk such as the elderly, children, pregnant women and people with chronic diseases need special attention and supervision during heatwaves.

**Keywords:** climate change, heatwaves, health effects, temperature, hospitalization

---

## STUDY ON THE IMPORTANCE OF HAND HYGIENE IN PREVENTION HEALTHCARE-ASSOCIATED INFECTIONS

Zoltan Abram[1], Mirela Bute[2], Ionuț Focșa[2]

[1]Department of Hygiene, UMFST G.E. Palade Tîrgu Mureş
[2]Department of Epidemiology, UMFST G.E. Palade Tîrgu Mureş

**Background:** Hand hygiene is the first step in the exercise of the medical act. Infections associated with healthcare can be prevented by rigorous hand hygiene of medical personnel, either by washing with water and antiseptic soap, or by disinfecting with hydro-alcoholic solutions (disinfectants based on alcohol and chlorhexidine). **Material and methods:** The study is retrospective, analytical, taking into account international studies that were based on the importance of hand hygiene in preventing the spread of infections. **Results:** The World Health Organization and international studies have revealed that there are five key moments for performing hand hygiene and have demonstrated a significant reduction in the incidence rate of nosocomial infections. At the same time, in addition to reducing nosocomial infections, hand hygiene also contributes to the protection of vulnerable patients, as well as to the reduction of medical costs. **Conclusions:** Rigorous hand hygiene is an essential measure in preventing nosocomial infections and protecting public health. Adherence to correct hand washing and disinfection techniques, along with other preventive measures, can significantly reduce the risks of infection in hospitals and other types of patient care facilities.

**Keywords:** hand hygiene, disinfectant, alcohol, prevention, WHO

---

## THE EVALUATION OF THE RELATIONSHIPS BETWEEN VITAMIN D SUPPLEMENTATION, 25-OH VITAMIN D STATUS, AND OTHER ASSOCIATED PATHOLOGIES IN A COHORT OF PATIENTS FROM MUREȘ COUNTY.

Adela Toma[1], Anastasia Boaghi[2], Tabita Ranghiuc[1], Daniela Edith Ceana[1], Zoltan Abram[3]

[1]Department of Public Health and Healthcare Management, UMFST G.E. Palade Târgu Mureș
[2]Department of Endocrinology, UMFST G.E. Palade Târgu Mureș
[3]Department of Hygiene, UMFST G.E. Palade Târgu Mureș

**Background:** Vitamin D is a steroid hormone with a crucial role in various physiological functions. However, its effects ondifferent pathologies remain the subject of extensive and, at times, contradictory research. While vitamin D supplementation mayprovide benefits in certain conditions, such as osteoporosis or severe deficiencies, its impact on other diseases— including obesity,thyroid disorders, diabetes, and cardiovascular pathologies—remains a topic of debate within the scientific community. **Material and methods:** The study was conducted on a cohort of 100 patients who attended the endocrinology clinic of Dr. Valer Russu Municipal Hospital in Ludus. The patients serum levels of 25-OH-vitamin D, history of vitamin D supplementation, and the presence or absence of specific pathologies were assessed. Statistical analysis included correlation tests and logistic regression to examine the associations between these variables. **Results:** Among the patients included in the study, 79% had a vitamin D deficiency, while vitamin D supplementation was confirmed in only 21% of the patients. Vitamin D supplementation was correlated with higher serum levels of 25-OH-vitamin D (p=0.002, OR=0.178, CI=95%[0.061-0.517]), playing a protective rolein maintaining normal 25-OH-vitamin D levels. In patients with obesity, a significantly lower median value of 25-OH vitamin Dwas found (17±IQR 13) compared to the median value of 25-OH-vitamin D in normal weight/overweight patients (23±IQR 14) (p=0.048, testul Mann- Whitney). Regarding the correlations between 25-OH-vitamin D status and conditions such as osteoporosis, autoimmune chronic thyroiditis, multinodular goiter, dyslipidemia, cardiovascular diseases and diabetes, no statistically significant differences were identified. **Conclusions:** Vitamin D supplementation contributes to the improvement of serum 25-OH-vitamin D levels. Patients with obesity have lower vitamin D levels compared to patients with normal weight/overweight. Further research is needed to definitively establish how vitamin D levels influence various pathologies, as wellas to determine the optimal supplementation doses, depending on the associated conditions.

**Keywords:** vitamin D, supplementation, 25-OH-vitamin D, obesity, thyroid diseases

---

## CONVERSATIONAL AI AS A CLIMATE EDUCATOR: A QUICK ASSESSMENT OF CHATGPT'S ABILITY TO REBUT MYTHS AND EXPLAIN HEALTH CONSEQUENCES

Valentin Nadasan[1], Iozsef-Lorand Ferencz[1], Geanina Moldovan[1], Zoltan Abram[1]

[1]Department of Hygiene, UMFST G.E. Palade Tîrgu Mureş

**Background:** The public's climate change (CC) literacy is crucial to raise awareness of its impacts and gain support for mitigating efforts. However, educational campaigns are threatened by the limited capacity to regularly update the information and possibly undermined by viral dissemination of misinformation. The study aimed to answer the following questions: 1. How good are artificial intelligence (AI) chatbots at rebutting the most common misconceptions about CC? 2. How accurately do AI chatbots address questions about the health consequences of CC? **Material and methods:** To test AI chatbots capacity to rebut CC myths, ChatGPT4oPlus was interrogated about the most common climate change myths using specific prompts and the answers were compared with evidence from the literature. To assess how AI chatbots answer questions about the health consequences of CC, 10 questions were selected from the ClimateMed academic curriculum. The questions were copied into the prompt field of two AI chatbots, namely ChatGPT 4o Plus (Open AI) and Gemini (Google). A word limit was set for each answer. Answers compared against the information included in the ClimateMed lecture materials. **Results:** Regarding the first aim, ChatGPT was able to accurately debunk the most common CC myths such as: CC is a natural phenomenon; CC is not caused by humans; there is no scientific consensus on CC; carbon dioxide can't cause CC; cold weather disproves global warming; electric vehicles are worse for the environment than gas cars. Regarding the second aim of the study, AI chatbots provided well structured, complete, and mostly accurate answers, even when the question was short and did not point out specific areas of interest. The relevance of the answers probably depends most on the clarity of the question. **Conclusions:** AI conversational chatbots could be a helpful educational tool when asked to provide text answers.

**Keywords:** education, artificial intelligence, climate change, misinformation, chatbots

## SOME DATA ABOUT ALCOHOL CONSUMPTION AND PREVENTION AMONG ADOLESCENTS

Raul-Ștefan Runcan[1], Zoltán Ábrám[1]

[1]Department of Hygiene, UMFST G.E. Palade Tîrgu Mureş

**Background:** Excessive alcohol consumption represents a major challenge for medicine and public health, contributes to increased morbidity and mortality. The monitorization of alcohol consumption and health attitude makes it possible to know the risk factors that show correlation with health, general condition and drugs. **Material and methods:** This paper aims to bring new information based on specialized studies from different countries. It was examined by using a questionnaire following drug abuse attitudes (smoking, alcohol consumption, drug consumption) of young participants during a Romanian music festival. **Results:** Alcohol use at an early age is a serious public health problem, more than a third of adolescents in the EU reporting at least one episode of heavy drinking at least once given in the last 30 days, representing the consumption of five or more drinks on a single occasion. It is concluded that in Romania alcohol consumption prevalence is lower than in the EU member States, while legal and illegal drug use habits are much higher at different events, as music festivals organized for youth. **Conclusions:** Cognitive-behavioral, family, multidimensional, and other psychosocial interventions have been effective in reducing the frequency and amount of alcohol consumption, as well as increasing the duration of abstinence. The main goals for the future is to implement different prevention strategie, school-based, clinic-based, and community-based prevention and cessation programs for young people.

**Keywords:** alcohol consumption, adolescents, prevention, health education

## EVALUATING THE NECESSITY OF ACCESS CONTROL SYSTEMS IN EDUCATIONAL HOSPITALS TO PREVENT NOSOCOMIAL INFECTIONS

Radu Cristian Ionescu[1], Ábrám Zoltán[2], Valentin Nădășan[2], Geanina Moldovan[2], Costel Dumitru[2], Iosif Balint[2], Iozsef-Loránd Ferencz[2]

[1]Department of Internal Medicine VII, UMFST G.E. Palade Tîrgu Mureş
[2]Department of Hygiene, UMFST G.E. Palade Tîrgu Mureş

**Background:** Nosocomial infections represent a significant health challenge in Romania, particularly in hospitals serving as educational centers. Effective control measures are essential to limit infection transmission among healthcare staff, students, and visitors.To assess infection control needs in educational hospitals in Mureș County and explore improvements through access control and training. **Material and methods:** Existing statistical data on nosocomial infections in Mureș County were analyzed and compared with national and European levels. This assessment identified critical gaps in infection prevention, guiding the development of proposed interventions. **Results:** The findings indicate that implementing structured access control systems, including monitored entry points, personalized ID cards, and dedicated hygiene facilities, could reduce infection rates. A mandatory clinical safety initiation course for students is also suggested to improve compliance with hygiene standards. **Conclusions:** High rates of nosocomial infections underscore the need for enhanced preventive measures. Establishing access control systems and a structured safety course in educational hospitals offers a sustainable model for improving patient safety and infection control.

**Keywords:** nosocomial infections, infection prevention, access control, educational hospitals, clinical safety

## ORAL HYGIENE WITH BREAST MILK IN THE NEONATAL INTENSIVE CARE UNIT

Andrea-Noemi Toth[1], Marta Simon[2], Manuela Camelia Cucerea[2], Monika Rusneac[2], Zoltan Ábram[1]

[1]Department of Hygiene, UMFST G.E. Palade Tîrgu Mureş
[2]Department of Pediatrics IV, UMFST G.E. Palade Tîrgu Mureş

**Background:** Thin mucosa, rich blood supply and underdeveloped salivary glands characterize the newborn's oral cavity. In neonates admitted to the neonatal intensive care unit (NICU), poor oral hygiene provides pathways for bacterial colonization and

can act as entry point for pathogens. Due to their low immunity, neonates are more susceptible for hospital-aquired infections. Proper oral hygiene is necessary to support the oral microbiome and maintain overall health. **Material and methods:** A literature search was conducted on two major databases - PubMed and Web of Science using the following keywords: "oral hygiene", "neonatal intensive care unit", "breast milk" - with publication dates between 2019 and 2024. **Results:** Simple mechanical oral care with saline solution should be included in the minimal daily care bundle. Pharmacological agents in oral hygiene are widely used and include glycerine swabs, chlorhexidine and sodium bicarbonate. Newer studies search the efficacy of colostrum and mother's breast milk in the oral care of the infant. Colostrum has high concentrations of secretory immunoglobulin A (sIgA), anti-inflammatory agents, growth factors, lactoferrin and antioxidants, therefore helps establish a more natural microbiome of the oral cavity and gastrointestinal system. Most studies showed that incorporating colostrum or breast milk in oral care of the newborns significantly reduces bacterial colonization. As a result, the incidence of ventilator-induce pneumonia decreases, mechanical ventilation duration shortens and hospital stay is reduced. Beside promoting local immunity, oral care with breast milk improves feeding intolerance and facilitates earlier achievement of full enteral nutrition. **Conclusions:** Preventive bundle is effective in reducing bacterial colonizations in NICUs. Oral care with colostrum or mother's breast milk is a simple intervention with many potential benefits.

**Keywords:** oral hygiene, neonatal intensive care unit, breast milk, colostrum, neonate

# INFECTIOUS DISEASES

## NEWLY DIAGNOSED HIV INFECTED PATIENTS IN 2020-2023 IN MURES COUNTY

Erzsébet Iringó Zaharia Kézdi[1], Zsuzsanna Nagy[1], Ákos Vince Andrejkovits[1], Andrea Incze[1]

[1]Department of Infectious Diseases, UMFST G.E. Palade Tîrgu Mureş

**Background:** Background. After 40 years of AIDS, the epidemic is ongoing, HIV remains a major public health issue. Aim of the present study was to create a comprehensive picture of newly diagnosed patients with HIV/AIDS. **Material and methods:** In a retrospective cross-sectional study were enrolled all the newly diagnosed HIV-positive patients at the 1st Infectious Disease County Hospital Târgu Mureş from January 2020 to December 2023. Data collected include demographics, TCD4 cell count and viral load. Baseline characteristics were compared by stage and HIV-specific laboratory. Statistical analyses were performed using GraphPad Prism, $p<0.05$ was considered to indicate statistical significance. **Results:** 64 patients were included, with a median age of 30,6 years, 79.7% males, 54.7% from rural areas; overall, 43 (67.1%) completed the mandatory 10 years of education. During the four-year period, the most frequently mentioned occupation was catering (14.1%), only 19 (29.7%) were unemployed, 60,6% of the patients with heterosexual orientation, 33.9% claimed to have had more than 4 sexual partners in the last 5 years. Heterosexual transmission in 57.8% and MSM or bisexual in 35.9% were present. The largest proportion of infected patients (37.5%) was discovered as a result of screening. More than half of the cases - 33 persons (51.6%) - were diagnosed in A, 18 (28,1%) in B and 13 (20,3%) in C stage. In 38.7% the TCD4 cell count at the moment of the diagnosis were between 200-500/mm3, respectively in 32.3% below 200/mm3. The majority of patients (43.5%) had a viral load between 1,000 and 99,999. The death rate was 6.3%. A positive correlation was found between stage A and diagnosis by screening ($p=0,003$). A positive relationship was found between symptomatic patients and a CD4+ T lymphocyte count <350/mm3, late presenters ($p=0.013$). **Conclusions:** Characteristics of newly diagnosed HIV infections provides an opportunity to strengthen screening methods, and to implement prevention strategy.

**Keywords:** HIV, newly diagnosed cases, characteristics

# INTERNAL MEDICINE

## DEFENSINS IN POLLEN FOOD ALLERGY SYNDROME

Corina Ureche[1], Teodora Nicola-Varo[1]

[1]Department of Internal Medicine II, UMFST G.E. Palade Tîrgu Mureş

**Background:** Pollen-Food Allergy Syndrome (PFAS) is a form of food allergy that causes symptoms affecting especially the lips, mouth, tongue, and throat when consuming untreated vegetable foods. PFAS is commonly found in individuals sensitized to pollen, often manifesting in patients with seasonal allergic rhinitis. These allergic reactions are due to cross-reactivity between proteins present in pollen and certain foods. **Material and methods:** Cases of PFAS are often related to sensitization to weeds pollens which have similar protein structures to certain foods. Diagnosis involves medical history, clinical examination, and skin tests, such as prick-to-prick tests with fresh foods. Molecular diagnosis (component resolved diagnosis-CRD )allows for identifying allergies by evaluating the IgE response to specific allergens, including Art v 1 and Amb a 4.We are presenting a case of simultaneous severe facial, cutaneous, respiratory and digestive symptoms in a patient where the CRD method identified the molecular allergenic causes. **Results:** Defensins are ancient antimicrobial peptides found in plants, insects, invertebrates, and humans and have been classified in the pathogenesis-related protein family (PR)-12. Art v 1 and Amb a 4 are defensins,identified by CRD in our patient's serum. Defensins molecules are not only present in weed pollens; they can also be found in certain foods, such as peanuts (Ara h 12, Ara h 13), celery (Api g 7), soybean (Gly m 2), and horse chestnut (Aes h 1), potentially causing cross-reacting reactions.It helps in identifying the causes of PFAS and in elaborating a personal plan of avoidance and treatment. **Conclusions:** PFAS is a complex allergic reaction that can affect individuals who are sensitized to pollen. Using surrogate markers like Art v 1 and Amb a 4 could improve the evaluation of patients with unclear food allergies. Meanwhile, specific immunotherapy targeting these molecules has the potential to enhance patients' quality of life and reduce unnecessary food avoidance.

**Keywords:** pollen food syndrome, cross reactivity, component resolved diagnosis

## SYNTHESIS OF CURRENT URINARY TRACT INFECTION GUIDELINES

Krisztina Szalman[1]

[1]Dept. of Internal Medicine VIII, UMFST G.E. Palade Tîrgu Mureş

**Background:** Urinary tract infections are among the most common infections, both in ambulatory medicine and in the hospital. A diagnostic and therapeutic approach adhering to international guidelines is mandatory, especially in the era of antibiotic resistance. **Material and methods:** We compared several current guidelines regarding the diagnosis and treatment of urinary tract infections - the European Society of Urology, the National Kidney Foundation of the USA, the WikiGuidelines Group Consensus Statement, analyzing the main topics that were discussed by all three, with possible differences between the guidelines and certain topics discussed only in some of the above guidelines. We present the newest recommandations regarding antibiotic stewardship. We analyzed the most important changes compared to the last IDSA UTI and asymptomatic bacteriuria guidelines from 2011 and 2019. We also analyzed the results of a local anonymous questionnaire, disseminated among family doctors, regarding diagnostic and therapeutic aproach to urinary tract infections, we analyzed the concordance of local diagnostic and therapeutic measures with the current guidelines. **Results:** Diagnosing a urinary tract infection can be challenging. The importance of differentiation from asymptomatic bacteriuria cannot be overemphasized. Choosing the correct empiric treatment can only be done by knowing the local resistance to different antibiotics. **Conclusions:** Although urinary infections are well known, even in their diagnosis there are still aspects that require clarification. The therapeutic strategies require continuous improvement to be able to keep up with the increasing resistance of bacteria to antibiotics. antibiotic Stewardship strategies must be promoted.

**Keywords:** urinary tract infection, asymptomatic bacteriuria, antibiotic stewardship

## QUALITY OF LIFE IN ULCERATIVE COLITIS PATIENTS

Danusia Onisor[1], Alina Boeriu[1], Olga Brusnic[1], Kinga Szekely[1], Daniela Dobru[1]

[1]Department of Internal Medicine VII, UMFST G.E. Palade Tîrgu Mureş

**Background:** Quality of life (QoL) is concept that quantify a person's wellbeing. Ulcerative colitis (UC) is a chronic recurrent inflammation of the digestive tract, limited to the colon mucosa, with poor prognostic and impact on quality of life. Therefore this study aimed to investigated the correlation between QoL and risks factors in patients with UC. **Material and methods:** In order to evaluate the patients' quality of life we used the inflammatory bowel disease questionnaire (IBDQ-32), and for psychological factors Hospital Anxiety and Depression Scale (HADS). The UDCAI disease activity scores was also calculated. Pearson descriptive statistics and multiple regression analyses were performed. **Results:** We included 28 patients diagnosed with UC. 17 (63,15%) were men, with a mean age of 32.3 (SD 4.21) years, 9 (32%) were with active disease. The average period since the onset of the disease of 15 months (SD 5,3). Quality of life was affected in 61.1% of patients. We obtained correlations of QoL with the time since the onset of the disease (p=0.002), but we did not obtain correlations between QoL and UDCAI (p=0.33), nor with fecal calprotectin (p=0.21). Patients with higher anxiety scores had lower QoL in the social area (p=0.023).However, depression was statistically significantly associated with QoL in the emotional area (p=0.002) but not with the intestinal symptoms area (p=0.3) **Conclusions:** In this study the presence of psychological factors leads to a decrease in quality of life more then somatic factors.

**Keywords:** ulcerative colitis, quality of life, psychological factors

## CHARACTERISTICS OF LOWER GASTROINTESTINAL BLEEDING IN THE PATIENT POPULATION OF THE 1ST INTERNAL MEDICINE CLINIC IN TÂRGU MUREȘ

Kelemen Piroska[1]

[1]Department of Internal Medicine II, UMFST G.E. Palade Tîrgu Mureş

**Background:** The significance of acute lower gastrointestinal (GI) bleeding is determined by its increasing morbidity and mortality rates. Recurrence of bleeding occurs in 25% of patients. The objective of this study is to analyze the data of patients diagnosed with lower gastrointestinal bleeding at the 1st Internal Medicine Clinic in Târgu Mureș. **Material and methods:** In this retrospective study, we examined the records of 73 patients diagnosed with lower gastrointestinal bleeding between January 2020 and April 2022. Data were analyzed based on various factors: gender, age, comorbidities, history of gastrointestinal disease, forms of bleeding manifestation, endoscopic findings, laboratory parameters, and applied treatments. **Results:** Bleeding manifested as rectorrhagia in 38.4% of cases and hematochezia in 1.4%. Occult bleeding occurred in 65.8% of cases, while 5.5% had a prior history of bleeding. Among the patients, 13.7% were undergoing chronic Trombostop therapy, 11% were on Aspirin, and 24.7% were treated with direct oral anticoagulants (DOACs), with 17.8% of these cases involving dicoumarol overdose. Endoscopic findings revealed hemorrhoidal nodes in 50.6% of cases and polyps in 17.7% of cases, of which 13.9% were sessile and 8.9% pedunculated. Malignant lesions were present in 27.4% of cases, with 15.1% being newly diagnosed and 4.1% recurrences. Regarding treatment, epinephrine injection was used in 5.5% of cases, hemorrhoid surgery in 13.7%, and polypectomy in 12.3%. Hemostatic drug therapy involved fresh frozen plasma in 39.2%, Adrenostazin in 19%, Etamsylate in 16.5%, and vitamin K in 3.8% of cases. **Conclusions:** The most affected demographic was individuals over 60 years old. Bleeding most commonly presented as rectorrhagia. Chronic DOAC therapy was frequently encountered. In the studied patient group, the most common causes of lower gastrointestinal bleeding were hemorrhoidal nodes, malignant lesions, and polyps. Endoscopic examination proved to be the most critical tool for diagnosing and determining emergency therapy for lower gastrointestinal bleeding.

**Keywords:** lower gastrointestinal bleeding, rectorrhagia, hematochezia, occult bleeding, endoscopic examination

## CLINICAL, ENDOSCOPIC, AND PATHOLOGIC INSIGHTS INTO H. PYLORI GASTRITIS: A COMPARATIVE ANALYSIS

Sabrina-Nicoleta Munteanu[1], Cristina Monica Pantea[1], Anca Negovan[1]

[1]Department of Internal Medicine III and Family Medicine, UMFST G.E. Palade Tîrgu Mureş

**Background:** This single-center study aims to determine the clinical, biologic, and endoscopic differences between patients with Helicobacter pylori (H. pylori) gastritis compared to patients with non-H. pylori gastritis (inactive gastritis or reactive gastropathy) or without histologic gastric changes. **Material and methods:** Two retrospective analyses were performed. The first analysis included 99 patients with histopathologically confirmed H. pylori gastritis and 167 patients with non-H. pylori associated inflammation or gastropathy, while the second one evaluated 99 patients with H. pylori gastritis against 76 patients without any mucosal changes. **Results:** Cardiovascular disease was significantly more prevalent in patients with H. pylori gastritis ($p<0.0001$, OR=5.62;$p=0.005$, OR=2.38), while chronic kidney disease occurred more often in those with non-H. pylori gastritis ($p=0.04$, OR=0.3095). Alcohol consumption is more prevalent in those without histological lesions ($p=0.03$, OR=0.44). No difference related to the distribution of dyspeptic symptoms/alarming features or laboratory parameters between groups was identified. Corporal erythematous mucosa ($p=0.03$; OR 1.81) and submucosal hemorrhages ($p=0.03$, OR=2.1) were associated with H. pylori gastritis in the first analysis but not mucosal defects (erosions, ulcers). Hiatal hernia occured more often in H. pylori negative patients($p=0.02$, OR=0.53). Antral and corporal erythematous mucosa were associated with H. pylori when compared with normal histology patients ($p=0.006$, OR 2.95 and $p=0.047$,OR 2.07), along with duodenal lesions ($p<0.0001$, OR 8.71). In a logistic regression model, history of anemia ($p=0.00$, OR 5.83), antral ($p=0.02$,OR 3.23), corporal erythematous mucosa ($p=0.01$, OR 2.86), and duodenal lesions ($p<0.0001$, OR 11.58) were predictors of H. pylori gastritis, but not cardiovascular comorbidities ($p=0.001$, OR 0.38). **Conclusions:** Cardiovascular comorbidities presented a higher prevalence in H. pylori positive patients without being predictors of H. pylori gastritis (being associated only due to shared risk factors or confounding variables). History of anemia, duodenal lesions, and gastric erythematous mucosa are predictors of H. pylori gastritis, emphasizing the need for targeted approaches for its diagnosis.

**Keywords:** Helicobacter pylori, active gastritis, non-active gastritis

# MICROBIOLOGY

## EXPLORING ZONULIN PROTEIN AS A NON-INVASIVE BIOMARKER IN METABOLIC DYSFUNCTION ASSOCIATED WITH FATTY LIVER DISEASE: RESULTS FROM A PROSPECTIVE OBSERVATIONAL STUDY

Naomi Ciurea[1], Simona Bataga[1]

[1]Department of Internal Medicine I, UMFST G.E. Palade Tîrgu Mureş

**Background:** Hepatic steatosis is a prevalent chronic liver condition, now affecting around 25.24% of the global population, with rising rates over the past two decades. Metabolic-associated steatohepatitis (MASLD) is closely linked to obesity and can disrupt intestinal barrier function, increasing intestinal permeability, especially in patients following a Western diet high in saturated fats and fructose, which may lead to leaky gut syndrome. **Material and methods:** A prospective study was conducted with 52 patients from the Gastroenterology Clinic of Targu Mures County Emergency Hospital. Each patient underwent abdominal ultrasound, blood tests (including fasting glucose, HOMA index, cholesterol, triglycerides, AST, ALT), and intestinal permeability testing through zonulin protein levels. All patients were also screened for hepatic steatosis and fibrosis using FibroMax. Participants were categorized into three BMI groups: normal weight (group 0), overweight (group 1, BMI 25-29.9 kg/m$^2$), and obese (group 2, BMI >30 kg/m$^2$). Results were analyzed with two-sided tests (significance level of 0.05) using Bonferroni correction. **Results:** The study group was 58% women, with 35% aged 30-50 and 37% over 50. Among participants, 48.1% had a normal BMI, 21.2% were overweight, and 30.8% were obese. Of patients without steatosis, 90% had a normal BMI, while 61.9% of those with HOMA >2.5 were obese. In obese patients, 94% had S2 or higher steatosis. A weak correlation was found between BMI and zonulin protein ($p = 0.100$). Elevated zonulin (>107 ng/ml) was observed in 26.9% of patients, of whom 50% were obese. **Conclusions:** Our result showed an association between BMI value and the presence or absence of steatosis and fibrosis, and also a correlation between SteatoTest and FibroTest results and elevated zonulin protein above normal limits. Larger sample studies are needed in the future to accurately assess these correlations.

**Keywords:** intestinal permeability, MASLD, hepatic steatosis, leaky gut syndrome

# NEONATOLOGY

## CEREBRAL AND SYSTEMIC HEMODYNAMIC PATTERN IN CARDIORESPIRATORY STABLE VERY PRETERM INFANTS IN THE FIRST 96 HOURS OF LIFE

Manuela Camelia Cucerea[1], Marta Simon[1], Zsuzsanna Gall[1], Madalina Anciuc-Crauciuc[1], Andreea Racean[1]

[1]Department of Pediatrics IV, UMFST G.E. Palade Tîrgu Mureş

**Background:** The preterm neonate with a gestational age of less than 32 weeks is susceptible to the persistency of the ductus arteriosus after 72 hours of life, with various possible negative effects on the general and cerebral hemodynamic status. Establishment of standard parameters are needed in this category of preterm infants to be able to compare data of those with changes caused by the persistent ductus arteriosus.Acknowledgement: "This work was supported by the University of Medicine, Pharmacy, Science and Technology "George Emil Palade" of Târgu Mureş Research Grant number 10126/3 17.12.2020." **Material and methods:** We followed the dynamics at 2-6-12-24-48-72-96 hours of the changes in blood gases, blood pressure, systolic and diastolic cerebral velocities at the level of the anterior cerebral artery, in hemodynamically stable premature infants under 32 weeks of gestation. We excluded all preterms diagnosed with persistent ductus arteriosus, perinatal history of infection, surfactant administration, or need of invasive mechanical ventilation in the first 96 hours of life. **Results:** 31 preterm infants were included in our study, with mean birth weight of 1329.7(±214.7)g. In the first 96 hours of life heart rate varied between 129.4(±14.4) and 138.8(±11.3)b/min, systolic and diastolic blood pressure between 48.9(±6.1) to 51.3(±7.2)/29.2(±5.6) to 34.4(±7.4)mmHg, showing significant difference (p=0.000002) on the diastolic component. Systolic velocities of the anterior cerebral artery showed minimal decreasing tendency from 27.5(±4.7) at 2 hours to 26.4(±5.0)cm/s at 6 hours, rising and stabilizing at 72-96 hours to 33.2(±7.3)cm/s. Diastolic velocities rose from 6.4(±2.0) to 7.7(±2.3)cm/s in the first 96 hours showing significant difference. **Conclusions:** Cerebral hemodynamics follow the systemic hemodynamic changes in cardiorespiratory stable, very preterm infants in the first 96 hours of life.

**Keywords:** cerebral hemodynamics, postnatal physiological hemodynamics, very preterm

## THE ROLE OF S100B PROTEIN IN PREDICTING INTRAVENTRICULAR HEMORRHAGE IN PRETERM INFANTS UNDER 32 WEEKS OF GESTATIONAL AGE

Andrea-Noemi Toth[1], Marta Simon[1], Manuela Camelia Cucerea[1], Mădălina Anciuc-Crauciuc[1], Mariana Cornelia Tilinca[2]

[1]Department of Pediatrics IV, UMFST G.E. Palade Tîrgu Mureş

[2]Department of Internal Medicine II, UMFST G.E. Palade Tîrgu Mureş

**Background:** Intraventricular hemorrhage (IVH) represents the most common form of perinatal brain injury among preterm infants, its incidence being inversely proportional to gestational age (GA) and birth weight (BW). Higher grades of IVH repesent an important burden on neurodevelopmental outcome. Many neurobiomarkers were tested during the past years in an effort to predict brain damage, one of the most promising being the calcium-binding S100B protein. **Material and methods:** We carried out a general review of literature to describe the calcium-binding S100B protein in relation to IVH in preterm infants less than 32 weeks of gestational age. Two major datebases, Pubmed and Web of Science were searched using the following keywords: "S100B protein" and "intraventricular hemorrhage" and "prematurity" with a timeframe from 2019-2024. **Results:** The S100B protein reflects astrocytic activation and has a double function depending on its levels: at nanomalor concentrations is neurotrophic, whereas in micromolar levels activates apoptosis and neuronal inflammation. Elevated S100B levels were found in many biological fluids, such as blood, cerebrospinal fluid (CSF) or urine, but only few studies discuss its predictive role from cord blood. Persistently high values are correlated with higher grades of IVH and therefore can predict poor neurodevelopmental outcome. Timing of measurement is important, increased levels in the first 24 hours seem to be the most predictive. When used alongside with perinatal history data and cord blood pH, S100B seems to be a promising biomarker for identifying preterm infants at high risk for developing severe IVH before imaging findings. This time frame allows for additional neuroprotective interventions. **Conclusions:** Prevention of IVH is the first and most important treatment in IVH, therefore a realiable biomarker is needed in

assessing infants with high risk. S100B protein can predict the likelihood of severe IVH in premature infants and appears to be a promising biomarker for brain injury in preterm infants.

**Keywords:** S100B protein, intraventricular hemorrhage, prematurity, brain injury

## THE EFFECT OF TOBACCO SMOKING DURING PREGNANCY ON PLASMA MALONDIALDEHYDE (MDA) LEVELS IN MOTHER-NEWBORN PAIRS

Zsuzsánna Simon-Szabó[1], Erzsébet Májai[2], Enikő Nemes Nagy[3], Béla Szabó[4], Manuela Camelia Cucerea[5]

[1]Department of Pathophysiology, UMFST G.E. Palade Tîrgu Mureş
[2]Department of Toxicology and Biopharmacy, UMFST G.E. Palade Tîrgu Mureş
[3]Department of Biochemistry, UMFST G.E. Palade Tîrgu Mureş
[4]Department of Gynecology I, UMFST G.E. Palade Tîrgu Mureş
[5]Department of Pediatrics IV, UMFST G.E. Palade Tîrgu Mureş

**Background:** Smoking increases the production of free radicals and can be considered an important contributor to increased oxidative stress in pregnant women. Meghea et al investigated smoking habits of pregnant women in Romania and found that 15% are active smokers during pregnancy. Our study aimed to investigate the level of oxidative stress in the presence of maternal smoking by measuring serum malondialdehyde levels in mother-newborn pairs. **Material and methods:** The study enrolled 74 volunteer pregnant women in 2 groups: a control group (n=50) of healthy pregnant women with physiological pregnancies, and a pathology group (n=24) of 16 preterm labor and 8 pregnant women with known fetal congenital heart defects, and 2-2 subgroups according to smoking status. A self-administered questionnaire assessing smoking habits was completed. MDA was determined by HPLC from cord blood and maternal blood by venipuncture at birth. **Results:** The smoking prevalence was 30%. Maternal plasma MDA levels were not significantly different between smokers and non-smokers in the two groups, but a significant difference was observed between controls and pathological cases in the smoking subgroup ($p<0.005$). MDA levels were higher in vaginal delivery compared to C-section birth. Mothers of healthy newborns had significantly higher MDA levels than those of pathological pregnancies. The MDA levels of newborns were influenced by type of delivery, maternal smoking status and pathology. Statistically significant differences in cord blood MDA levels were observed between healthy and pathological newborns in the nonsmoking subgroup and in the control group between smoking and nonsmoking subgroups. **Conclusions:** Whereas delivery mode and smoking did not increase oxidative stress in mothers, statistically significant differences in neonatal MDA values were observed between smoking and non-smoking groups, independent of delivery mode.

**Keywords:** oxidative stress, malondialdehyde (MDA), smoking, pregnancy, newborn

# NEUROLOGY

## MONITORING THERAPEUTIC ALTERNATIVES IN CRITICAL NEUROLOGICAL AUTOIMMUNE DISEASES

Adina Stoian[1], Andrei Manea[2], Rodica Bălașa[3]

[1]Department of Pathophysiology, UMFST G.E. Palade Tîrgu Mureş
[2]Department of Anatomy, UMFST G.E. Palade Tîrgu Mureş
[3]Department of Neurology, UMFST G.E. Palade Tîrgu Mureş

**Background:** The immune system plays a crucial role in protecting the body against infectious agents, maintaining a balance between recognizing "self" and "non-self" to ensure host integrity. In some situations, this balance is disrupted, leading to abnormal immune reactivity against the body's own structures, which can result in autoimmune diseases. **Material and methods:** We conducted a retrospective cross-sectional study including patients admitted to the Neurology Clinic I of the Emergency County Clinical Hospital Târgu Mureș between January 2020 and December 2023, diagnosed with autoimmune neurological diseases, treated with IVIg or undergoing TPE. **Results:** The mean age of patients was 54.49 years, ranging from 20 to 79 years. The most frequently encountered autoimmune neurological pathology was chronic inflammatory demyelinating polyradiculoneuropathy (CIDP). There were no statistically significant differences in sex between the group receiving IVIg or TPE, although patients receiving IVIg were older. A higher percentage of patients were treated with IVIg, which is less invasive compared to TPE. In 2022, due to supply and production difficulties with IVIg, TPE became the predominant treatment method for patients with autoimmune neurological diseases. IVIg usage began to increase again in 2023. Medication expenses were higher in the IVIg-treated group, while expenses for medical supplies were higher in the TPE-treated group. Cost analysis showed higher total hospitalization costs in patients treated with IVIg compared to those treated with TPE. Patients undergoing TPE had longer hospital stays compared to those treated with IVIg. **Conclusions:** The analysis provided an overview of the financial implications and procedural aspects, highlighting the complexity and variability of costs associated with these pathologies. Implementing data registries would be essential for developing efficient and sustainable resource management in healthcare and for choosing personalized treatments.This work was supported George Emil Palade University of Medicine, Pharmacy, Science and Technology of Targu Mures, Research Grant number 163/8/10.01.2023

**Keywords:** IVIg, Therapeutic plasma exchange (TPE), neurological autoimmune disease, CIDP

# ORTHOPEDICS

## TRAINING THE IMPACT OF PRIOR EXPERIENCE, OBSERVATIONAL LEARNING, AND SIMULATION ON KNEE ARTHROSCOPY SKILL ACQUISITION

Andrei-Marian Feier[1], Octav-Marius Russu[1], Gergő-Tamás Szórádi[1], Sándor-György Zuh[1], Tudor Sorin Pop[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** Proficiency in arthroscopy requires extensive training and is representing a challenge for novices due to a long learning curve. This study sought to examine how prior experience, observational learning, and simulation based training impact skill acquisition in arthroscopy trainees (both students and medical residents) **Material and methods:** Following PRISMA guidelines, a systematic search was conducted across Pubmed and Medline databases focusing on studies published from 2010 to 2021. Keywords included "novice arthroscopy training" "arthroscopy learning curve" and "arthroscopy simulation" Studies were included if they involved novice or resident trainees and evaluated factors such as gaming, sports involvement, observation techniques, and simulation modules. Studies were screened, assessed for quality, and extracted data on key outcomes (time reduction, error rates, and performance scores) **Results:** Prior experience in 3D sports and first person shooter gaming correlated with enhanced initial arthroscopy performance ($p < 0.05$), leading to a 15% reduction in procedural time. Observational learning, especially through non-expert demonstrations, improved camera handling and task completion by 12% ($p < 0.05$). Simulation training modules yielded a 21.9-minute reduction in task completion time over six weeks ($p<0.001$), confirming its effectiveness in skill acquisition. Additionally, e-learning approaches improved both theoretical knowledge and practical skills by 27% over traditional teaching methods ($p < 0.05$). **Conclusions:** Integrating prior experience, observational learning with error recognition and structured simulation training improves the learning curve for novice arthroscopists. These findings support a interdisciplinary training approach, leveraging varied techniques to optimize skill acquisition in arthroscopy.

**Keywords:** Arthroscopy training, skill acquisition, simulation based learning

## COMPARATIVE EFFICACY OF CONSERVATIVE AND SURGICAL INTERVENTIONS IN CHRONIC PAIN MANAGEMENT FOR ORTHOPEDIC PATIENTS

Andrei-Marian Feier[1], Andrei Diaconu[1], Sándor-György Zuh[1], Octav-Marius Russu[1], Tudor Sorin Pop[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** Chronic pain management is challenging in orthopedic care, affecting patient outcomes and quality of life. This study compares the effectiveness of conservative versus surgical treatments in managing chronic orthopedic pain. **Material and methods:** A retrospective analysis was conducted at the Orthopedic Clinic of the Clinical County Hospital of Mureş on patient records from 2018-2022. Patients with conditions such as osteoarthritis, fractures, and ligament injuries were divided into conservative therapy (medication, rehabilitation) and surgical intervention groups. Pain and function were assessed using the Visual Analog Scale (VAS), WOMAC, Oswestry Disability Index (ODI), and SF-36 Physical Functioning scores, with follow-ups over four years. **Results:** The study included 356 patients, mean age 56.4 years. Baseline mean VAS was 7.4/10. Following treatment, VAS scores improved by 3.5 points (final: 4.3) in the conservative group and 5.6 points (final: 1.8) in the surgical group. Surgical treatment achieved notable pain relief in 85.2% of patients, compared to 65.3% for conservative therapy. WOMAC scores improved by 39.7% with conservative methods and 62.5% with surgery. ODI showed a 30.8% improvement in the conservative group, versus 55.4% in the surgical group. SF-36 Physical Functioning scores increased by 34.6% in the conservative group and 59.1% in the surgical group. **Conclusions:** Surgical interventions provided superior long-term pain relief and functional improvement compared to conservative treatments. These findings support the need for tailored treatment strategies, with surgical options favored for patients unresponsive to conservative methods.

**Keywords:** Chronic pain, orthopedic, conservative treatment

## CLINICAL FEATURES AND SPINOPELVIC MEASUREMENTS IN RAPIDLY PROGRESSIVE HIP OSTEOARTHRITIS: CASE SERIES AND A SCOPING REVIEW

Tudor Sorin Pop[1], Andrei-Marian Feier[1], Gergő-Tamás Szórádi[1], Sándor-György Zuh[1], Octav-Marius Russu[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** Rapidly progressive hip osteoarthritis (RPOH) is an uncommon but severe form of osteoarthritis characterized by rapid joint degradation. Recent evidence suggests that spinopelvic alignment may play a role in its pathogenesis. This scoping review provides a clinical overview of RPOH, emphasizing the influence of sagittal spinopelvic malalignment on disease progression and patient outcomes. The main objective was to structure current clinical knowledge on RPOH with a focus on the role of spinopelvic alignment in accelerating joint degeneration **Material and methods:** This review followed a structured scoping methodology, with a literature search conducted in PubMed and Scopus databases. Studies were included if they contained data on RPOH's clinical presentation, risk factors, diagnostic methods, or spinopelvic alignment characteristics. Extracted data highlighted clinical features, imaging findings, and the role of spinopelvic alignment. A retrospective case series of eight elderly female RPOH patients with documented spinopelvic malalignment was included, providing clinical context on presentation, alignment metrics, and treatment outcomes **Results:** RPOH primarily affects elderly females and is linked with risk factors such as age, obesity and intraarticular corticosteroids. Clinically, RPOH is marked by severe hip pain during weight bearing with normal range of motion early in the disease. Imaging typically reveals rapid joint space narrowing and subchondral fractures. Eight elderly female patients presented with acute hip pain and confirmed rapid joint degeneration. Spinopelvic assessments revealed substantial posterior pelvic tilt (averaging 18°) and reduced lumbar lordosis across cases. Within one year of symptom onset, each patient required total hip arthroplasty due to advanced joint destruction **Conclusions:** Spinopelvic geometry plays an important role in RPOH by increasing mechanical load on the hip joint. Recognizing abnormalities in RPOH patients improve early diagnosis and intervention. Clinicians should consider alignment measurements in at risk patients to guide management, potentially integrating therapeutic or corrective measures to reduce the rapid hip deterioration

**Keywords:** rapidly progressive hip osteoarthritis, spinopelvic alignment, rapid joint degeneration

## RISK FACTORS CONTRIBUTING TO THE INCREASED LIKELYHOOD OF PERIPROSTHETIC RADIOLUCENT LINE FORMATION IN PATIENTS WHO UNDERWENT CEMENTED TOTAL KNEE REPLACEMENT

Tudor Sorin Pop[1], Gergő-Tamás Szórádi[1], Sándor-György Zuh[1], Andrei-Marian Feier[1], Octav-Marius Russu[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** This study aimed to evaluate total knee arthroplasty (TKA) radiographically to detect periprosthetic radiolucent lines (PPRL) under the tibial base plate. The hypothesis was that PPRLs may vary in radiological appearance and progression based on multiple factors **Material and methods:** A retrospective cohort study analyzed 217 patients who underwent total knee replacement from 2020 to 2024. Radiolucent lines (RLLs) were documented in a database and described by appearance, location, timing, and progression. Follow-ups occurred at 3, 6, 12, and 36 months, with sequential post-operative radiographs performed to assess for PPRL presence **Results:** Among 217 patients, 23 TKAs (10.6%) developed PPRL. The average follow-up was 21 months (range: 3-51 months). A pattern was observed, in the patients who had PPRLs. They usually presented higher body mass index (BMI), had an advanced age, or were female. No significant differences were found regarding implant constraint, cement type, patella resurfacing, or initial mechanical axis deviation. PPRLs most frequently appeared in the tibial anterior-posterior (AP) zone 1 and 2 (91.3%), followed by femoral lateral zone 5 (56.5%), tibial lateral zone 1 (43.5%), and tibial lateral zone 2 (30.4%). None of the patients required revision surgery. **Conclusions:** Despite the limited number of patients observed with PPRLs, they usually presented one of three risk factors, a higher BMI, older age or were female. PPRLs are common at the bone/implant interface post-TKA but do not necessarily indicate implant loosening. They reflect reduced epiphyseal fixation due to tibial implant micromobility. Radiologically visible aseptic loosening, occurs with macro-mobility at the metaphyseal level. The high incidence of early PPRLs warrants continued clinical and radiological follow-up for these patients.

**Keywords:** periprosthetic radiolucent line, total knee replacement, body mass index, implant

## BONE PENETRATION OF TWO ANTIBIOTIC LOADED BONE CEMENTS IN TOTAL KNEE ARTHROPLASTY, A COMPARISON

Gergő-Tamás Szórádi[1], Sándor-György Zuh[1], Andrei-Marian Feier[1], Octav-Marius Russu[1], Tudor Sorin Pop[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** A common concern with antibiotic-loaded polymethil-methacrylate bone cement is its potential to have negative effects on the mechanical properties of the cement when antibiotics are added. This study aimed to assess whether there is a difference in radiological bone intrusion between PMMA bone cement loaded with gentamycin and PMMA bone cement with tobramycin content in total knee arthroplasties **Material and methods:** This was a retrospective, randomized study involving 100 TKA patients. Participants were assigned to one of two groups: Group 1 received the knee implant using cement with added tobramycin, while in Group 2 gentamycin loaded PMMA bone cement was utilised. Postoperative radiographs made from two points of view were used to measure cement penetration across four regions of the tibial component **Results:** There was no significant difference in cement penetration between the two groups. In Group 1, the average cement penetration in the tibia was 2.5 mm (±0.4). In Group 2, tibial intrusion was 2.7 mm (±0.5). Across 80% of the patients, the tibial cement intrusion averaged at least 2.2 mm, with no notable difference between the groups **Conclusions:** No significant difference in bone cement intrusion was found between the two antibiotic loaded bone cement. Thus, the type of antibiotic loaded bone cement used in primary total knee arthroplasties has no relevant impact on the quality of bone penetration of the cement and the component fixation

**Keywords:** antibiotic-loaded bone cement, bone cement penetration, polymethil-methacrylate, radiological penetration, radiological penetration

## OUTCOMES OF MEDIALIZED VERSUS HIGH HIP CENTER ACETABULAR PLACEMENT IN CEMENTLESS TOTAL HIP ARTHROPLASTY FOR ADULT HIP DYSPLASIA OSTEOARTHRITIS

Gergő-Tamás Szórádi[1], Marius-Gheorghe Pop[1], Sándor-György Zuh[1], Andrei-Marian Feier[1], Tudor Sorin Pop[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** Developmental hip dysplasia (DDH) has known challenges in reconstructing the anatomical hip center in total hip arthroplasty (THA). It primarily impacts young female patients representing the majority of those and often require early intervention to address functional limitations. Medializing the acetabular component placement and using a small cup can reduce joint forces and improve implant longevity in the this population. This study aimed to assess subjective outcomes of medialized versus high hip center acetabular placement in cementless THA for DDH **Material and methods:** This retrospective study evaluated 80 patients with DDH, treated with cementless THA and grouped by acetabular placement technique: Group A (medialized, 38 hips) and Group B (high hip center, 42 hips). Patients had a mean age of 55.4 years (range: 28-70) and were followed for an average of 12 years. Data were collected through clinical exams, radiographic assessments, and validated by the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) and the Harris Hip Score (HHS). Radiographic stability and implant survivorship were measured by two independent reviewers **Results:** Significant functional improvements were observed in both groups. Group A mean WOMAC score increased from 46.2 to 81.2 points ($p < 0.001$), and HHS improved from 44.8 to 88.4 points ($p < 0.001$). Group B showed comparable improvements, with WOMAC scores increasing from 47.5 to 84.3 points ($p < 0.001$) and HHS increasing from 39.6 to 85.8 points ($p < 0.001$). Radiographic analysis indicated a 96.3% acetabular component survival in Group A versus 93.7% in Group B at a mean 34 months after surgery **Conclusions:** Longterm outcomes indicate that medialized acetabular placement in DDH patients provides enhanced implant stability and greater functional improvements than high hip center placement, likely due to reduced joint forces and acetabular anatomy

**Keywords:** total hip arthroplasty, developmental hip dysplasia, acetabular placement

## COMPARATIVE OUTCOMES OF PATELLA RESURFACING COMPARED TO DENERVATION IN TOTAL KNEE ARTHROPLASTY

Marius-Gheorghe Pop[1], Sándor-György Zuh[1], Gergő-Tamás Szórádi[1], Octav-Marius Russu[1], Tudor Sorin Pop[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** The decision to resurface or denervate the patella during total knee arthroplasty (TKA) is to this day debated due to its impact on postoperative outcomes, including anterior knee pain (AKP) and functional improvement. This study is looking to examine the effects of resurfacing versus denervation on pain and function in TKA, with a focus on outcome differences at three and six months **Material and methods:** A systematic search was performed across PUBMED and SCOPUS databases, identifying randomized controlled trials comparing patella resurfacing with denervation in TKA patients. Data analysis focused on the Western Ontario and McMaster Universities Arthritis Index (WOMAC), Oxford Knee Score (OKS), and Visual Analog Scale (VAS) for pain. Effect sizes were calculated using odds ratios (OR) and 95% confidence intervals (CI) for AKP and reoperation rates **Results:** At three months, the resurfaced group showed significantly improved WOMAC (OR 1.4; 95% CI: 1.1-1.8) and OKS (OR 1.5; 95% CI: 1.2-1.9) compared to the denervated group, indicating superior functional outcomes and pain relief. However, by six months, the results between the groups were similar, with no statistically significant difference in WOMAC (OR 1.1; 95% CI: 0.9-1.4) or OKS (OR 1.0; 95% CI: 0.8-1.3) scores. The risk of AKP was lower in the resurfacing group at both three and six months (three months: OR 0.7; 95% CI: 0.5-0.9; six months: OR 0.8; 95% CI: 0.6-1.0), and the resurfaced group also had a reduced reoperation rates (OR 0.6; 95% CI: 0.4-0.9) **Conclusions:** Patella resurfacing offers early benefits in pain and function over denervation at three months after surgery although by six months both treatments provide comparable outcomes. Resurfacing may thus be advantageous for patients seeking faster recovery, with a potentially lower risk of AKP and reoperation. Further studies are recommended to evaluate sustained benefits and refine patient selection for optimal outcomes

**Keywords:** anterior knee pain, total knee arthroplasty, patella resurfacing

## PATIENT AND DEMOGRAPHIC RISK FACTORS FOR PATELLAR NECROSIS FOLLOWING TOTAL KNEE REPLACEMENT

Sándor-György Zuh[1], Andrei-Marian Feier[1], Gergő-Tamás Szórádi[1], Octav-Marius Russu[1], Tudor Sorin Pop[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** Patellar complications are a significant cause of failure following primary total knee arthroplasty (TKA), which can compromise joint function and patient satisfaction. Patellar necrosis, in particular, presents a complex and challenging post-operative outcome. This study aimed to examine the association of demographic and patient-specific factors with the long-term risk of developing patellar necrosis over time, utilizing data from an extensive cohort of primary TKAs **Material and methods:** We conducted a thorough literature review to assess risk factors associated with patellar necrosis post-TKA, evaluating case reports, observational studies, and interventional trials. Sources included PubMed and the Cochrane Database, with the last search conducted on October 15, 2024. The search terms included patellar necrosis, total knee replacement, risk factors, patellar complications, and failure of primary total knee replacement. This approach resulted in the identification of 64 relevant articles **Results:** Analysis of the selected articles revealed key demographic and patient-specific risk factors for patellar necrosis following TKA. Obesity, defined as a BMI of ≥30 kg/m², emerged as a predominant risk factor, frequently cited as exacerbating patellar complications due to increased load on the knee joint. Additionally, age was found to be a crucial factor, with patients under 65 years facing an elevated risk of patellar necrosis. Sex also played a role, as males exhibited a higher propensity for patellar complications compared to females **Conclusions:** This study highlights the importance of male sex, younger age and obesity as notable risk factors for aseptic patellar complications in primary TKA. Recognizing these factors can enhance risk stratification and improve post-operative care strategies

**Keywords:** patellar complications, total knee replacement, patient demographics, patellar necrosis, obesity

## THE IMPACT OF PRE-EXISTING CONDITIONS ON TOTAL KNEE ARTHROPLASTY OUTCOMES

Sándor-György Zuh[1], Andrei-Marian Feier[1], Dora Tokos[1], Octav-Marius Russu[1], Tudor Sorin Pop[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** Pre-existing medical conditions can substantially affect outcomes following total knee arthroplasty (TKA), influencing recovery and patient satisfaction. Understanding these impacts helps us to increase surgical care and optimize patients' recovery **Material and methods:** This study analyzed data from 187 patients at the Department of Orthopedics and Traumatology at Clinical County Hospital of Mureș who underwent elective TKA from 2022 to 2024. Data on pre-existing conditions, including diabetes, hypertension, and obesity, were collected. Surgical outcomes were assessed by monitoring postoperative complications, length of hospital stay, and functional recovery using the Knee Injury and Osteoarthritis Outcome Score (KOOS) **Results:** The findings indicated that patients with pre-existing conditions had a 24.5-25.6% higher incidence of postoperative complications ($p < 0.01$) compared to those without such conditions. Specifically, patients with diabetes had an average hospital stay that was 1-3 days longer than those without comorbidities ($p < 0.05$). Functional recovery, assessed by KOOS, was significantly lower in patients with comorbidities, with average scores of 62 in the affected group versus 79 in those without ($p < 0.001$) **Conclusions:** Pre-existing conditions, particularly obesity and diabetes, significantly impact outcomes in total knee arthroplasties, leading to increased complications and prolonged recovery times. This study underscores the necessity of comprehensive preoperative evaluations and tailored management strategies to improve surgical success and patient outcomes

**Keywords:** Total knee arthroplasty, Comorbidities, KOOS

## THE INFLUENCE OF PREOPERATIVE PSYCHOSOCIAL FACTORS ON SURGICAL OUTCOMES IN TOTAL HIP ARTHROPLASTIES

Dora Tokos[1], Sándor-György Zuh[1], Gergő-Tamás Szórádi[1], Andrei-Marian Feier[1], Tudor Sorin Pop[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** Psychosocial factors have emerged as significant determinants of surgical outcomes, particularly in total hip arthroplasties (THA). Identifying these factors is crucial for enhancing recovery and overall satisfaction in orthopedic patients **Material and methods:** This study involved 150 patients from the Department of Orthopedics and Traumatology at Clinical County Hospital of Mureş, undergoing elective THA between 2022 and 2024. Preoperative evaluations included standardized questionnaires to evaluate levels of anxiety, depression, and perceived social support. Surgical outcomes were assessed through postoperative complications, duration of recovery, and patient satisfaction using the Harris Hip Score (HHS) **Results:** Analysis revealed that patients with stronger social support and better coping mechanisms experienced a 28.6% lower rate of postoperative complications ($p < 0.05$) and had a recovery time that was approximately 24% shorter compared to those with less support. Additionally, higher levels of preoperative anxiety and depression were correlated with an increased rate of complications ($p < 0.01$) and extended hospital stays. Patient satisfaction scores also reflected these trends, with those exhibiting positive psychosocial attributes reporting higher satisfaction (mean HHS score of 82 vs. 72, $p < 0.001$) **Conclusions:** The study highlights the substantial impact of preoperative psychosocial factors, particularly social support and mental health, on outcomes in total hip arthroplasties. Addressing these psychosocial elements in preoperative care could lead to improved recovery times and enhanced patient satisfaction. Future strategies should aim to incorporate psychosocial evaluations into routine clinical practice to optimize surgical success

**Keywords:** Total hip arthroplasty, psychosocial factors, mental health

## THE IMPACT OF CHRONIC VENOUS INSUFFICIENCY OVER THE PAIN LEVEL AFTER CEMENTED TOTAL KNEE ARTHROPLASTY

Lorand Vitalis[1], Andrei-Marian Feier[1], Manuela-Raluca Iacoban[1], Gergő-Tamás Szórádi[1], Tudor Sorin Pop[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** Chronic venous insufficiency (CVI) has been found to have an impact on patients undergoing total knee arthroplasty surgery and postoperative recovery and pain levels. The present research explores the differences in pain levels and functionality during the recovery period following cemented TKA in patients with and without CVI **Material and methods:** A group of 100 participants who were scheduled for a cemented TKA procedure were given an assessment; 50 of them had a diagnosis of CVI, and the remaining 50 did not. Pain levels were reported on the Visual Analog Scale (VAS) prior to surgery and at 3 and 12 months postoperatively. In addition, other functional measurements and functional scores (Knee Society Score) were referenced **Results:** After the procedure was done, patients with CVI presented with a higher pain level that was found to be statistically significant at 3 months postoperatively (average VAS score of 6.5 compared to a mean VAS of 4.2 in the control group). While the intensity of pain decreased in both groups over time, the CVI group continued to have higher values of pain even at 12 months (mean VAS 3.0 versus 1.9 $p < 0.05$). The functional outcome of both groups improved equally, but there were significant differences in the functional scores of knee surgery patients with CVI at the 3 and 12-month followup visits ($p < 0.05$). The proportion of subjects with postoperative complications was statistically similar in the two groups **Conclusions:** Pain levels rise significantly with the development of chronic venous insufficiency in patients who are undergoing cemented total knee arthroplasty, with a higher level of pain symptoms appreciated in the CVI group compared to the group without CVI. This indicates that CVI might aggravate the symptoms of TKA, such as distress and ambulatory disability

**Keywords:** chronic venous insufficiency, total knee arthroplasty, pain levels, cemented TKA, postoperative outcomes

## ASSESSMENT OF THE OUTCOMES OF SURGICAL TREATMENT VERSUS CONSERVATIVE TREATMENT FOR COMPLETE ANTERIOR CRUCIATE LIGAMENT TEARS.

Manuela-Raluca Iacoban[1], Gergő-Tamás Szórádi[1], Sándor-György Zuh[1], Octav-Marius Russu[1], Tudor Sorin Pop[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** The anterior cruciate ligament (ACL) is a very important stabilizer of the knee. ACL injuries are quite common and can have an effect on a person's knee function and their quality of life, especially among active patients with complete ACL tears. This research evaluates the impact of surgical treatment compared to conservative treatment on knee stability and functional outcomes in patients aged 20 to 42 with complete ACL lesion **Material and methods:** A group of 42 people with ACL tears was divided into two groups: 21 patients underwent surgery for reconstruction, while the remaining 21 underwent conservative treatment that included therapy and rehab sessions for recovery purposes. The results were measured using the Knee Injury and Osteoarthritis Outcome Score (KOOS) and Lysholm Knee Score assessments as a range of motion tests conducted at 6 months and 1 year after treatment. **Results:** After 1 year of follow-up evaluation, the group that had surgery showed KOOS scores with an average difference of 15 points and $p<0.01$ and Lysholm Knee Scores with an average difference of 10 points and $p< 0.05$ compared to those with conservative treatment. The surgical group showed a significantly lower incidence of knee instability, with 72% reporting no instability compared to 38% in the conservative group ($p < 0.05$). There was an improvement in range of motion within the surgical group with an average increase of 18° in flexion compared to 10° in the conservative group (with a $p<0.05$). **Conclusions:** A surgical approach for ACL tears led to improved functionality, lower instability, and increased range of motion compared to non-surgical methods. These results indicate that surgery could be the choice for individuals with complete ACL tears; however, conservative treatment is still a suitable option for certain patients.

**Keywords:** ACL injury, surgical intervention, conservative therapy, knee instability, range of motion

## IMPACT OF SUBCHONDRAL INSUFFICIENCY FRACTURE OF THE KNEE ON JOINT FUNCTION AND PATIENT QUALITY OF LIFE

Elena-Calina Tonalt[1], Gergő-Tamás Szórádi[1], Octav-Marius Russu[1], Sándor-György Zuh[1], Tudor Sorin Pop[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** Subchondral insufficiency fractures of the knee are increasingly recognized as a significant cause of joint dysfunction and reduced quality of life, particularly among elderly individuals with underlying osteoporotic conditions. It is important to be able to predict the consequences of these breaks in order to devise strategies of management **Material and methods:** This research is a retrospective review of 30 patients diagnosed with subchondral insufficiency fractures of the knee from 2021 to 2024. Medical records were mined for patient information (demographics, comorbidities and clinical outcomes). Functional evaluation was carried out by means of the Knee Society Score (KSS) and the Short Form Health Survey (SF-36). Follow-up assessments were performed 3, 6 and 12 months after diagnosis. **Results:** The group consisted of 19 women and 11 men, with an average age of 65 years. The average baseline KSS was 45 (reflecting severe dysfunction) and significantly improved to 75 at 12 months (p 0.001). The SF-36 physical component score rose from a mean of 34 to 52 in the same time (p 0.001). Patients who underwent early surgical intervention reported greater improvements in both KSS and SF-36 scores compared to those managed conservatively (p 0.05). **Conclusions:** Subchondral insufficiency fractures of the knee have a major impact on joint function and on the quality of life of patients who have them. Early, particularly surgical, diagnosis and treatment are linked to better functional outcomes. This research underscores the importance of raising awareness of subchondral insufficiency fractures as a vital element in knee care, especially in the elderly.

**Keywords:** Subchondral insufficiency fracture, knee joint, joint function, quality of life, KSS

## THE CORRELATION BETWEEN SUBCHONDRAL INSUFFICIENCY FRACTURES AND KNEE JOINT DEFORMITIES

Elena-Calina Tonalt[1], Andrei-Marian Feier[1], Sándor-György Zuh[1], Gergő-Tamás Szórádi[1], Tudor Sorin Pop[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** Subchondral insufficiency fractures of the knee have become a big problem in knee joint disorders especially in older population. Understanding the relationship between these fractures and knee joint deformity is important to improve clinical outcome. **Material and methods:** This study reviewed clinical records and radiological data of patients with subchondral insufficiency fractures of the knee. 50 patients were included and demographic data, history of knee osteoarthritis and imaging studies were collected. Correlation between the presence of subchondral fractures and knee deformity (varus and valgus) was analyzed using statistical methods. **Results:** The result showed that there is significant correlation between subchondral insufficiency fractures and knee joint deformity. 65% of patients with fractures had varus or valgus deformity. p-value < 0.05. **Conclusions:** Subchondral insufficiency fractures are related to knee joint deformity. Clinicians should recognize this relationship to diagnose and manage knee condition better. More study needed to explore the underlying mechanism and long term consequence of these finding.

**Keywords:** subchondral insufficiency fractures, knee deformities, osteoarthritis, clinical outcomes, radiological assessment

## PREOPERATIVE ANALYSIS IN CRUCIATE-RETAINING TOTAL KNEE REPLACEMENT: VARUS – VALGUS ALIGNMENT FOR OPTIMAL IMPLANT POSITIONING

Andrei Oprisan[1], Sándor-György Zuh[1], Andrei-Marian Feier[1], Octav-Marius Russu[1], Tudor Sorin Pop[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** In total knee replacement, cruciate - retaining implant (CR) is preferred for pacients with stable posterior cruciate ligaments, mild to moderate varus or valgus knee deformities and adequate bone quality. Main role of PCL is to prevent posterior translation of tibia, secondary stabilizer of knee and guide of femoral roll-back motion. Precise preoperative alignment assessment is

mandatory in CR-TKR as it infuences intraoperative decisions on implant positioning. This narrative review explores how preoperative alignment analysis impacts surgical strategy, focusing on management of varus-valgus deviations. **Material and methods:** A comprehensive literature review was conducted using databases such as Pubmed and Cochrane, focusing on studies that examined preoperative alignment role in CR-TKR. Articles addressing alignment deviations varus-valgus, indication for CR total knee replacement were selected. Key factors were synthesized to provide a detailed overview of current practices and outcomes associated with alignment management in CR-TKR. **Results:** Preoperative assessment of varus -valgus deviations in a mild to moderate stage are typically amenable to CR-TKR. More challenging, valgus deviation cand also be managed with these type of implant in case where ligament structures allow a stable correction. Studies show that failure to account for alignment deviations intraoperatively cand lead to malaligment, comprimised soft tissue balance, instability and potentially impacting implant survival rate. Alignment analysis preoperative is associated with improved mechanical axis restoration, neutral alignment whitch correlates with better functional outcomes and reduced revision rates. **Conclusions:** Preoperative alignment analysis represents a critical role in CR-TKR guiding implant positioning to achieve optimal mechanical alignement and soft tissue balancing. Indications for an CR implant are optimal and stable PCL, controlled deformities and adequate bone quality. Therefore this review underscores the need for a structured alignment assessment for surgical planning and optimize long-term succes rate.

**Keywords:** cruciate-retaining total knee replacement, varus-valgus deviation, knee stability

## FACTORS AFFECTING IMPLANT LONGEVITY IN TOTAL HIP REPLACEMENT: INFLUENCE OF AGE, ACTIVITY LEVEL, IMPLANT CHOICE, AND SURGICAL TECHNIQUE.

Andrei Oprisan[1], Andrei-Marian Feier[1], Gergő-Tamás Szórádi[1], Octav-Marius Russu[1], Tudor Sorin Pop[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** Total hip replacement is a procedure commonly performed in elderly patients to improve mobility and reduce pain caused by hip joint degeneration. Despite advances in technology, implant longevity is influenced by various factors and variables, such as age, activity level, implant choice, and surgical technique, all of which affect the lifespan of total hip replacement implants. Understanding these factors can help prevent premature deterioration and extend the life expectancy of the implant. This study investigates the effects of age, activity level, implant choice, and surgical tehnique on the longevity of hip implants **Material and methods:** A retrospective cohort analysis was conducted on 300 THR cases performed between 2012 and 2022. Patients were classified by age, activity level, surgical approach and implant type. Data on complications, revision rates, implant survival and revisioin rates were collected from medical records and analyzed. Kaplan-Meier survival curves and Cox proportional hazards models were used to evaluate longevity of the implant and to indentify significant factors affecting implant failure. **Results:** At 10 years, implant survival was significantly higher in patients over 65 compred to younger, more active patients ($p<0.05$). Metal-on-polyethylene and ceramic-on-ceramic implants demonstrated the longest survival rates, in particular in lower activity grups. Surgical tehnique was almost the same, optimizing component positioning and correlating with lower revision rates. Overall, high activity level corelated with younger age and suboptimal implant alignment were associated with reduced implant longevity. **Conclusions:** Pacient age, activity level, implant material and surgical technique are key factors influencing implant longevity. These factors suggest that implant choise should be appropiate to each individual pacient to maximize outcomes. Further research may help to improve long-term succes rates, particularly for younger, more active patients.

**Keywords:** total hip replacement, implant longevity, age related outcomes, activity level

## THE ROLE OF MENISCAL EXTRUSION IN ACCELERATING CARTILAGE LOSS AND OSTEOARTHRITIS OF THE KNEE

Attila Kovacs[1], Lorand-Csaba Hegyessy[1], Sándor-György Zuh[1], Octav-Marius Russu[1], Tudor Sorin Pop[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** Meniscal extrusion (ME) is characterized by the radial movement of the meniscal body over the periphery of the tibial plateau margin. The most frequently used threshold to define a significant ME is 3 mm, which was first implemented. In recent years interest in this disorder has risen significantly because ME is associated with knee osteoarthritis (OA), meniscal posterior root tears, post-anterior cruciate ligament reconstruction and post-meniscal allograft transplantation. **Material and methods:**

We analyzed 10 retrospective studies taken from the "Pubmed" and "The Journal of arthroplasty" database. The criteria for inclusion in this article were the following: year of publication from 2018 to 2023, English publications, studies that include correlation between ME and OA. **Results:** ME may develop in knee OA and it has been linked with increased tibiofemoral joint cartilage loss and osteophyte formation. At a 2-year follow-up, Hart et al. observed an association between lateral ME and worsening of patellofemoral joint OA features. Furthermore, a variety of articles claim that the occurrence of knee OA could be predicted by the presence of ME. In knees with the same grade of knee OA, Kijima et al. found that patients with pain experienced greater medial meniscus extrusion versus those without pain. Additionally, since severe ME increases the formation of knee OA, it is essential to avoid this progression and delay the inevitable total knee replacement. **Conclusions:** ME occurs in a variety of knee conditions and has been linked to increased morbidity and rapid progression of knee OA. Therefore, caution should be applied to properly handle and reduce it. The current conservative and operative treatment seem to be equally useful in reducing the progression of OA while decreasing symptoms when ME is present, knowing there is no specific therapy of mild to moderate knee OA targeting ME.

**Keywords:** knee osteoarthritis, meniscal extrusion, prevention

## COMPARATIVE EFFICACY OF LATERAL RELEASE TECHNIQUES IN TOTAL KNEE ARTHROPLASTY FOR SEVERE GENU VALGUM

Lorand-Csaba Hegyessy[1], Octav-Marius Russu[1], Andrei-Marian Feier[1], Sándor-György Zuh[1], Tudor Sorin Pop[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** For patients suffering from signifiant genu valgum, maintaining proper alignment along with ligament stability following total knee arthroplasty (TKA) is challenging and often requires lateral release for the relief of soft tissue tension. While the literature widely believes that lateral structural release is necessary in situations involving valgus deformity, there is controversy concerning the best approach and order to perform these releases. **Material and methods:** A review was performed via PubMed and Embase. The criteria for inclusion in this article were the following: year of publication from 2013-2023, case series, cohort studies, and randomized controlled trials which described procedures, alignment outcomes, stability, and rates of complications. Research was performed on 28 trials which involved over 1,200 individuals. **Results:** Various lateral release procedures having variable successful ratios have been described by multiple authors. Krackow et al. tipically release the lateral collateral ligament (LCL) and iliotibial band (ITB) prior to releasing the popliteus tendon (POP) and then, if needed, the posterolateral capsule (PLC). The PCL (posterior cruciate ligament) is the first component which is released in the sequential technique described by Ranawat et al. Whiteside believes that the LCL and POP, that are attached to the epicondyle, are essential lateral stabilizers in flexion and that by releasing these two structures, a contracted knee in flexion can be released. On the other hand, the ITB and PLC should be loosened when the knee is tighter in extension, as both serve as essential knee stabilizers. **Conclusions:** Even though they may differ, complications undeline the importance of selecting an individual strategy based on the degree of valgus deformity and intraoperative ligament balance. Further randomized trials are needed to establish the most beneficial technique guidelines.

**Keywords:** total knee replacement, lateral release, genu valgum

## COMPARISON OF EARLY VERSUS DELAYED ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION IN YOUNG, ACTIVE PATIENTS

Octav-Marius Russu[1], Tudor Nemes[1], Sándor-György Zuh[1], Gergő-Tamás Szórádi[1], Tudor Sorin Pop[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** The bemefits associated with early timing of ACL reconstruction has been a subject of ongoing debate, particularly in young, active individuals. This study aims to evaluate the outcomes of early (6 months post-injury) ACL reconstruction in a cohort of young, physically active patients. **Material and methods:** This retrospective cohort study included 84 patients aged 18-30 who underwent ACL reconstruction following anterior cruciate ligament tear between 2019 and 2023. Patients were divided into two groups based on the timing of surgery: early reconstruction (n=40) and delayed reconstruction (n=44). The time to return to pre-injury activity levels was documented. Functional outcomes were assessed using the Tegner Activity Scale at 3, 6, and 12 months postoperatively, and the Range of motion (ROM) was evaluated at each follow-up check. **Results:** At 12 months, patients in the

early reconstruction group attained a higher Tegner score compared to the delayed reconstruction group (mean 6.3 vs. 5.8, p<0.05). Early intervention patients also showed a faster recovery of ROM, achieving near-complete restoration by 6 months, whereas the delayed group exhibited greater ROM deficits at comparable time points. The median time to return to pre-injury activity levels was 8 months in the early group versus 9 months in the delayed group. Notably, a higher proportion of patients in the delayed group reported difficulty returning to high-impact activities. **Conclusions:** Early ACL reconstruction in young, active patients appears to provide slightly superior functional outcomes, with higher Tegner scores, faster recovery of ROM, and a shorter time to return to activity. These findings suggest that early surgical intervention may benefit this population, enabling a more reliable and timely return to pre-injury activity levels.

**Keywords:** ACL reconstruction, Tegner Activity scale, Range of motion

## THE ROLE OF ARTHROSCOPY AND SYNTHETIC GRAFTS IN THE TREATMENT OF KNEE CONDITIONS

Octav-Marius Russu[1], Paul Dragoi[1], Andrei-Marian Feier[1], Sándor-György Zuh[1], Tudor Sorin Pop[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** Conditions affecting the knee, like osteochondritis dissecans and anterior cruciate ligament injuries have an impact on the quality of life of patients. A research investigation has been conducted to assess how arthroscopy is involved in dealing with knee osteochondritis and the effectiveness of grafts, in ACL reconstruction showcasing how these treatments can enhance outcomes. **Material and methods:** Between 2018 and 2022,a study looked back at patients who had knee osteochondritis and those who had ACL reconstruction surgery. The results, for the osteochondritis patients were based on how they improved the relief from pain the range of motion and their functional scores as, per the Lysholm Knee Score.The ACL patients were split into groups depending on whether they received autologous grafts. Their results were assessed using the Knee Injury and Osteoarthritis Outcome Score . **Results:** In a study involving 120 individuals diagnosed with osteochondritis 85, out of every 100 patients reported notable improvement in symptoms after undergoing arthroscopic treatment procedures with 22 points in Lysholm score ratings. For the group comprising 150 patients who underwent ACL reconstruction surgeries it was found that the satisfaction rate was around 85 percent for those who received graft implants compared to approximately 90 percent for those with autologous graft implants. The KOOS scores showed improvements in both groups with a gain of about 28 points among those with synthetic graft implants and about 30 points, among individuals receiving autologous graft implants. **Conclusions:** Both the use of arthroscopy, for osteochondritis and the use of graft options for ACL reconstruction show outcomes in treating knee issues effectively. Arthroscopic treatment shows enhancements in symptoms and functional results for osteochondritis patients whereas synthetic graft options offer a substitute for autologous graft alternatives, in ACL reconstruction procedures. These discoveries highlight the significance of suitable interventions to enhance patient well being and results effectively.

**Keywords:** anterior cruciate ligament, osteochondritis, outcome scores

## MODERN TECHNIQUES IN POSTERIOR CRUCIATE LIGAMENT RECONSTRUCTION

Paul Dragoi[1], Octav-Marius Russu[1], Gergő-Tamás Szórádi[1], Andrei-Marian Feier[1], Tudor Sorin Pop[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** Injuries, to the cruciate ligament (or PCL for short) can result in instability and reduced functionality of the knee joint according to research findings assessing the effectiveness and safety of contemporary approaches to PCL reconstruction and their influence, on patient well being. **Material and methods:** From 2018, to 2022 a study looked back on patients who had PCL reconstruction surgery with up to date methods modernly used in medicine practice today and how their surgeries went down was divided into two groups. One received single bundle reconstruction and the other double bundle reconstruction paths of treatment were compared in terms of how they did post surgery such, as pain levels dropping stability improvements and overall knee functionality measured by the Knee Injury and Osteoarthritis Outcome Score (KOOS). The study followed up on these patients for two years to see how they were doing long term after their surgeries took place. **Results:** Among 100 patients (, with an age of 34·2 ± 9·4 years) those who had double bundle reconstruction surgery showed a higher stability rate at 92% compared to the single bundle group at 78%. The KOOS scores indicated enhancement in both groups with an increase of 30 points for the double

bundle group and 22 points, for the single bundle group respectively.The occurrence of complications was minimal as there were no events reported. **Conclusions:** Advanced methods, in PCL reconstruction have shown to increase stability and enhance results significantly - with double bundle techniques in particular as highlighted in this research study which advocates for ongoing utilization and deeper investigation of these sophisticated surgical methods to improve the care of individuals, with PCL injuries.

**Keywords:** Posterior cruciate ligament, double-bundle, modern techniques

## EVALUATING TOURNIQUET SAFETY AND EFFICACY IN TKA

Tudor Nemes[1], Octav-Marius Russu[1], Andrei-Marian Feier[1], Sándor-György Zuh[1], Tudor Sorin Pop[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** The intra-operative use of tourniquets during Total Knee Arthroplasty (TKA) has widely become common-practice, but the risk of causing deep vein thrombosis and the efficacy in reducing blood loss associated to surgery has constantly been under scrutiny. **Material and methods:** In this retrospective cohort study, the medical records from 123 patients undergoing primary TKA between 2021 and 2023 were reviewed. Patients were divided into two groups: those who underwent total knee arthroplasty with a pneumatic tourniquet (Group A, n= 67) and those without a tourniquet (Group B, n=56). We compared the intra-operative and post-operative blood loss, as well as postoperative deep vein thrombosis (DVT) and pulmonary embolism (PE) occurence. **Results:** Group A exhibited superior reduction in measured intraoperative blood loss compared to group B (mean blood loss: 215mL vs. 434 mL, $p < 0.05$), but the the total blood loss recorded for both groups did not signifficantly differ (mean 1246 ml vs. 1275 ml). The occurence of thromb-embolic post-operative events did not vary signifficatly between the two groups (p=0.24) **Conclusions:** The findings of this study suggesst that there is no signifficatly elevated risk of thromb-embolic events associated with the use of a tourniquet, but also show no signifficant total reduction in blood loss. Further studies on the functional outcomes could help with a clearer differentiation between the two routines.

**Keywords:** TKA blood loss, Deep vein thrombosis, Tourniquet use in TKA

## IMPORTANCE OF PREOPERATIVE PLANNING FOR SUCCESSFUL OUTCOME IN ACETABULAR REVISION. CLASSIFICATION, ACETABULAR SYSTEM VARIETY AND BONE GRAFT SIGNIFICANCE

Lorand Vitalis[1], Sándor-György Zuh[1], Alexandru Dobrin[1], Octav-Marius Russu[1], Tudor Sorin Pop[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** The long-term success of acetabular revision is based upon effective management of acetabular defects, which represent a substantial challenge in reconstructive orthopedic surgery. For a successful outcome a series of investigations have to be carried out, such as physical examination, laboratory workup, plain radiographs to find out the causes of component modification and evaluate the degree of bone defect. Based on results, out of the variety of acetabular reconstructive methods the befitting ones have to be taken under consideration. This study was design to bring into focus the need of thorough case planning. **Material and methods:** For this narrative review the search was conducted from PubMed and Google scholar databases, with a time frame from 2019 to present. **Results:** Patient history, physical examination, plain radiographs as well as laboratory workup and can lead to the etiology of acetabular endoprosthetic loosening, and help in subsequent treatment. The Paprosky classification is most commonly used to evaluate the bone defect and integrity of column support. Most studies show that cementless acetabular reconstruction is superior. Lately, porous reconstruction materials have shown their benefits by biological fixation and low bone graft resorption over time. However, patient age is one of the key factors in choosing a type of reconstruction. **Conclusions:** Studies show that preoperative planning is crucial for a desired outcome. The Paprosky classification has shown validity over time in preop evaluation of bone loss. Several factors (e.g. etiology, age, etc.) have to be taken under consideration before taking a decision. Further long-term studies are needed to extend the ways of preoperative planning and achieve better results.

**Keywords:** Planning, Acetabular reconstruction, Paprosky classification, acetabular system

## UNILATERAL ACETABULAR REVISION OF ASEPTIC ACETABULAR COMPONENT MOBILIZATION WITH PAPROSKY TYPE 3A BONE DEFECT OF A TWELVE YEARS BILATERAL UNCEMENTED TOTAL HIP REPLACEMENT. CASE REPORT

Alexandru Dobrin[1], Gergő-Tamás Szórádi[1], Octav-Marius Russu[1], Sándor-György Zuh[1], Tudor Sorin Pop[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** The acetabular component loosening is the principal long-term complication of total hip arthroplasty. Many factors such as traumatic, septic, lack of stabilization can be incriminated for acetabular mobilization. Pre operative planning that includes lab tests and radiographic assessment are important in having a diagnosis and treatment plan. **Material and methods:** A 66 years old female, known with a surgical history of bilateral uncemented total hip replacement 12 years ago, due to hip osteoarthritis, with a time gap between surgeries of 5 months, presented with left hip pain, antalgic position and walking possible only with auxiliary support. Patient related a traumatic event 2 months ago, a fall from same level. For the preoperative planning and information gathering a literature survey on PubMed and Google Scholar with a time gap from 2019 to present was conducted. **Results:** A plane AP pelvic radiograph and lateral hip radiograph revealed stress shielding modifications on both proximal femurs, with a 1 to 7, 8 and 14 Gruen zones osteolysis, left stem pedestal sign, 1 and 2 DeLee-Charnley osteolysis around the right acetabular cup and left acetabular component mobilization with Type 3A Paprosky defect of acetabulum. Laboratory inflammation markers were not modified. A acetabular revision was conducted using morselized and structural bone grafts, a titanium porous acetabular component and supplementary iliac fixation screw. Radiographic assessment was conducted intra and post operatively for optimal reconstruction and fixation certainty. After surgery the patient was advised not to full weight bear on the revised hip for three months and avoid any traumatic event. Patient is expected to come back for a three-month follow-up. **Conclusions:** This case highlights the importance of patient follow-up, pre operative planning and variety of acetabular reconstruction methods and systems.

**Keywords:** aseptic mobilization, Paprosky defect, acetabular revision

## COMPARATIVE ANALYSIS OF METHODS FOR TREATING MENISCUS TEARS OF THE "BUCKET HANDLE" TYPE: PARTIAL RESECTION AND MENISCUS SUTURING

Igor Ciobanu[1], Ivan Gutul[1], Sándor-György Zuh[1], Andrei-Marian Feier[1], Tudor Sorin Pop[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** Meniscus injury, which is a major contributor to knee joint deterioration, results in decreased lower limb function. The word "bucket handle" refers to the way the tear looks, with the outward undisplaced fragment looking like a bucket and the inside displaced fragment looking like a handle. This rupture is oblique or vertical in shape, extending from the posterior horn and body to the anterior horn. These tears frequently affect the whole meniscus, from the posterior to the anterior regions. **Material and methods:** In 38 patients who underwent arthroscopy, either suturing or partial meniscal resection was performed for a bucket handle injury at the Orthopedic Clinic of Mures County Hospital in 2023-2024. Assessed at baseline and 12 months post-operatively were knee stability, knee functionality, and subjective Oxford Knee Score (OKS). **Results:** At 12 months after the intervention, both methods demonstrated positive functional results. Patients with suturing showed stable functional recovery and lower risks of degenerative changes in the knee. The average OKS for the suturing group was 44.1 ± 3.0, indicating a high degree of satisfaction and stability. In the partial resection group, the OKS was 41.8 ± 2.7, which also demonstrated a good result, but was more prone to reoperation and the risk of joint degeneration. Studies show that suturing, especially when performed in the "red-red" zone with good blood supply, significantly reduces the risk of osteoarthritis and allows maintaining joint stability for a long time. **Conclusions:** Long-term results confirm the effectiveness of meniscus suturing in maintaining stability and preventing degenerative changes. Despite faster symptomatic relief with partial resection, this treatment is associated with a higher risk of recurrence and joint degeneration.

**Keywords:** Meniscus injury, suturing, partial resection

## COMPARATIVE ANALYSIS OF METHODS FOR TREATING KNEE CHONDROPATHY INTERNATIONAL CARTILAGE REPAIR SOCIETY (ICRS) II: MICROFRACTURES AND TRADITIONAL METHODS OF TREATMENT

Ivan Gutul[1], Sándor-György Zuh[1], Gergő-Tamás Szórádi[1], Octav-Marius Russu[1], Tudor Sorin Pop[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** Microfracture involves creating small holes in the subchondral bone, which stimulates the formation of fibrocartilage, which can partially compensate for the lost areas of hyaline cartilage. ICRS grade II chondropathy of the knee involves cartilage damage that often requires intervention to prevent further degeneration. This analysis compares the results of microfracture and conservative approaches in 58 patients. **Material and methods:** In 58 patients of the Orthopedic Clinic of Clinical County Hospital of Mures database identified patients with ICRS II chondropathy age 34-46, either microfractures or conservative methods (physiotherapy, drug therapy) were used. Functional status was assessed before the intervention and after 12 months using the Oxford Knee Score (OKS) and the visual analog scale (VAS) **Results:** At 12 months post-intervention, patients with microfractures showed significant improvements in functionality and pain. The average OKS in the microfracture group was 43.5 ± 3.2, while in the conservative group it was 40.4 ± 2.9 ($p < 0.05$). Patients who underwent microfractures also demonstrated improvements in knee stability and a reduced risk of further degenerative changes. **Conclusions:** Microfracture treatment has shown benefits in terms of improving function and reducing pain symptoms in patients with ICRS II chondropathy. While conservative methods may alleviate symptoms in the short term, microfractures provide a more sustainable result and reduce the likelihood of chondropathy progression. However, the results depend on strict adherence to a rehabilitation protocol, which should gradually increase the load, starting with gentle exercises such as swimming and low-impact exercise machines. Microfractures can effectively relieve pain and have good results in the short term, but their long-term effect requires further study.

**Keywords:** Chondropathy, microfracture, traditional methods

## NEW STRATEGIES IN TREATING CHRONIC OSTEOMYELITIS

Andrei Diaconu[1], Sándor-György Zuh[1], Andrei-Marian Feier[1], Gergő-Tamás Szórádi[1], Tudor Sorin Pop[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** Chronic osteomyelitis is a lasting bone infection that presents hurdles in treatment and frequently leads to substantial health issues, for patients. Conventional approaches like antibiotics and surgical cleaning may not fully meet the requirements of every patient. This research explores methods for treating osteomyelitis by looking into improvements in surgery methods and antimicrobial therapies along, with regenerative medicine advancements. techniques, antimicrobial treatments, and regenerative medicine **Material and methods:** Recent studies examined the treatment options, for long term bone infections in a manner by exploring innovative methods like bioactive materials and improved ways of administering antibiotics locally alongside advancements, in tissue engineering techniques were discussed in depth and the success of combining surgery with advanced drug therapies using a variety of strategies was closely scrutinized as well **Results:** The results suggest that using technologies, like friendly scaffolds and precise drug delivery systems leads to better treatment results. Research shows that these methods may boost recovery rates and reduce the chances of reinfection while also aiding in improved recuperation. Additionally supplementary treatments such as oxygen therapy and negative pressure wound therapy offer hope, for handling situations. **Conclusions:** Using approaches to manage long term osteomyelitis could result in improved results and help address the difficulties linked with this illness. By combining cutting edge methods, with state of the art choices healthcare professionals may boost treatment efficiency encourage bone regrowth and ultimately enhance patients quality of life.

**Keywords:** Chronic osteomyelitis, Treatment strategies, Bioactive materials, Tissue engineering, Antibiotic delivery

## IMPACT OF EARLY SURGICAL INTERVENTIONS ON THE PROGRESSION OF AVASCULAR NECROSIS OF THE FEMORAL HEAD

Calin Trambitas[1], Barbulescu Thomas[1], Sándor-György Zuh[1], Octav-Marius Russu[1], Tudor Sorin Pop[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** Avascular necrosis (AV) a condition that affects the head can cause collapse and severe issues, in movement abilities of an individuals hip joint.The primary goal of this study is to evaluate how early surgical interventions can influence the development of AV and stress the significance of treatment in maintaining hip functionality. **Material and methods:** Doctors looked back at patients diagnosed with AVascular Necrosis between 2018 and 2022 sorting them by when they had surgery (either within six months of diagnosis or later). They then checked how well the patients were doing by looking at X rays and scoring their functionality, over the four years. **Results:** In a group of 180 patients, with an age of 54 years old (with a deviation of 8 years) individuals who underwent surgery early on had a noticeably lower occurrence rate of AVN at 32% in contrast to those who had surgery later on at 58%. The Harris Hip Score evaluations revealed a enhancement in functional scores, for the early intervention group (average improvement of 25 points) compared to the delayed intervention group (average improvement of 12 points). **Conclusions:** The results suggest that taking actions can greatly reduce the advancement of avascular necrosis, in the hip joint and improve how well it functions afterward emphasizing the importance of diagnosing and treating the condition promptly to improve patient outcomes and maintain hip function for a longer duration. This research emphasizes how beneficial early surgical care can be for individuals, with necrosis.

**Keywords:** Avascular necrosis, femoral head, early surgical intervention, hip function

## USE OF SYNTHETIC GRAFTS IN ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION

Thomas Barbulescu[1], Sándor-György Zuh[1], Andrei-Marian Feier[1], Gergő-Tamás Szórádi[1], Tudor Sorin Pop[1]

[1]Department of Orthopedics I, UMFST G.E. Palade Tîrgu Mureş

**Background:** ACL reconstruction surgery is frequently performed in orthopedics, with the decision on graft selection significantly impacting the procedures outcome quality and safety measures assessed between synthetic versus graft types, in this research study. **Material and methods:** Researchers looked back at a study involving individuals who had ACL surgery, from 2018 to 2022 and separated them into two categories based on the type of graft they received. Synthetic or autologous grafting procedures were performed on the patients in question for comparison purposes. The assessments covered aspects such as results and functional evaluations using tools like the Knee Injury and Osteoarthritis Outcome Score (KOOS) along, with imaging tests conducted over a period of four years to monitor progress and outcomes. **Results:** Out of the 150 individuals studied ( age of 29 years, with a deviation of 7) those who received synthetic graft implants expressed an 85 percent satisfaction rate in contrast to a 90 percent satisfaction rate among those who received autologous graft implants. Both groups showed enhancement based on their KOOS scores; the synthetic graft recipients had a score increase of 28 points while the autologous graft recipients experienced a rise of 30 points. The occurrence of complications was comparable, between the two groups. **Conclusions:** The utilization of graft materials, in surgery for the anterior cruciate ligament has demonstrated positive outcomes similar to those achieved with graft tissues obtained from the patients own body (autologous graft). These results indicate that artificial graft materials could offer an option, for ACL reconstruction surgery and possibly lessen the complications linked to harvesting graft tissues.

**Keywords:** Synthetic grafts, anterior cruciate ligament reconstruction, efficacy, safety, functional scores

# PATHOLOGY

## BILATERAL MATURE CYSTIC TERATOMA – THE EXCEPTION FROM THE RULE? – A CASE PRESENTATION

Iuliu Gabriel Cocuz[1], Maria-Cătălina Popelea[2], Sabin Gligore Turdean[3], Ovidiu Simion Cotoi[3]

[1]Department of Pathophysiology, UMFST G.E. Palade Tîrgu Mureş
[2]Department of Histology, UMFST G.E. Palade Tîrgu Mureş
[3]Department of Pathology, UMFST G.E. Palade Tîrgu Mureş

**Background:** Mature cystic teratoma is a benign tumor which belongs to the germ-cell ovarian tumors category. Only 10% of the tumors are bilateral and malignancy is rare. The aim of our paper is to present a bilateral mature cystic teratoma case. **Material and methods:** We present the case of a 28-years-old female which presented to the Gynecological Department from the Mures Clinical County Hospital in March 2024 with persisting abdominal pain. After imagistic investigation, a bilateral ovarian cystic mass was described, and a bilateral cystectomy was performed. The tissue sample was sent to the Pathology Department of our hospital for the histopathological diagnostic. **Results:** Grossing revealed two cystic masses of 70x50x3 mm and 50x35x5 mm, with a fatty content, multiple hairs, with a smooth and shiny external surface an no vegetations on the internal surface. Microscopically, there were observed multilocular cysts composed of a proliferation of mature tissues without any atypia. The tissues were composed of stratified squamous keratinized epithelium, cutaneous appendages (sebaceous glands, sweat glands, and hair follicles), adipose tissue, cartilaginous tissue, smooth muscle tissue, respiratory epithelium, intestinal epithelium, lymphoid tissue, and thyroid tissue. **Conclusions:** Based on the histopathological characteristics, the established histopathological diagnosis was of a bilateral mature cystic teratoma. The case showed a mixture of mature tissues from all three embryonic layers (ectodermal, mesodermal, and endodermal). The particularity of the case is represented by the presence of a bilateral cystic proliferation, with benign characteristics and no immature component detected.

**Keywords:** gynecological pathology, bilateral mature cystic teratoma, histology

## METASTATIC YOLK SAC TUMOR: A CASE REPORT

Ana Maria Plamadă[1], Andrei Patrichi[1], Tibor-Laszlo Mezei[1], Tamás-Csaba Sipos[1], Bogdan Andrei Suciu[2]

[1]Department of Pathology, UMFST G.E. Palade Tîrgu Mureş
[2]Department of Surgery I, UMFST G.E. Palade Tîrgu Mureş

**Background:** Yolk sac tumor (YST), also known as endodermal sinus tumor, is a rare and aggressive malignant tumor originating from primordial germ cells, usually occurring in children and young adults, and typically localized primarily in the ovary or testicle. They show histological resemblance to the mesenchyme of the primitive yolk sac, hence the name. **Material and methods:** A 28-year-old male patient, without remarkable medical history, is admitted to Surgery, presenting a left supraclavicular tumor mass with increased consistency but with no pain or other symptoms. **Results:** Based on a chest radiography, the mass is identified as a supraclavicular lymph node. Histopathological examination of the excised supraclavicular mass confirmed a metastatic yolk sac tumor. Histology showed the presence of primitive tumor cells with endodermal sinus-like patterns, Schiller-Duval bodies, and eosinophilic hyaline globules. Immunohistochemistry demonstrated positivity for germ cell markers such as PanCK, SALL4, and AFP, which confirmed the diagnosis of metastatic YST. Serum alpha-fetoprotein (AFP) values were also increased above the normal limit. One month later, the patient was confirmed with a primary left testicular tumor. **Conclusions:** This case emphasises the need for awareness of close monitoring for metastatic spread in patients with yolk sac tumors, as well as the need for prompt investigation of any new lymphadenopathy, particularly in unusual locations such as the one presented. Elevated AFP and histopathological confirmation are essential for accurate diagnosis and prompt management of metastatic yolk sac tumors.

**Keywords:** metastatic yolk sac tumor, lymph node, AFP

## PRIMARY MEDIASTINAL LARGE B-CELL LYMPHOMA AS PRIMARY OR SECONDARY ANTERIOR MEDIASTINAL TUMOR - CASE REPORT

Gyopar Beata Molnar[1], Rolland Jozsef Bartalis[2], Simina-Petra Simion[2], Erzsebet Lazar[3], Bogdan Andrei Suciu[4], Emoke Horvath[2]

[1]Department of Biochemistry, UMFST G.E. Palade Tîrgu Mureş
[2]Department of Pathology, UMFST G.E. Palade Tîrgu Mureş
[3]Department of Internal Medicine III and Family Medicine, UMFST G.E. Palade Tîrgu Mureş
[4]Department of Anatomy, UMFST G.E. Palade Tîrgu Mureş

**Background:** Primary mediastinal large B-cell lymphoma (PMBCL) is a mature aggressive B-cell lymphoma of putative thymic B-cell origin with distinctive clinical, immunophenotypic and molecular features, typically localised in the anterior-superior mediastinum, often with supraclavicular lymph nodes involvement. It may occur before, at the same time as or at relapse of classical Hodgkin lymphoma. **Material and methods:** We present the case of a 24-year-old female who presented for the first time in 2021 with an anterior mediastinal tumor mass associated with left supraclavicular adenopathy. The adenopathy was biopsied and diagnosed as classical Hodgkin's lymphoma, mixed cellularity. The patient underwent chemotherapy. In 2024 an other surgery was performed to remove a mediastinal tumor mass infiltrating the right pleural cavity and the right phrenic nerve. **Results:** In comparison with the first biopsy from the supraclavicular lymph node, the mediastinal mass showed a completely different aspect, consisting of a diffuse infiltration of large neoplastic lymphoid cells distributed in clusters or sheets on a fibrotic background with the following immunophenotype: CD45 +, CD20 +, BCL2 +, BCL6 +, CD23 +, CD10 + and CD30 -, with a high Ki67 proliferation index (80%). Residual thymic tissue was also observed adjacent to the tumor mass. In conclusion, the histological appearance and immunophenotype of the tumor cells were consistent with a diagnosis of PMBCL. **Conclusions:** PMBCL accounts for 2-4% of all non-Hodgkin lymphomas, predominantly in young adults, with a female predominance. The peculiarity of this case is the occurrence of PMBCL after diagnosis and treatment of Hodgkin lymphoma, as well as an uncommon CD30 negativity and CD10 positivity.

**Keywords:** primary mediastinal large B-cell lymphoma (PMBCL), young adults, following Hodgkin lymphoma

## RAPIDLY PROGRESSIVE DEMENTIA WITH FATAL EVOLUTION IN A PATIENT WITH SPORADIC CREUTZFELDT-JAKOB DISEASE. A CASE REPORT

Elena-Diana Crețа[1], Attila Kovecsi[1], Rodica Balasa[2], Simona Gurzu[1]

[1]Department of Pathology, UMFST G.E. Palade Tîrgu Mureş
[2]Department of Neurology, UMFST G.E. Palade Tîrgu Mureş

**Background:** Creutzfeldt-Jakob disease (CJD) is a pathology of the central nervous system caused by abnormal folding of cellular prion protein, with fast and progressive degenerative neurological manifestation. CJD cases are rare, with adult onset and a median survival rate of 12 month. CJD can be sporadic (85%), genetic (15%) or iatrogenic (15%). **Material and methods:** Male patient of 57 years old, presented with memory disorders, temporal-spatial disorientation, left visual inattention, truncal ataxia and bi-pyramidal syndrome. Symptomatology had a fast progressive evolution with spastic tetraparesis, GFAS scor <20, MMSE 15/30, Q.D >20% and severe cognitive impairment (Glasgow score of 11 points). The patient died 3 months after the onset of symptoms. **Results:** Brain MRI revealed discrete FLAIR and T2 signal changes in the occipital, right parietal and frontal cortex, left parietal parasagittal and left postcentral cortex, bilateral hippocampus, right insula and head of the right caudate nucleus, and hyperintense signal on DWI. Repeated electroencephalograms showed concrete findings such as a slower background rhythm, triphasic complexes, polymorphic wide theta waves, intermittently intricate with sharp waves. Cerebrospinal fluid showed only mild albumina, oligoclonal bands, VDRL, anti CASPR-1, anti-GAD II with negative results. Microscopic examination of post-mortem histopathological samples from the brain showed characteristic spongiform changes, with the presence of small vacuoles and clusters of large confluent vacuoles. **Conclusions:** Sporadic CJD can be clinically diagnosed based on the criteria of the European CJD Surveillance Network: fast and progressive cognitive impairment with visual disorders, cerebellar and pyramidal signs, a specific EEG and MRI changes, and patient survival less than 2 years from the onset of symptoms. The diagnosis can be confirmed basedon histopathological examination.

**Keywords:** Creutzfeldt-Jakob, Brain, Microscopic

## A RARE CASE OF CUTANEOUS METASTASIS OF RENAL CLEAR CELL CARCINOMA

Maria Malina Agu[1], Andreea-Catalina Tinca[1], Bianca Andreea Lazar[1], Ovidiu Simion Cotoi[1]

[1]Department of Pathophysiology, UMFST G.E. Palade Tîrgu Mureş

**Background:** Cutaneous metastasis from renal clear cell carcinoma (ccRC) is an uncommon clinical phenomenon, primarily documented in case reports. Although rare, the occurrence of cutaneous metastasis in ccRC holds significant clinical relevance, as a better understanding of its pathophysiology is crucial for developing targeted therapeutic strategies and clinical protocols to manage these cases effectively. **Material and methods:** We present a case of a 70-year-old male with a history of ccRC, who developed a rapidly enlarging subcutaneous lesion on the scalp. The lesion was clinically characterized as a well-defined, pale, nodular mass surrounded by skin induration. After clinical evaluation, the lesion was excised, and paraffin-embedded sections were prepared for histopathological examination at the Pathology Department of Mureş County Clinical Hospital. Histological analysis was performed using hematoxylin and eosin (H&E) staining, followed by immunohistochemical analysis. **Results:** Microscopic examination revealed a proliferation of polygonal cells with clear cytoplasm and focal eosinophilic regions, distinct cell membranes, round nuclei, and prominent nucleoli, located beneath keratinized stratified squamous epithelium. The cells were arranged in a solid and tubular pattern, surrounded by delicate, branching vasculature and areas of hemorrhage. Immunohistochemical staining demonstrated nuclear positivity for PAX-8 and membranous positivity for CD10, confirming the presence of tumor cells in the dermal layer. **Conclusions:** While metastasis is a well-recognized feature of ccRC, cutaneous metastasis remains a rare occurrence and is often associated with a poor prognosis, typically indicating advanced disease. It may present with clinical features that mimic other dermatologic conditions, making early diagnosis challenging. Further research and case reports are essential to better understand the pathophysiology of cutaneous metastasis in ccRC, as current data on such cases is limited.

**Keywords:** Renal clear cell carcinoma, Cutaneous metastasis, immunohistochemical analysis

## BRUNNER'S GLANDS HYPERPLASIA, AN UNCOMMON MIMICKER OF MALIGNANCY

Georgian-Nicolae Radu[1], Ovidiu Simion Cotoi[2], Emőke Andrea Szász[1]

[1]Department of Histology, UMFST G.E. Palade Tîrgu Mureş

[2]Department of Pathophysiology, UMFST G.E. Palade Tîrgu Mureş

**Background:** Brunner's glands hyperplasia (BGH) is a rare benign hamartomatous lesion seen in proximal duodenum. BGH is usually an incidental finding during surgery, endoscopy and radiological studies, and it can easily be mistaken for a malignancy. **Material and methods:** We report the case of a 59 years-old man who presented to the emergency department with a 5-days

history of diffuse abdominal pain, nausea and vomiting, associated with mild increase in serum amylase. The patient had a documented event of pancreatitis 4 years prior to the presentation. An esophagogastroduodenoscopy was performed, which showed a large infiltrating-type mass located in the proximal duodenum rising the suspicion for a pancreatic head tumour. Consequently, Whipple procedure was conducted. The resection specimen was further processed in the Pathology department of Mureș County Clinical Hospital. On macroscopy we described a circumferential polypoid-sessile mass around the ampulla of Vater, while the pancreas showed areas of extensive necrosis and haemorrhage. Histological examination revealed a benign proliferation composed of closely packed clusters of Brunner's glands separated by thin fibrous septa in the duodenal wall, with no evidence of atypia or malignancy. **Results:** Brunner's glands are acinar glands located in the submucosal layer of the duodenum, secreting an alkaline fluid in response to acid stimulation. The pathogenesis of BGH remains unclear, however it has been commonly associated with chronic pancreatitis, acid hypersecretion and Helicobacter pylori infection. In our case the prior history of pancreatitis could have been the leading cause in the pathophysiological chain of events regarding the development of BGH, which consequently lead to ampullary obstruction and acute pancreatitis. **Conclusions:** Diffuse BGH around the ampulla of Vater is particularly rare, having been described in just a few cases in the literature. While BGH is a completely benign condition, it should always be taken into consideration as differential diagnosis of lesions arising from the duodeno-pancreatic region.

**Keywords:** Brunner's glands, pancreatitis, benign, mimicker

## CASE REPORT: INTRAHEPATIC CHOLANGIOCARCINOMA WITH SARCOMATOUS FEATURES – A RARE VARIANT

Botond Fülöp[1], Kövecsi Attila[1], Dan Georgescu[2], Réka Linda Fülöp[1]

[1]Department of Pathology, UMFST G.E. Palade Tîrgu Mureş
[2]Department of Internal Medicine I, UMFST G.E. Palade Tîrgu Mureş

**Background:** Intrahepatic colangiocarcinoma (iCCA) is the second most common primary hepatic malignancy next to hepatocellular carcinoma and accounts for about 10-15% of primary liver cancers. The incidence of iCCA is increasing in many geographical areas, the small duct iCCA exhibits the same risk factors as hepatocellular carcinoma, including viral hepatitis and non-biliary cirrhosis. **Material and methods:** We present the case of a 70-year-old male patient who was referred to the gastroenterology department after an incidental liver lesion was detected on an echography. Unfortunately, the patient passed away shortly after admission, and an autopsy was performed to further investigate the cause of death. **Results:** At autopsy, a multifocal tumor was identified within the liver, alongside cirrhosis. The tumor was characterized by poorly circumscribed nodules of varying sizes, with the largest measuring 10×7×8 cm. Histopathological examination revealed a complex tumor composed of two distinct components: sarcomatous components, a diffuse proliferation of the spindle-shaped neoplastic cells, arranged in a celullar fascicular pattern with pleomorphic nuclei and mitotic figures, respectively, proliferation of small cribriform glands composed of cuboid cells with nuclear atypia. On immunostaining, the sarcomatous components express the epithelial markers, such as CK7, CK AE1/AE3, confirming the epithelial nature. Vimentin, as a mesenchymal marker, shows strong positivity and HepPar1 focally marks tumor cells around entrapped hepatocytes. **Conclusions:** Intrahepatic cholangiocarcinoma with sarcomatous elements is an exceedingly rare pathological entity. These tumors tend to exhibit more aggressive behavior and are associated with a poorer prognosis compared to conventional cholangiocarcinoma.

**Keywords:** cholangiocarcinoma, liver, carcinosarcoma

## A RARE CASE OF PRIMARY ULCERATED NODULAR ANORECTAL MELANOMA: CASE REPORT

Andreea Mocanu[1], Bianca Andreea Lazar[1], Andreea-Cătălina Tinca[2], Emőke Andrea Szasz[3], Ovidiu Simion Cotoi[2]

[1]Department of Pathology, UMFST G.E. Palade Tîrgu Mureş
[2]Department of Pathophysiology, UMFST G.E. Palade Tîrgu Mureş
[3]Department of Histology, UMFST G.E. Palade Tîrgu Mureş

**Background:** Mucosal melanoma constitutes 1% of gastrointestinal malignancies and about 1% of all anorectal region malignancies, representing 1% of all melanoma cases in European populations. On average with a 10-years delayed diagnosis, it

holds a significantly poorer prognosis than cutaneous melanoma. **Material and methods:** We present you a recent case of anorectal mucosal melanoma of a 66 years old patient, with no relevant personal medical history and no records of cutaneous melanoma, presented to our clinic with chronic constipation and hematochezia. The rectal examination revealed a stenotic, hemorrhagic mass situated in the lower rectum and an external hemorrhoidal nodule. Multiple samples were collected. **Results:** Gross examination revealed irregular tissue fragments with increased consistency and focal areas of hemorrhage and fibrosis. Histological examination showed an ulcerated malignant proliferation represented by expansive nodules. These nodules were composed of large pleomorphic epithelioid cells with abundant pale cytoplasm, enlarged nuclei and proeminent eosinophilic nucleoli.Breslow index measured 17 mm, lymphocytic infiltrate was brisk type, mitotic index counted 89 mitoses/10 HPF (40x objective). The tumor lacked pigment. Surgical resection margins were infiltrated. Tumour cells expressed S100, SOX10 and were negative for Pancytokeratin, SMA, CD34. A diagnosis of ulcerated nodular melanoma stage pT4b was established. **Conclusions:** While mucosal melanoma is an exceedingly rare pathology, it mostly occurs in the anorectal mucosa and, similarly to our patient, it is typically diagnosed in advanced stages, with a poor survival rate despite the available treatments. Furthermore, just as in the presented case, about half of mucosal melanomas exhibit amelanotic characteristics or minimal pigmentation, which also leads to diagnostic difficulties.

**Keywords:** Melanoma, Anorectal, Nodular, Ulcerated, Mucosal

## CASE OF UNDIAGNOSED CELIAC DISEASE ASSOCIATED WITH ENTEROPATHY T-CELL LYMPHOMA

Réka Linda Fülöp[1], Diana-Paula Burlacu [1], Mădălina-Ștefania Preda[1], Rebeca Chiciudean[1], Botond Fülöp[1], Emőke Horváth[1]

[1]Department of Pathology, UMFST G.E. Palade Tîrgu Mureş

**Background:** With an overall incidence of less than 5% of all gastrointestinal lymphoproliferative diseases, enteropathy associated T cell lymphomas (EATLs) usually affect male patients 20 years after the initial diagnosis of celiac disease. Delay in the diagnosis of celiac disease may associate with lymphoma progression. **Material and methods:** An 83-year-old female patient was admitted to the surgical department of our hospital with acute abdominal pain. Her medical history included chronic gastritis and diverticulosis of the descending colon. There was no evidence of celiac disease. Intraoperatively, generalized peritonitis with multiple ileal fistulas and adhesion syndrome was observed. An exploratory laparotomy with segmental resection of the ileum was performed. The resected specimen was sent to the pathology department where macroscopic examination revealed an ileal segment with two areas of discontinuity. Adjacent to it, a nodular tumor of 60x50x20 mm with white - yellow areas was described. **Results:** At the level of the areas of discontinuity, a dense tumor infiltrate of medium-sized lymphocytes with moderate pleomorphism was observed in a richly vascularized stroma among extensive necrotic areas. Of 20 lymph nodes identified, 16 showed identical morphological tumor aspects. The immunophenotype of the tumor cells confirmed the T-line origin, being CD3+ and CD7+ with loss of CD5, CD4 and CD8 expression. The tumor cells expressed intensely and constantly the CD30 antigen, Granzyme B and TIA1 (cytotoxic phenotype) without CD56 expression. The Ki67 proliferation index was 70%. Features of celiac disease in the adjacent mucosa was found. The histological and immunophenotypic appearance of the tumor was compatible with the diagnosis of enteropathy-associated T-cell lymphoma. **Conclusions:** EATL diagnosis was made by surgical resection. Patient died shortly after surgery. The special feature of this case is the occurrence of the tumor against the background of an undiagnosed coeliac condition.The Intraepithelial lymphocytosis of adjacent mucosa has supported the diagnosis.

**Keywords:** T cell lymphoma, lymphocites, immunohistochemistry, intestinal

## TUMOR ASSOCIATED MACROPHAGES AND PDL-1 EXPRESSION IN GASTRIC- TYPE HEPATOCELLULAR CARCINOMA

Rita Szodorai[1], Katalin Dezső[2], Ilona Kovalszky[2], Simona Gurzu[1]

[1]Department of Pathology, UMFST G.E. Palade Tîrgu Mureş

[2]Department of Pathology, other

**Background:** Hepatocellular carcinoma (HCC) is the most common primary malignancy of the liver, known for its highly

immunosuppressive tumor microenvironment. This paper focuses on understanding the novel identified gastric-type HCCs clinicopathological features and its microenviroment. The gastric-type HCC is characterized by a glandular-like pattern with dual positivity for TTF1 and VSIG1 and negativity for Vimentin. **Material and methods:** The clinicopathological features of 33 gastric-type HCCs were examined and correlated with the immunoexpression of PDL-1 (clone 28-8) and CD68. The examined cases were obtained from two departments of pathology: one from the Clinical County Emergency Hospital of Târgu-Mureş, Romania, and the other from the Semmelweis University from Budapest, Hungary. **Results:** Patient ages ranged from 9 to 81 years, with a male predominance (n= 22). The PDL-1 positivity was highlighted by 15 cases. Its expression was directly associated with a high presence (>15%) of CD68-positive tumor-associated macrophages. **Conclusions:** Recognition of new histological variants of HCC is crucial for optimizing the therapeutic management of patients and a better understanding of the tumor microenvironment.

**Keywords:** hepatocellular carcinoma, gastric-type carcinoma, macrophages, PDL-1

## AN ADNEXAL CUTANEOUS CYSTIC LESION WITH CLINICAL PRESENTATION AS A SYNOVIAL CYST

Anca Otilia Farcas[1], Doina Milutin[2], Cosmin Lucian Nicolescu[3], Tibor-Laszlo Mezei[2]

[1]Department of Cell Biology, UMFST G.E. Palade Tîrgu Mureş
[2]Department of Pathology, UMFST G.E. Palade Tîrgu Mureş
[3]Department of Anatomy, UMFST G.E. Palade Tîrgu Mureş

**Background:** We present the case of a 51-year-old woman presented with varicose veins and right internal saphenous thrombophlebitis who was addmitted to surgery. Preoperative ultrasound examination of the lower extremities showed the presence of a cyst in the right medial pericondylar region. A clinical diagnosis of synovial cyst was made. **Material and methods:** Apparently the lesion appeared 6-8 months prior to the current examination, declaratively following a trauma. The lesion was surgically excised and submitted for histopathological examination. **Results:** On gross examination, the lesion was 15 mm in greatest diameter, with a unilocular cystic appearance, with a wall thickness of 3-4 mm, an irregular internal surface, small, white protrusions, and clear, serous watery content. Microscopy showed a fibrous cystic wall with a discrete inflammatory infiltrate and macrophages containing a yellow pigment in the cytoplasm. The cyst is focally lined by a bilayered epithelium, consisting of 2 layers of cells, without nuclear atypia. Papillary proliferations were also noted, covered by similar bilayered epithelium. Cells show pan-cytokeratin, p40, and focal SMA expression. S100 is expressed in myoepithelial cells. EMA shows intense luminal-type staining. Based on morphology and immunophenotype, the diagnosis of apocrine/ecrine cystadenoma was rendered.Apocrine/ecrine cystadenoma is a rare, benign adenomatous neoplasm developed from apocrine/eccrine cutaneous adnexal glands, with ductal sweat gland origin. It presents as an intradermal, asymptomatic, solitary cystic lesion. It typically affects the head and neck of middle-aged women. Despite its characteristic histology, various lesions may be considered in its differential diagnosis including entities as monophasic/biphasic synovial sarcoma with a predominant glandular component and synovial metaplasia **Conclusions:** Apocrine cystadenoma is a rare benign neoplasm with a good prognosis, the treatment being complete surgical excision. Our presented case demonstrates that this lesion may be encountered at unusual locations.

**Keywords:** Apocrine cystadenoma, synovial cyst, histopathology, surgical excision, benign

## METABOLIC DISEASE-ASSOCIATED BONE LESION MIMICKING GIANT CELL TUMOR OF BONE: A CASE REPORT

Emoke Horvath[1], Ancuța Ungureanu[2], Raluca Niculescu[3], Vasile Gurduza[2], Katalin Dezső[2]

[1]Department of Pathology, UMFST G.E. Palade Tîrgu Mureş
[2]other
[3]Department of Pathophysiology, UMFST G.E. Palade Tîrgu Mureş

**Background:** We present a mimic of giant cell tumor of bone, a non-neoplastic process caused by increased osteoclastic activity and fibroblastic proliferation in primary or secondary hyperparathyroidism. **Material and methods:** A 55-year-old woman presents for investigation of multiple osteolytic lesions with suspicion of osteosarcoma on imaging. The biopsy from the right distal humeral lesion shows a high cellularity lesion, predominantly composed of osteoclast-like giant cells. Among them round/oval mononuclear and spindle cells with pale eosinophilic cytoplasm and nuclei with dispersed chromatin and small nucleoli are identified. There are

also foci with significant amounts of siderophages, aneurysmal changes and fibrotic areas. Fragments of disrupted cortical bone are also seen. These histopathological features can also be consistent with a giant cell tumor of bone (GCTB). GCTB is a locally aggressive neoplasm typically involving a single bone, and the definitive diagnosis requires confirmation by immunohistochemical and molecular testing. In our case, the presence of multiple osteolytic lesions (right and left scapula, left humerus, left costal arches) raised the possibility of a different synchronous tumor. A clinico-pathological correlation has been recommended. In addition, H3F3AG34W and H3F3B immunohistochemistry and FISH-analysis for USP6 gene rearrangement were performed to establish an accurate diagnosis. **Results:** The negative results of the above tests raised the possibility of osteitis fibrosa cystica (brown tumor), which was later confirmed by an elevated blood level of parathyroid hormone with reactive hypercalcemia, hypophosphatemia, suspicious for parathyroid neoplasia or a paraneoplastic syndrome. Further investigation with parathyroid and bone scintigraphy was recommended. **Conclusions:** Always consider metabolic bone lesions when diagnosing multiple bone tumors resembling GCTB—misdiagnosis can lead to unnecessary surgery and treatment. A well-informed pathologist supported by clinical, imaging and laboratory data is the key to deciphering the case.

**Keywords:** giant cell tumor, hyperparathyroidism, osteitis fibrosa cystica

## BEHIND THE CYST: A HISTOPATHOLOGICAL ANALYSIS OF CYSTIC SCHWANOMMA – A CASE REPORT

Raluca-Diana Hagău[1], Andreea-Cătălina Tinca[1], Ovidiu Simion Cotoi[1]

[1]Department of Pathophysiology, UMFST G.E. Palade Tîrgu Mureş

**Background:** Schwanommas are benign proliferations with neural origin which are located mostly on the extremities, trunk and head and neck region. The sporadic cases are mostly seen in 4th to 6th decade of life. Multiple subtypes can be identified, yet the cystic one is exceptional. **Material and methods:** We present the case of a 37-year-old female patient admitted to the Plastic Surgery Department of the Mureş County Clinical Hospital with a clinical suspicion of a cervical cyst. Surgical excision of the lesion was performed, and the excised tissue was sent for histopathological analysis. **Results:** The submitted specimen was well defined, round, encapsulated, measuring 22x21x10 mm, on cross section with a cystic cavity filled with hemorrhagic content. On HE stain we observed a tumor proliferation structured into two distinct components: areas composed of spindle cells (type Antoni A and Antoni B) with Verocay bodies. Centrally, a large area of cystic degeneration with hemorrhage and hemosiderin deposits was identified. Immunohistochemistry showed strong, diffuse positivity for S100 and SOX10. **Conclusions:** Cystic schwannomas of the neck are considered extremely rare. While schwannomas in the head and neck region make up about 25-45% of all schwannomas, the cystic variant specifically within the neck is much less common, with only sporadic cases reported in the literature. Differential diagnoses include branchial cleft cysts, thyroglossal duct cysts, lymphangiomas, and neurofibromas with cystic changes. Additionally, cystic metastatic lymph nodes, paragangliomas, thyroid cysts, and sebaceous or epidermoid cysts may resemble cystic schwannomas. By adding to the limited cases of cervical cystic schwannomas in the literature, this report highlights the necessity for clinicians and pathologists to recognize this uncommon variant, as its rare presentation may lead to diagnostic challenges.

**Keywords:** cyst, schwannoma, immunohistochemistry

## RARE TYPE OF IMMATURE TERATOMA IN A PEDIATRIC PATIENT: DIAGNOSTIC CHALLENGES AND HISTOLOGICAL INSIGHTS

Simina-Petra Simion[1], Rita Szodorai[1], Zoltan Derzsi[2], Gyopár Beáta Molnár[3], Emőke Horváth[1]

[1]Department of Pathology, UMFST G.E. Palade Tîrgu Mureş

[2]Department of Pediatric Orthopedics and Surgery, UMFST G.E. Palade Tîrgu Mureş

[3]Department of Biochemistry, UMFST G.E. Palade Tîrgu Mureş

**Background:** Immature teratoma is a malignant germ cell tumor that is histologically graded according to the presence of immature neuroepithelial components, a factor that is predictive of overall survival; while these tumors are primarily seen in adolescents and young adults, they remain rare among pediatric ovarian tumors. **Material and methods:** This case study presents the case of a 6-year-old girl with a torsioned right ovarian tumor. The patient underwent a right adnexectomy, and the specimen

was sent to the Pathology Department for further examination. **Results:** Macroscopically, the right ovary was larger than normal, measuring 65x35x30 mm with an intact capsule. Upon sectioning, a multilocular cystic mass was observed, comprising a compact component and a smooth, yellowish, gelatinous content. On microscopic examination, the tumor displayed a variety of mature tissues, including keratiniZed squamous epithelium with adjacent hair follicles, islands of cartilage, and respiratory-type epithelium. The stromal analysis revealed the occasional presence of nervous tissue, identified by GFAP staining, and foci of primitive neuroepithelium with hyperchromatic nuclei and increased mitotic activity. These were positive for CD56 and SOX10. The extensive primitive tubular-glandular structures that express SALL4, OCT3/4, and AFP suggest the presence of a yolk sac component. To obtain further diagnostic confirmation and to exclude any malignant components, a paraffin-embedded tissue block was sent for a second opinion. Subsequent immunohistochemistry confirmed the presence of immature erythroid islands, which were found to mimic immature epithelium. Additionally, the gastrointestinal and respiratory tract origin of the suspect yolk-sac component was confirmed, leading to a diagnosis of immature teratoma without immature neuroepithelium. Grading was not applicable to this diagnosis. **Conclusions:** Ovarian teratomas with an immature component require complex processing using a large immunohistochemical panel, the results of which must be interpreted in the context of histology and immunophenotyping of embryonic tissues to avoid excessive chemotherapy.

**Keywords:** Immature teratoma, ovary, malignant

## BILATERAL MEDULLARY CARCINOMA OF THE THYROID GLAND ASSOCIATED WITH PARATHYROID HYPERPLASIA – SUSPICION OF MEN 2A SYNDROME

Tamas-Csaba Sipos[1], Tibor-Laszlo Mezei[2], Radu Neagoe[3], Angela Borda[4]

[1]Department of Anatomy, UMFST G.E. Palade Tîrgu Mureş
[2]Department of Pathology, UMFST G.E. Palade Tîrgu Mureş
[3]Department of Surgery II, UMFST G.E. Palade Tîrgu Mureş
[4]Department of Histology, UMFST G.E. Palade Tîrgu Mureş

**Background:** Multiple endocrine neoplasia type 2 (MEN 2) is an autosomal dominant neoplasia caused by activating mutations in the RET proto-oncogene. The MEN 2 syndrome includes subtypes, such as multiple endocrine neoplasia type 2A, multiple endocrine neoplasia type 2B, and familial medullary thyroid carcinoma. Multiple endocrine neoplasia type 2A involves the development of medullary thyroid carcinoma, pheochromocytoma and primary parathyroid hyperplasia. The incidence of MEN 2A is 1 in 1.9 million individuals, with no significant differences between genders. **Material and methods:** We examined a total thyroidectomy specimen and bilateral latero-cervical lymphadenopathy from a 61-year-old patient, performed for a clinical suspicion of medullary carcinoma based on elevated serum calcitonin levels and FNA citology. **Results:** The histopathological examination of the thyroid gland revealed two whitish nodules localized in the upper third, symmetrically, in both thyroid lobes. The morphological features of the tumors, along with an immunohistochemical profile positive for Chromogranin, CEA, and Calcitonin, were consistent with a diagnosis of bilateral medullary thyroid carcinoma. Additionally, two hyperplastic parathyroid glands were identified incidentally: one in the adipose tissue of the central compartment and the other in the lower third of the right thyroid lobe. **Conclusions:** The coexistence of medullary thyroid carcinoma and parathyroid hyperplasia raises the suspicion of MEN 2A syndrome. However, genetic confirmation is necessary for a definitive diagnosis. Family counseling (first-degree relatives) for genetic testing is important to enable access to prophylactic medical care. Given the challenges related to diagnosis, treatment, and screening, a multidisciplinary approach is essential to achieve prolonged survival.

**Keywords:** MEN 2A, medullary, hyperplasia

## NEVOID MELANOMA: A CASE REPORT AND PATHOLOGICAL INSIGHTS

Bianca Andreea Lazar[1], Andreea-Catalina Tinca[2], Ovidiu Simion Cotoi[2], Maria Malina Agu[1]

[1]Department of Pathology, UMFST G.E. Palade Tîrgu Mureş
[2]Department of Pathophysiology, UMFST G.E. Palade Tîrgu Mureş

**Background:** Nevoid melanoma is a rare subtype of melanoma, representing about 1% of all malignant melanoma cases. Its histological resemblance to benign melanocytic nevi often results in diagnostic challenges. This report discusses the case of a 68-year-old female patient presenting with a pigmented cutaneous tumor in the inguinal area, highlighting the pathological features

and diagnostic complexity of nevoid melanoma. **Material and methods:** The patient underwent surgical excision of the lesion, which was subsequently analyzed at the Pathology Department of Mureş Clinical County Hospital. The specimen was processed using standard histological techniques: fixation in 10% buffered formalin, paraffin embedding, and Hematoxylin-Eosin (HE) staining. Immunohistochemical analysis was performed on 4 µm-thick sections using markers for melanocytic differentiation and proliferative activity. **Results:** The tumor exhibited a solid architecture with neoplastic cells organized in nests, extending from the epidermis into the reticular dermis. The cells had ovoidal to polygonal shapes with pale eosinophilic cytoplasm and pleomorphic, hyperchromatic nuclei. High mitotic activity (10 mitoses/10 HPF) and malignant melanocytic cells extending to the corneal layer were observed. Distinct tumor characteristics included a Breslow index of 1.2 mm, Clark level III invasion, brisk tumor-infiltrating lymphocytes (TIL), radial growth phase, and pagetoid migration. A nevus component with Clark level IV invasion was identified. Immunohistochemical analysis showed Sox10 positivity and a Ki-67 index of 20% in the malignant component versus 2% in the nevus component. **Conclusions:** This case underscores the diagnostic complexity of nevoid melanoma, characterized by both malignant and benign components. Despite its atypical presentation, nevoid melanoma retains the aggressive biological behavior of other melanoma subtypes. Early recognition and accurate differentiation are essential for staging and management, emphasizing the importance of combining histopathological and immunohistochemical evaluations.

**Keywords:** nevoid melanoma, rare, nevi, aggressive

# PEDIATRICS

## THE ENIGMATIC PRESENCE OF PERIPHERAL NEUROPATHY IN FEMALE TEENAGER WITH CROHN'S DISEASE

Lorena Elena Melit[1], Nicoleta Ana Tomsa[1], Adina Stoian[2], Monica Sanda Cucuiet[3]

[1]Department of Pediatrics II, UMFST G.E. Palade Tîrgu Mureş
[2]Department of Neurology, UMFST G.E. Palade Tîrgu Mureş
[3],

**Background:** Crohn's disease (CD) is a chronic inflammatory condition of the entire gastrointestinal tract with a complex pathogenesis including a puzzle of genetic, environmental, microbial and immunological factors. Although extraintestinal manifestations are commonly seen in patients with CD and they can even precede the onset of the disease, neurological complications, especially peripheral neuropathies, were rarely reported so far. **Material and methods:** We report the case of a 15-year-old female teenager, recently diagnosed with CD presenting with paresthesia of the inferior left limb and limping for underlying the importance of multidisciplinary approach of this condition. **Results:** The personal history of the patient revealed that she was diagnosed with CD approximately 6 weeks before, receiving treatment with oral prednisone and sulfasalazine. She presented for paresthesia of the inferior left limb and limping. The laboratory tests pointed out mild anemia and severely increased calprotectin (1,340 µg/g). The neurological consult indicated steppage gait, motor deficit with the limitation of the dorsal flexion of the inferior left foot, intermittently diminished osteo-tendinous achylia and median plantar reflexes suggesting a paresis of the left external popliteal sciatic and crural nerves. We performed an electromyography with the following conclusions: compression neuropathy of both left ulnar nerve with minimal demyelination, and left fibular nerve with conduction block left common fibular nerve and minimal motor and sensitive axonal implication with elements suggesting 'on-going denervation'. The magnetic resonance imaging of the left inferior limb showed minimal fluid collection above and behind the patella, surrounding the femoral condyle and inside the tibio-femoral joint. The recommendations included continuation of the CD treatment, and B complex vitamins along with physical therapy. The patient's evolution was mildly favorable after 1 month. **Conclusions:** Although rare, peripheral neuropathies associated with CD might represent a secondary manifestation of the treatment or might belong to the wide-spectrum of CD extraintestinal manifestations requiring a multidisciplinary approach.

**Keywords:** Crohn's disease, neuropathy, paresthesia

## HIDDEN CAUSES OF ANOREXIA NERVOSA

Reka Solyom[1], Lucia Sanda Voicu[1], Andrea Incze[2], Zsuzsanna Moreh[1], Zsuzsanna Erzsebet Papp[1], Lorena Elena Melit[1]

[1]Department of Pediatrics II, UMFST G.E. Palade Tîrgu Mureş
[2]Department of Infectious Diseases, UMFST G.E. Palade Tîrgu Mureş

**Background:** Anorexia nervosa, like other eating disorders, can take over people's lives and be very hard to overcome. Because often it's related to changes in the brain, anorexia behaviors are not choices and the illness is not really about food or looking a certain way. **Material and methods:** In our paper, we present the case of a 16-year-old female patient who has been examined and treated for over a year with the suspicion of anorexia nervosa. **Results:** The patient was admitted to our hospital with symptoms of respiratory infection, where her HIV test came back positive during examinations, which were expanded due to her significant weight loss and an over six months lasting amenorrhea. **Conclusions:** Despite the fact that anorexia nervosa is considered a widespread and 'on trend' disease nowadays, we must look for possible organ-related causes, because we might overlook pathological changes, that could, in themselves, endanger the patient's life.

**Keywords:** anorexia, HIV, eating disorder, amenorrhea, weight loss

## RARE DISEASE- LISOSOMAL STORAGE DISEASE- CASE PRESENTATION

Papp Zsuzsanna[1], Reka Solyom[1], Zsuzsanna Moreh[1], Lucia Sanda Voicu[1], Lorena-Elena Melit[1]

[1]Department of Pediatrics II, UMFST G.E. Palade Tîrgu Mureş

**Background:** Niemann-Pick disease (NPD) type A, type B or type A/B is a rare autosomal recessive lysosomal storage disease characterized by Acid sphingomyelinase deficiency (ASMD). Each type has a different clinical manifestation, type A/B is known to have a later onset (at age 5-7 years) and a relatively slow neurovisceral progression manifested as hepatosplenomegaly, jaundice, pulmonary dysfunction, dyslipidemia, and thrombocytopenia. **Material and methods:** Diagnosis is based on genetic mutation detection. The first efficient treatment was approved in 2022, using olipudase-alfa as an enzyme replacement. **Results:** We present the case of a 14-year-old boy with mild mental retardation, chronic constipation, abdominal pain, inappetence, and weight loss. After admission, we observed thrombocytopenia, hepatosplenomegaly, and chronic CMV infection. The laboratory findings infirmed a malignant hemopathy, so we continued investigating to identify hepatopathies or rare storage diseases. After a multidisciplinary approach with relatively normal findings, we sent the dry blood spot test for genetic determination. After 21 days we were announced about the positive result for Niemann Pick Disease type A/B. After initiating the enzyme replacement therapy, hopefully, our patient will have a slower progression and a stable outcome. **Conclusions:** Early diagnosis is extremely important, so in the presence of hepatosplenomegaly and thrombocytopenia, we have to take into consideration a rare disease, in order to begin the specific therapy as soon as possible.

**Keywords:** hepato-splenomegaly, niemann-pick disease, lysosomal storage diseases, thrombocytopenia, sphingolipidoses.

## SIGNET RING CELL GASTRIC CARCINOMA IN CHILDREN: AN AGGRESSIVE TUMORAL PATTERN

Oana Marginean[1], Maria Oana Săsăran[2], Andreea Stoica[1], Andreea Dincă[1], Mihaela Chincesan[1]

[1]Department of Pediatrics I, UMFST G.E. Palade Tîrgu Mureş
[2]Department of Pediatrics III, UMFST G.E. Palade Tîrgu Mureş

**Background:** Introduction: Mucinous adenocarcinoma with a signet ring cell component is a rare and aggressive form of neoplasia, with low incidence in the pediatric population. This malignancy presents an unfavorable prognosis and rapid progression, most commonly within the gastrointestinal tract. **Material and methods:** Method: We present the case of a 15-year-old patient diagnosed in October 2024 with stage IV rectal adenocarcinoma, treated according to the BEV+FOLFOX 4 protocol. Upon admission, the patient reported symptoms such as loss of appetite, lumbar pain, rectal bleeding, significant weight loss (7 kg in the past month) and severe muscle weakness. Laboratory tests revealed severe anemia, prolonged prothrombin time, and hepatocytolysis syndrome, leading to the initiation of parenteral nutrition and specific treatment. Computer tomography imaging showed retroperitoneal adenopathy, with rectal thickening. Given the aforementioned symptoms, a colonoscopy was performed, which showed a giant rectal tumor, almost obstructing 2/3 of the rectal lumen. Rectal biopsy returned positive for mucosal adenocarcinoma with signet ring cell-type cells. As the patient rapidly developed dysphagia and odynophagia, an upper digestive endoscopy was afterwards performed, which finally confirmed the presence of signet ring cell-type tumor cells within gastric biopsy specimens. Therefore, the primary tumor was believed to be the gastric tumor, with secondary rectal determination. **Results:** Results: During the second chemotherapeutic cycle, the patient suffered a cardiorespiratory arrest, which was successfully resuscitated, and was transferred to the Intensive Care Unit. Despite all therapeutic measures, a second cardiorespiratory arrest occurred, and the patient deceased. **Conclusions:** Conclusions: This case illustrates the rarity and severity of gastric adenocarcinoma with a signet ring cell component, which disseminates rapidly in children.

**Keywords:** Signet ring cell gastric carcinoma, children, aggressive tumoral pattern

## LUNG ULTRASONOGRAPHY IN CHILDREN - TIPS AND TRICKS

Virginia Bodescu[1], Lucia Sanda Voicu[1], Zsuzsanna Moreh[1]

[1]Department of Pediatrics II, UMFST G.E. Palade Tîrgu Mureş

**Background:** Lung ultrasonography is a quite new field in pediatrics, and it started to be used more and more in clinical practice by radiologist but also by pediatricians, as a part of point-of-care ultrasound examination. Even if the basis is similar to adult ultrasonography, there are some specific features in children, due to examining procedure and range of diseases that can be diagnosed. **Material and methods:** The material used by the authors in his cases review retrospective study was obtained from the patients admitted in Pediatric department, with different respiratory diseases. We used the convex transducer and the high frequency linear transducer in B and M mode. All cases were confirmed by chest X-ray and CT scan. **Results:** Lung ultrasonography is based on artefacts. so a short ilustrated review is necessary to understand lung ultrasonographyWe present pathological US findings in some aases of respiratory pathology in children. Case nr 1 is an 11 years old male, with clinical features and laboratory finding suggesting a bacterial infection, a normal chest X-ray and a posterior retro-cardiac pneumonia seen on CT scan but also on lung ultrasonography. The second case is a pleural effusion and subpleural pneumonia in a 15 years old girl, in this case US being useful in monitoring the evolution of disease and reducing the need for repeated chest X-ray. The third case is a pneumonia with minor pleural effusion only seen on US but not on chest X-ray. **Conclusions:** These findings come to emphasithe the importance of performing chest US in all cases of chest infections in children in order to find minimal changes and also to reduce the patient's exposure to radiation.

**Keywords:** ultrasound, children, lung, pneumonia, pleural effusion

# PHARMACOLOGY

## IMPACT OF CANNABIDIOL USE ON MEMORY IN STRESS CONDITIONS

George Jîtcă[1]

[1]Department of Pharmacology and Clinical Pharmacy, UMFST G.E. Palade Tîrgu Mureş

**Background:** Cannabidiol (CBD) is one of the active compounds in the Cannabis sativa plant. Due to its effects on the central nervous system, it is also used for treating anxiety-related disorders. This type of anxiety-like behavior is responsible for producing reactive oxygen species (ROS), which can lead to a massive generation of ROS. This overproduction may exacerbate anxiety, with undesirable effects on learning and memory abilities. **Material and methods:** Forty male Wistar rats, aged five months, were randomly allocated into four groups: Control (n = 8), Stressed Control (n = 12), CBD (n = 8), and Stressed CBD (n = 12). To induce stress, the rats were exposed to a predator odor on day 10, with a second exposure occurring 10 days later, on day 20. An additional stressor was implemented in the form of psychosocial stress, involving the daily rotation of each animal's partner. The treatment was administered over four weeks. Memory and learning abilities were evaluated using the Novel Object Recognition and Morris Water Maze tests. On the final day of the experiment, the rats were anesthetized with 3% isoflurane, and blood samples were collected via cardiac puncture into K3-EDTA-coated tubes. The samples were centrifuged, and the resulting plasma and brain tissues were stored at -80°C. **Results:** Using behavioral tests, we evaluated the potential impact of stress on learning and memory. Oxidative stress markers, including malondialdehyde (MDA) levels and the GSH/GSSG ratio, were analyzed from plasma and brain samples. A significance level of $p < 0.05$ was considered statistically significant. **Conclusions:** The results of the present study suggest that CBD represents a potential therapeutic agent targeting anxiety, through its impact on learning and memory abilities, as well as on specific markers of oxidative stress.

**Keywords:** cannabidiol, oxidative stress, memory, learning, stress model

# PHARMACY

## THE ASSESSMENT OF OLANZAPINE DISSOLUTION PROFILES FROM PREPARATIONS OBTAINED THROUGH DIRECT COMPRESSION EMPLOYING BIOMIMETIC DISSOLUTION MEDIA

Robert-Alexandru Vlad[1], Paula Antonoaea[1], Emoke-Margit Redai[1], Cornelia-Titiana Cotoi[1], Sergiu-Daniel Rus[1], Andreea-Teodora Bogdan[1], Adriana Ciurba[1]

[1]Department of Pharmaceutical Technology, UMFST G.E. Palade Tîrgu Mureş

**Background:** This study aims to characterize three biomimetic salivae and verify the dissolution profile of two different formulations (coated and orodispersible tablets) with olanzapine. Considering that some pre-established dissolution media are usually used (phosphate buffer, citrate buffer, etc.), the correlation of the amount of the olanzapine released in the biomimetic salivae with the disintegration behavior will be of increased interest. **Material and methods:** Three artificial salivas (S1, S2, S3) were developed using hypromellose with different viscosities. The dissolution media were analyzed in terms of pH, viscosity, and density. At the same time, the orodispersible tablets (OLZ-ODT1, OLZ-ODT2) and coated tablets (OLZ-CTB) were evaluated for friability, resistance to crushing, tensile strength, crushing strength/friability ratio (CSFR), disintegration, and dissolution test. **Results:** Three different odorless and tasteless saliva formulations were obtained characterized through a pH that ranged between 7.27±0.03 (S2) and 7.42±0.06 (S3) and viscosities between 12.7 mPa*s (S1) and 14.7 mPa*s since different types of hypromellose were used. The friability was less than 1 % in all cases, and the resistance to crushing varied between 36 N (OLZ-ODT2) to 113 N (OLZ-CTB1), with the tensile strength and the CSFR showing similar behaviors. The disintegration time increased directly proportional to the saliva viscosity (<180 seconds in all cases). More than 80 % of olanzapine was released at 30 minutes for all three formulations. **Conclusions:** Three different saliva formulations were used as disintegration and dissolution media to outline the differences that could be registered interindividually. By increasing the viscosity of the disintegration media, the disintegration time tends to increase. Considering the in vitro dissolution results a differentiation was noticed at the beginning of the experiment, which can be explained by the pharmaceutical formulation selected and different viscosities of the selected dissolution media.

**Keywords:** olanzapine, biomimetic dissolution media, orodispersible tablets, coated tablets

## EVALUATING THE SAFETY OF ORAL BENZYDAMINE DURING GESTATION IN A RAT MODEL

Ősz Bianca-Eugenia[1], Jîtcă George[1], Camil-Eugen Vari[1]

[1]Department of Pharmacology and Clinical Pharmacy, UMFST G.E. Palade Tîrgu Mureş

**Background:** Benzydamine, a locally acting anti-inflammatory drug, is sometimes misused as a recreational drug. Considering the increased risk of unplanned pregnancies among substance abusers, this study aimed to evaluate the safety of oral benzydamine during pregnancy using an animal model. **Material and methods:** Forty pregnant white Wistar rats were randomly assigned in two groups: a control group (n=20), which received saline water orally, and an experimental group (n=20), which was given oral benzydamine at doses equivalent to those commonly used recreationally by humans. The treatment began on the first day of gestation and continued throughout the entire gestation period. On day 21, a cesarean section was performed under general anesthesia with isoflurane to assess the safety of benzydamine. Fetal intrauterine development was evaluated through detailed observations, including measurements of fetal weight, examination of uterine resorptions, occurrences of fetal deaths, and abnormalities in amniotic fluid quality. These assessments provided insights into the potential risks associated with high-dose benzydamine use during pregnancy. **Results:** Fetal weights were significantly lower in the experimental group compared to the control group. Additional observed effects included early and late uterine resorptions, fetal deaths, fetal hemorrhages, and alterations in the consistency and color of the amniotic fluid. **Conclusions:** The use of benzydamine in high doses during gestation poses a significant risk to the fetal development. Careful monitoring of benzydamine release from pharmacies is essential, even if it

is classified as an over-the-counter (OTC) medication.This work was supported by George Emil Palade University of Medicine, Pharmacy, Science, and Technology of Targu Mures, Research Grant number 163/6/10.01.2023.

**Keywords:** benzydamine, pregnancy, fetal development

# PNEUMOLOGY

## WHEN AND WHY SHOULD WE ADDRESS INTERSTITIAL LUNG PATHOLOGY IN THE CONTEXT OF RHEUMATOLOGICAL DISEASES?

Corina Budin[1], Nicolae Demenciuc[2], Horațiu Sabău[1], Gabriela Jimborean[3]

[1]Department of Pathophysiology, UMFST G.E. Palade Tîrgu Mureş
[2]UMFST G.E. Palade Tîrgu Mureş
[3]Department of Pulmonology, UMFST G.E. Palade Tîrgu Mureş

**Background:** Chronic inflammation is a characteristic feature of connective tissue disorders (CTD), a group of systemic autoimmune diseases. To improve patient management, it is necessary to understand the pathophysiological mechanisms, clinical presentation, and potential progressive course of interstitial lung disease (ILD), which is emerging as a critical determinant of morbidity and mortality. **Material and methods:** A retrospective study was conducted on 8 patients who were diagnosed with various connective tissue disorders over a 4-year period from 2018 to 2022, including systemic sclerosis (SSC), rheumatoid arthritis (RA), systemic lupus erythematosus (SLE), dermatomyositis (DM), Sjogren syndrome (SS) who developed secondary ILD. Through detailed clinical evaluation, serological testing, pulmonary function tests (PFTS), and radiological imaging, we evaluate the disease course, response to therapy, and outcomes over time, highlighting the heterogeneity of ILD presentations in collagenases. **Results:** Anti-fibrotic therapy was not initiated by four patients and they were placed under observation until their natural course of disease improved on PFT and imaging.Anti-fibrotic and immunosuppressive therapy has been initiated for patients who exhibited pathognomonic honeycombing and extensive fibrosis on HRCT, with a decline in PFT over time.Management strategies, primarily antifibrotic therapy can have positive outcome on disease severity and progression. The importance of early diagnosis and personalized treatment based on investigations and clinical presentation is highlighted in our case series to mitigate disease progression and improve quality of life. **Conclusions:** The clinical presentation of connective tissue dissorders, severity, and rate of progression of ILD can be correlated with the underlying autoimmune disorder.

**Keywords:** interstitial lung disease, connective tissue, anti fibrotic treatment, progressive fibrosis

## INTERSTITIAL LUNG DISEASES (EXPERIENCE OF PULMONOLOGY CLINIC TÂRGU MUREȘ, ROMANIA)

Gabriela Jimborean[1], Delia Rachis[1], Dragos Hutanu[1]

[1]Department of Pulmonology, UMFST G.E. Palade Tîrgu Mureş

**Background:** With more than 200 heterogeneous conditions included, interstitial lung diseases (ILDs) account for at least 15% of all known respiratory diseases. ILDs have various clinical pictures and overlapping imaging, laboratory and histological findings, making the diagnostic process often difficult. **Material and methods:** We analyzed 169 patients with ILD hospitalized in Pulmonology Clinic between 2022-2024, evaluating the diagnostic criteria, age/gender distribution, risk factors, clinical features, respiratory functional explorations, imaging and treatment challenges. **Results:** We found sarcoidosis in 29 patients (17.1%); post-COVID fibrosis (21-12.4%); pneumoconiosis (20-11.83%); idiopathic pulmonary fibrosis (15-8.87%); ILD linked to collagen disease (22-13%); exposure to chemical substances (42-24.85%), post-TB pulmonary fibrosis (20-11.83%). ILD was predominant in women in sarcoidosis and collagen disease and significant in men in postCOVID and post environmental exposure. Smoking was found in high prevalence (42%) greater than the national average 21% or EU average 18%. Gastro-esophageal reflux (GERD) was common in all subgroups (80-47.3%), sleep apnea in (39-23%). Investigations were extremely complex from clinical analysis of symptoms/signs and risk factors to spirometry, plethysmography and transfer capacity by alveolar-capillary-membrane, imagistic: high-resolution CT, thoracoscopy with biopsy and histopathology, biomarkers: autoantibodies, angiotensin-converting-enzyme, bronchoalveolar aspirate by bronchoscopy and bacteriology, cytology and several interdisciplinary consults. Treatment was guiding after etiology: corticoids in sarcoidosis, anti-fibrotic: nintedanib for idiopathic fibrosis, corticoids or nonsteroidal anti-inflammatory in collagenosis, quitting smoking and occupational exposure. In the same time we gave symptomatic treatment: inhaled

bronchodilators in ventilatory dysfunctions, long-time home-oxygen (in respiratory insufficiency), mucolytics, CPAP in sleep apnea, GERD treatment and in all patients we had the strong recommendation for pulmonary rehabilitation. **Conclusions:** Diagnosis and treatment of ILD are challenging and difficult and require a multidisciplinary team. Treatment was guided primarily by the etiology of the underlying disease but also by the symptoms and the functional appearance of the fibrosis during the evolution of ILD.

**Keywords:** Diffuse fibrosis, multidisciplinary team, interstitial lung diseases

# PUBLIC HEALTH

## ANALYSIS OF THE HEALTH STATUS OF THE POPULATION IN MUREȘ COUNTY (2018-2023)

Otilia-Margareta Popescu[1], Rodica Biro[1], Alexandra Vacariu[1], Claudiu Neagu[1], Daniela Edith Ceană[1], Iuliu Moldovan[1], Hajnal Finta[1], Corneliu Florin Buicu[1]

[1]Department of Public Health and Healthcare Management, UMFST G.E. Palade Tîrgu Mureş

**Background:** The health status of the population in Mureș County reflects significant demographic and epidemiological trends that are crucial for public health planning. This analysis examines these trends from 2018 to 2023, focusing on demographic changes, morbidity, and mortality rates, which are influenced by aging, declining birth rates, and the impact of recent health crises, such as the COVID-19 pandemic. **Material and methods:** This study employed a retrospective analysis of demographic and health data collected from various sources, including the Mureș Public Health Directorate, the Mureș Health Insurance House, the National Institute of Statistics, and other relevant organizations. The data analysis included indicators such as birth and mortality rates, population distribution by age and sex, morbidity rates, and healthcare service usage. Tools like Microsoft Excel were used for statistical analysis and visualization. **Results:** The study found a continuous decline in the total population of Mureș County from 2018 to 2023, driven by negative natural growth, low fertility rates, and the emigration of young adults. The population is aging, with a notable increase in individuals over 65 years old, impacting healthcare needs and service demand. Mortality rates, particularly among the elderly, spiked during the COVID-19 pandemic, while fertility and birth rates showed a downward trend. Public health disparities were observed between urban and rural areas, with rural areas experiencing higher mortality and limited access to medical services. **Conclusions:** The demographic aging and declining birth rates present challenges for the sustainability of healthcare resources and social services in Mureș County. Strategic interventions, including enhanced healthcare access in rural areas, support for preventive health measures, and policies to encourage higher birth rates, are necessary to address these issues. Investments in public health can improve life expectancy and quality of life for the county's population, supporting both current and future healthcare demands.

**Keywords:** public health, demographics, aging population, Mureș County, healthcare access

## THE IMPACT OF THE COVID-19 PANDEMIC ON CERTAIN MANAGEMENT INDICATORS AT THE LEVEL OF A MUNICIPAL HOSPITAL

Alexandra Vacariu[1], Otilia-Margareta Popescu[1], Claudiu Neagu[1], Andrei-Alexandru Vacariu[2], Iuliu Moldovan[1], Hajnal Finta[1], Corneliu Florin Buicu[1], Daniela Edith Ceană[1]

[1]Department of Public Health and Healthcare Management, UMFST G.E. Palade Tîrgu Mureş

[2]Department of Urology, other

**Background:** The COVID-19 pandemic has tested health systems around the world. As a direct consequence, many elective procedures were postponed and resources were mobilized to treat emergencies and COVID-19 positive patients. **Material and methods:** Through this paper we aimed to analyse the impact of COVID-19 on management indicators in a municipal hospital in Romania. We performed a retrospective study over a period of 4 years (01.01.2019-31.12.2022) of the indicators registered in the Topliţa Municipal Hospital. **Results:** The maximum incidence of COVID-19 cases in the Municipality of Topliţa was recorded in February 2022 (11.59‰). The number of continuous hospitalizations decreased in the period 2020-2022 compared to 2019 by 38.57% (2020), 35.26% (2021), respectively by 19.69% (2022), the average decrease being 31.17%. The number of day-hospitalizations decreased in 2020 by 39.41% compared to the previous year, on the other hand, for the following analyzed years, their increases are recorded by 18.32% (2021) and by 48.48% (2022). The addressability of patients in the ambulatory decreased by 31.46% (2020), 29.61% (2021) and 21.78% (2022) respectively compared to 2019. The average length of hospitalization recorded increases for the years 2020 (6.11 days) and 2021 (6.27 days) compared to 2019 (5.87 days) and in 2022 the value was the lowest recorded (5.36 days). The average cost per day of hospitalization increased in the period 2020-2022, with the highest value being recorded in 2021 - 78.13% higher than the cost recorded in 2019. The number of emergency admissions compared to

the number of chronic admissions registered progressive increases in the period 2020-2022. The in-hospital mortality rate recorded a maximum in 2021 (1.63%). **Conclusions:** Through the analysis of the management indicators we can see that the Romanian health system is gradually adapting to the new situation in which the Covid-19 disease is only one of the human pathologies that require specialized medical assistance.

**Keywords:** COVID-19, MANAGEMENT INDICATORS, MORTALITY RATE

## IMPROVING THE FINANCING OF A HOSPITAL BY DEVELOPING NEW TYPES OF SERVICES

Claudiu Neagu[1], Corneliu Florin Buicu[1], Daniela Edith Ceana[1], Hajnal Finta[1], Otilia-Margareta Popescu[1], Alexandra Vacariu[2], Iuliu Moldovan[2]

[1]Department of Public Health and Healthcare Management, UMFST G.E. Palade Tîrgu Mureş
[2]Department of Pharmacy Industry and Pharmaceutical Management, UMFST G.E. Palade Tîrgu Mureş

**Background:** As a result of the repeated economic and health crises of the last period, hospitals began to use financial and human resources more judiciously and to look for new ways of increasing funding. The objective of this paper was to simulate the creation of a rheumatology department within the Reghin Municipal Hospital (RMS) based on health management indicators **Material and methods:** In this paper, we performed a retrospective study including a series of health management indicators of RMS related to the years 2021 and 2022. **Results:** The decision to redistribute hospital beds was taken based on the analysis of the indicators of the use of medical services and a financial indicator. A decrease in the number of discharged patients was observed in the pediatrics, neonatology and orthopedics departments with the lowest values among the total hospital departments in the case of ENT departments. The average duration of hospitalization increased in the departments of internal medicine, pediatrics, dermatology, infectious diseases and cardiology with the highest value in the case of chronic internal medicine. Increases in the degree of use of hospital beds were registered in the case of pediatrics, chronic internal medicine and dermatology departments and the lowest value in the case of orthopedics. In the case of the case mix index decreases were recorded in the departments of surgery, pediatrics, dermatology and orthopedics, the lowest value being recorded by pediatrics. There were increases in the average cost of the hospitalization day in the departments of surgery, pediatrics, neonatology, ENT, orthopedics, urology and infectious diseases with the highest value recorded by the ENT department. **Conclusions:** The beds required for the rheumatology department can be redistributed from the surgical (ENT, obstetrics-gynecology) or medical (pediatrics) areas. Replacing of doctor's workload according to the number of beds with the norms of patients solved in ambulatory or continuous hospitalization.

**Keywords:** public health, health management indicators, medical services indicator, financial indicator

# SURGERY

## AN EXTREMELY RARE CASE OF PANCREATIC METASTASIS OF UTERINE LEIOMYOSARCOMA

Tivadar Jr Bara[1], Alexandra Scurtu[1], Simona Gurzu[2], Renata Moriczi[1], Valentin Danielopol[1], Botond Kiss[1], Mircea Muresan[3], Ioan Macavei[4], Daniela Sala[1], Tivadar Bara[1]

[1]Department of Surgery II, UMFST G.E. Palade Tîrgu Mureş
[2]Department of Pathology, UMFST G.E. Palade Tîrgu Mureş
[3]Department of Anatomy, UMFST G.E. Palade Tîrgu Mureş
[4]Department of Neurology, UMFST G.E. Palade Tîrgu Mureş

**Background:** Malignant tumors of the pancreas are most frequently primary neoplasms, and pancreatic metastases are rare. Pancreatic metastases from primary tumors represent approximately 2-5% of all malignant pancreatic tumors. The most common primary malignancy that metastasizes to the pancreas is clear cell renal cell carcinoma. Uterine leiomyosarcoma is a rare, very aggressive malignant tumor with a high risk of recurrence. Pancreatic metastasis from uterine leiomyosarcoma is an extremely rare entity. **Material and methods:** We present the case of a 60-year-old patient with uterine leiomyosarcoma, who 12 months after total hysterectomy with bilateral adnexectomy developed a metachronous pancreatic metastasis. The patient complains of pain in the left hypogastrium and at the level of the lumbar spine, weight loss, symptoms that appeared two months ago. **Results:** Ultrasonography with contrast and PET-CT describe a tumor in the tail of the pancreas of approximately 20x20mm, well delimited, hypoechogenic. Surgical treatment is recommended, the presence of tumor at the tail of the pancreas is confirmed intraoperatively and caudal splenopancreatectomy, liver biopsy and lymph node biopsy at the level of the celiac trunk are performed. The histopathological and immunohistochemical examination of the pancreatic piece confirmed the diagnosis of pancreatic metastasis of uterine leiomyosarcoma. The postoperative evolution was favorable, the patient is directed towards oncological treatment. **Conclusions:** Pancreatic metastasis of uterine leiomyosarcoma is extremely rare. Pancreatic metastases can develop several years after the treatment of the primary lesion. The diagnosis is difficult, histopathological and immunohistochemical examination being necessary. Surgical treatment of pancreatic metastases is an effective treatment strategy.

**Keywords:** uterus, leiomyosarcoma, pancreatic metastasis

## PECTORALIS MAJOR MYOCUTANEOUS FLAP USED FOR TONGUE RECONSTRUCTION AFTER SUBTOTAL GLOSSECTOMY

Dániel Tamás Száva[1], Cecilia Petrovan[1], Alina Ormenişan[1], Alina Iacob[1], Despina Luciana Bereczki Temistocle[1], Bálint Botond Bögözi[1], Adina Simona Coşarcă[1]

[1]Department of Oral and Maxillofacial Surgery, UMFST G.E. Palade Tîrgu Mureş

**Background:** 5 year survival rate in advanced, stage IVA oral cancer patient vary between 19-30%. Locally advanced, T4a stage tongue cancer treatment requires large excisions and resection of the tongue, reaching total and subtotal glossectomy. The main concern after total/ subtotal glossectomy is the modality of the reconstruction, which assures sufficient functionality and quality of life. The neotongue has to assure, deglutition, and sufficient epoglottic closure, with no salivary aspiration, in order to prevent aspiration pneumonia, and the possibity of decannulation. Secondary is the oral feeding reintroduction. Intelligible speech and ability of the communication for social reintegration is important and aesthehic appearance should also not be neglected. **Material and methods:** We present a case of a 54 years old patient with cT4aNoMx tongue and FOM moderate differntiated scc, who underveant subtotal glossectomy with FOM resection and anterior marginal mandibular resection via lip split and, median mandibulotomy after bilateral supraomohyoid selective neck dissection. Reconstruction of the defect was made using musculo-cutaneous PMMA island flap.For the reconstruction of the neo-tongue with PMMA flap, sushi roll tehnique was used. Traheostomy was performed, and nazo-gastric feeding tube was inserted. Antibiotic, antiimflamatory, painkillers, antiaggregant drugs were administered. For the next 24 hours the patient was transferred to intensive care unit, where hidro-electric equilibration and traheostomy monitoring was made. **Results:** First postoperative week was uneventful, local wound healing was favorable,

suction drains were removed, no necrosis of the orally introduced flap was observed. From the second week, due to favorable wound healing, and no further complications, the volume of the neotongue decreased, which allowed better movement.At the end of the 2. week deglutiton of the fluids was possible **Conclusions:** Extensive, subtotal/total glossectomy with no or incipient nodal metastasis is offering good solution for the treatment of locally advanced tongue cancer patients, but also presents high postoperative risks.

**Keywords:** Tongue cancer, PMMC island flap, neotongue, subtotal glossectomy

## A LITERATURE REVIEW ON ARTIFICIAL INTELLIGENCE IN LAPAROSCOPIC CHOLECYSTECTOMY: CURRENT APPLICATIONS AND FUTURE DIRECTIONS

Catalin Cosma[1], Marian Botoncea[1], Calin Molnar[1]

[1]Department of Surgery I, UMFST G.E. Palade Tîrgu Mureş

**Background:** Laparoscopic cholecystectomy (LC) is the gold-standard surgical technique for gallbladder surgery, but it still has potential risks, with the most common presented as bile duct injuries (BDIs), which are a significant concern. Getting the Critical View of Safety (CVS) is crucial in reducing the cases of BDIs. Artificial Intelligence (AI) has the potential to aid surgeons by offering information during surgical procedures and providing immediate decision-making assistance, which may enhance safety and efficiency in the long run. **Material and methods:** Analysis of published articles focusing on the use of AI in laparoscopic cholecystectomy between 2010 and 2024 was performed in various types of studies, including randomized controlled trials and multi-center observational studies along with systematic reviews. In particular we explored the application of AI algorithms in identifying stages of CVS and support in applyng decision making assistance. **Results:** Some notable studies included the GoNoGoNet algorithm that identifies dissection zones, real-time assistance models like DeepCVS, and tools like SUPR GAN for anticipating phases. The studies that were examined looked into the effectiveness and reliability of AI in clinical trials and its impact on improving patient care outcomes through treatment processes. Recent studies have shown that AI models have achieved a 91% accuracy in identifying various stages of surgical procedures and pinpointing crucial areas in the CVS during operations effectively. The GoNoGoNet algorithm has been successful, in differentiating between "Go" and "No Go" zones, reducing the risk of bile duct injury (BDI) by 33% across all scenarios. **Conclusions:** AI technology in LC is progressing from frameworks to applications in clinical trails. By improving real-time evaluations and identifying different phases accurately during surgery procedures, AI has the potential to increase precision, reduce risks in surgeries, and ensure better outcomes.

**Keywords:** Artificial Intelligence, Laparoscopic Cholecystectomy,, Intraoperative Decision Support, Critical View of Safety (CVS)

# UROLOGY

## MANAGEMENT OF DETRUSOR UNDERACTIVITY IN WOMEN AND MEN

Veronica Ghirca[1], Ciprian Todea-Moga[1], Calin Chibelean[1], Daniel Porav-Hodade[1], Rares Vascul[1], Oliver Vida[1], Raul Gherasim[1], Alexandru Laslo[1], Tibor Reman[1], Orsolya Martha[1]

[1]Department of Urology, UMFST G.E. Palade Tîrgu Mureş

**Background:** Underactive bladder is a common clinical entity characterized by a weak urinary stream, hesitancy, straining to void, with or without a sensation of incomplete emptying, and sometimes associated with storage urinary symptoms.The International Continence Society (ICS) defines detrusor underactivity as a decrease in detrusor contractility, with reduced duration and/or amplitude, prolonged urinary voiding time, and/or incomplete emptying. **Material and methods:** Underactive bladder remains a challenging entity to study (significant variability in diagnostic criteria, overlap of symptoms with other conditions). Reported incidence ranges from 12% to 45%, with a higher prevalence in elderly patients (38%). Uroflowmetry has an orientative role in identifying patients with bladder underactivity. It is associated with evaluation of post-void residual volume. The result is difficult to differentiate from bladder outlet obstruction. Pressure-flow studies increase diagnostic accuracy but are not routinely performed (invasive method, expensive, time-consuming). **Results:** Timed voiding or scheduled voiding, increasing intravesical pressure (Crede or Valsalva maneuver), relaxation of the pelvic floor muscles combined with abdominal effort can improve urine emptying, decrease post-void residual urine (PVR), decrease voiding time and increase urinary flow rate. Alpha-blockers influences bladder emptying by reducing bladder outlet resistance. Intermittent self-catheterization is the most commonly recommended method for emptying the bladder. Percutaneous cystostomy or indwelling urethral catheter are options for patients with persistent PVR, in whom other treatments have failed and who cannot perform intermittent self-catheterization. Transurethral incision of the bladder neck or transurethral resection of the prostate facilitate bladder emptying. **Conclusions:** Due to the multitude of potential causes and diverse pathophysiological mechanisms involved in the etiology of bladder underactivity, prevention and treatment strategies are difficult to define.Treatment targets are: to improve urine emptying, enhance detrusor contractility, reduce bladder outlet obstruction, improve symptoms and quality of life and reduce the risk of complications secondary to incomplete bladder emptying.

**Keywords:** urodynamics, underactive detrusor, uroflowmetry, pressure flow study

## HOW MUCH WE CAN PUSH THE LIMITS IN THE NEPHRONSPARING ERA

Ciprian Todea-Moga[1], Orsolya Martha[1], Veronica Ghirca[1], Rares Vascul[1], Calin Chibelean[1], Oliver Vida[1], Raul Gherasim[1], Tibor Reman[1], Alexandru Laslo[1], Daniel Porav-Hodade[1]

[1]Department of Urology, UMFST G.E. Palade Tîrgu Mureş

**Background:** The laparoscopic approach has proved its effectiveness in terms of perioperative functionality and cancer control, with relatively low additional costs compared to open surgery. The incidence of renal tumors is between the ages of 60 and 70, with a male to female ratio of 3:2. For patients with clinically localized clear cell renal carcinoma, surgery offers the best opportunity for cure. **Material and methods:** Indications for partial nephrectomy include: stage T1 kidney tumors, single kidney tumor lesions, bilateral kidney tumor lesions, patients with conditions that increase the risk of being compromised the contralateral kidney in the future, such as hypertension and diabetes, young patients. "Limits of partial nephrectomy": tumors larger than 4 cm, associated comorbidities (chronic anticoagulant treatment, risk of bleeding), lymphadenopathy, hemorrhagic diathesis. **Results:** Partial nephrectomy has 20% complication rate for which many factors concur: tumor size, perirenal fat inflammation, surgical approach, surgeon experience, comorbidities, patient's age, etc. Two of the dreaded complications of partial nephrectomy are hemorrhage (intra- or postoperative, 10% of cases) and urinary fistula (<5% of cases). Complications after partial and radical nephrectomy have decreased after improvements of surgical techniques. Laparoscopy has similar morbidity compared to the open approach, but significantly increased outcomes and postoperative comfort. **Conclusions:** Partial nephrectomy offers several advantages compared to total nephrectomy such as: preservation of kidney function, lower risk of renal failure or the need for postoperative dialysis especially in patients with a single kidney or pathological contralateral kidney or in patients with comorbidities at risk of future compromising of the contralateral kidney or in patients bilateral kidney tumor lesions.In the treatment of kidney tumors, partial

nephrectomy should be considered first, before proceeding to radical nephrectomy when surgical intervention is technically feasible and the tumor can be excised within oncological safety limits.The management of these cases remains difficult for surgeons and requires experience and high-performance equipment.

**Keywords:** laparoscopy, kidney tumor, partial nephrectomy

# VASCULAR SURGERY

## MANAGEMENT OF THE RUPTURED INFARENAL AORTIC ANEURYSM

Catalin Mircea Cosarca[1], Eliza Russu[2], Emil Arbanasi[2], Adrian Vasile Muresan[2]

[1]Department of Anatomy, UMFST G.E. Palade Tîrgu Mureş
[2]Department of Surgery I, UMFST G.E. Palade Tîrgu Mureş

**Background:** Aortic aneurysm is still one of the biggest emergencies of vascular surgery. Mortality is also high and depends on the perioperative management of the patient. **Material and methods:** In this paper we propose to analyze some of the factors that influence the posoperative evolution of patients with symptomatic/ruptured aortic aneurysm, in emergency. **Results:** We made a review of the literature, comparing the cases with ruptured aortic aneurysm that were treated with an open tehnique versus with an endovascular one. We also present a series of patients that were treated in the Vascular Clinic of the Emergency Hospital from Targu Mures. **Conclusions:** It is very difficult to specify the moment of the rupture of an aortic aneurysm therefore it is very important to diagnose them in a timely manner.The present paper is part of the grant intitled- Studiul rolului predictiv al inflamatiei cronice in evolutia ateriosclerozei bolii arteriale periferice nr. 164/10.01.2023

**Keywords:** aneurysm, endovascular treatment, EVAR, open tehnique, abdominal mass

# SCIENCE AND TECHNOLOGY

# CORPORATE GOVERNANCE AND SUSTAINABLE REPORTING

## EXAMINING THE CORRELATION BETWEEN FINANCIAL PERFORMANCE AND ESG SCORES: A STUDY OF ROMANIAN LISTED COMPANIES

Ioan Ovidiu Spătăcean[1]

[1]ED1 Economic Sciences , UMFST G.E. Palade Tîrgu Mureş

**Background:** Sustainable corporate reporting has evolved significantly over the last decade, reflecting the increasing importance of integrating environmental, social, and governance (ESG) concerns into corporate disclosure practices. Mainly non-financial, this corporate reporting could bear a material impact upon investors' decision-making process. The impact of ESG disclosures on investor decisions was a main area of exploration for Serafeim, G. (2020), tackled in the wider context of analyzing how sustainability practices and disclosures may affect the financial performance of companies (Ioannou, I., & Serafeim, G. (2019)). These research outlines proved to be inspiring in our efforts to conduct similar studies regarding companies listed on the Bucharest Stock Exchange, under the requirements imposed by the Corporate Sustainability Reporting Directive (CSRD). Our research design focused on the relationship between financial performance metrics (e.g. ROE, ROA and ROS) and ESG scores publicly available for companies listed on Bucharest Stock Exchange. For assessing investors' perceptions, we also analyzed market performance for issuers over 2024, in comparison with BET-XT index. We based our research strategy on some relevant hypothesis, such are: [H1] There is a significant positive correlation between ESG scores and financial performance of Romanian listed companies; [H2] Companies with higher CG compliance index, have better ESG scores and VEKTOR transparency, as well as a market performance above BET-XT index. Our sample of issuers comprises all BSE listed companies with publicly available ESG scores and VEKTOR transparency index values. We expect our results to provide a reasonable basis of conclusions regarding the expected correlation between financial performance and the relevant scores used to assess corporate ESG reporting practices.

**Keywords:** ESG scores, sustainable reporting practice, corporate governance compliance scores, financial performance, market performance

# LAW

## NON-RECRUITMENT AGREEMENTS. LEGAL IMPLICATIONS AND COMPETITION CHALLENGES

Lacrima Bianca Luntraru[1]

[1]Department of Law and Public Administration, UMFST G.E. Palade Tîrgu Mureş

**Background:** The exponential development of the business environment has led to an increasingly pronounced concern of the competition authorities in the control and sanctioning of the ways of initiating and materializing agreements concluded between employers on the prohibition of reciprocal recruitment of personnel. Such agreements are undeniably anti-competitive and lead to a significant reduction in competition on labor markets.In practice, agreements prohibiting the hiring-out of personnel can take various forms. In all cases, however, they violate the principles of competition on the market in the same way as market-splitting and price-fixing agreements. In a functioning labor market, employers compete for their employees by offering competitive wages and working conditions. Competing for employees is a form of competition, which must comply with all relevant principles and rules of direct competition, leading employers to offer compensation commensurate with the benefit to the employee.The present paper aims to capture the anti-competitive implications of such agreements, highlighting the practice and challenges.

**Keywords:** competition law, anti-competitive agreements, labor market, staff recruitment

## CONSIDERATIONS ABOUT THE PENAL CLAUSE

Roxana-Maria Roba[1]

[1]Department of Law and Public Administration, UMFST G.E. Palade Tîrgu Mureş

**Background:** According to the provisions of article 1538, paragraph 1 of the Civil Code, the penal clause is when the parties stipulate that the debtor undertakes a certain performance in case of non-performance of the main obligation. In case of non-performance, the creditor may request either forced execution in kind of the main obligation or the penal clause. The debtor cannot free himself by offering the agreed compensation.The creditor may request the execution of the criminal clause without being obliged to prove any damage.The provisions regarding the penal clause are applicable to the convention whereby the creditor is entitled, in case of resolution or termination of the contract due to the fault of the debtor, to keep the partial payment made by the latter. The court may reduce the penalty only when the principal obligation has been executed in part and this enforcement has profited the creditor or the penalty is manifestly excessive against the damage that could be foreseen by the parties at the conclusion of the contract. The study will analyse the legal provisions currently in force taking into account the point of view expressed in doctrine and judicial practice, highlighting the situations in which the court can modify the penal clause.

**Keywords:** the penal clause, the creditor, the debtor, compensation, the obligation

## ADMISSIBILITY OF THE PRESIDENTIAL ORDINANCE IN THE MATTER OF ADMINISTRATIVE LITIGATION

Sonia Bianca Blaj[1]

[1]Department of Law and Public Administration, UMFST G.E. Palade Tîrgu Mureş

**Background:** In the light of the variety of judicial procedures, the presidential ordinance is designed as a tool for the temporary resolution of urgent cases, having applicability in a relatively wide range of disputes, predominantly of a civil nature. However, the expansion of this procedure's scope to include other matters, specifically administrative litigation, arose from the necessity of obtaining a decision through a process that requires urgency to prevent the occurrence of imminent damage.Based on inconsistent practices among courts, the High Court of Cassation and Justice (HCCJ) ruled through Decision No. 2462/2012, which carries

binding authority, that, in principle, the presidential ordinance can be used in administrative litigation, with the exception of cases involving the suspension of an administrative act. This rationale is justified by the fact that Article 14 of Law No. 554/2004 has the character of a special, derogatory norm and therefore lacks the "flexibility" to be compatible with other special provisions, such as those of the presidential ordinance.On the other hand, in disputes other than those seeking the suspension of an administrative act, the legislature does not fundamentally exclude the possibility of resorting to the presidential ordinance, with the court holding the role of concretely assessing its admissibility in relation to the specifics of administrative litigation, based on the provisions of Article 28 of Law No. 554/2004.This paper will undertake an analysis of specific case examples, both from a theoretical and practical perspective, to highlight the criteria that administrative courts consider when exercising their discretion regarding the admissibility of the presidential ordinance, as well as the specific nature of the case subject and the urgency of the provisional measures that must be adopted.

**Keywords:** presidential ordinance, administrative litigation, admissibility, special rules

## ENVIRONMENTAL LIABILITY VERSUS THE RISK INSURANCE OBLIGATION

Lucretia Dogaru[1]

[1]Law and Public Administration, UMFST G.E. Palade Tîrgu Mureş

**Background:** Environmental liability is the essential legal framework for the application of the "polluter pays" principle in environmental damage. In addition to this, the introduction of environmental liability provides an excellent opportunity to strengthen civil liability for pollution. As far as we are concerned, this is an important reason why environmental liability must be strong, in the sense that it must cover all damages resulting from environmental pollution and degradation. However, the implementation of environmental liability presents some inconsistencies. Thus, it requires that the actors can require a financial guarantee, in the way of insurance, context which turns it into an indirect tool. Then, the attribution of proof of liability for the environment rests with the polluter, which does not match the quality of the subject who should assume liability in this regard. At the same time, the liability for the environment should be universal, that is, it should be applied to all subjects and areas with clarity and transparency, and not limited only to certain areas and types of hazardous activities. The question that arises is the following: where is the ecological consciousness and, finally, the environmental liability if the costs of pollution pass, as a matter of priority, through insurance mechanisms? We believe that coverage through the risk insurance procedure should not systematically exempt potential polluters from liability. This, on the grounds that ecological risk insurance provides clear economic signals about the cost of ecological security, and should only be beneficial for the correct management of environmental pollution accidents.

The correlation between civil liability for the environment, the one on the basis of which the measure of the obligation to repair the ecological damage is established, and the ecological risk insurance are two circular situations, in the sense that they support and condition each other.

**Keywords:** environmental liability, risk insurance, polluter pays, damage

## LEGISLATIVE TRENDS IN ECOLOGICAL DAMAGE ASSESSMENT

Lucretia Dogaru[1]

[1]Law and Public Administration, UMFST G.E. Palade Tîrgu Mureş

**Background:** For a correct and pragmatic analysis of the issues involved in the application of environmental damage assessment methods, our reasoning starts primarily from the legislative trends that appear in the field of european law. We can say that, currently, there are many texts both at the European Union level and some international documents that recognize the importance of repairing ecological damage, despite the difficulties of evaluating them. The reality shows that there is no international solution in this sense, and international law does not prescribe any precise method for quantifying the compensations that must be granted for illegal international acts of states. Thus, the rule would consist in the diversity of methods, depending on the national legislation and liability regimes in question. Certainly, the difficulties related to the assessment of environmental damage, involved that few texts consider the use of economic assessment methods, especially at the national level. The European directive in the field of ecological liability, creates a real environmental liability regime. According to its rules, operators are required to pay for the effective repairs of ecological damage, and only when the equivalence methods are inadequate, can be resorted to other

methods, such as monetary valuation methods. Moreover, many international provisions use a very indirect assessment process, the dominant approach is to resort directly to restoration or safeguard measures as an a posteriori assessment of pure ecological damage. Considering that the express recognition of ecological damage by international texts is quite limited, it is imperative to identify potential ways to improve the effectiveness of repairing ecological damage.

**Keywords:** ecological damage assements, international rules, equivalence methods

## THE APPLICABILITY OF THE PRESIDENTIAL ORDINANCE IN THE FIELD OF ARBITRATION

Roxana Truța[1]

[1]Department of Law and Public Administration, UMFST G.E. Palade Tîrgu Mureş

**Background:** The provisions art. 547 C. proc. civ. regulates in the arbitration procedure a special situation when the way to the institution of the presidential ordinance is opened. This refers to the situation in which during the course of the arbitration procedure there are various obstacles or certain tasks that are incumbent on the court, must be fulfilled, be able to refer the matter to the court in the district of which the arbitration takes place.This paper aims both to identify aspects that bring benefits in terms using the artbitration procedure within the special procedure that is the presidential ordinance. Also, The wording of the law is an interesting one, given that the legislator refers to the institution of the presidential ordinance, to which he also adds " urgently and especially".

**Keywords:** presidential ordinance, arbitration procedure, urgence

## CURRENT CONSTITUTIONAL COORDINATES ON THE OATH OF ALLEGIANCE IN THE CONSTITUTIONAL COURT JUDGMENT NO. 2 OF 2024

Adrian Boanta[1]

[1]Law and Public Administration, UMFST G.E. Palade Tîrgu Mureş

**Background:** The oath of allegiance, provided for in the Romanian Constitution for the office of President of Romania, is a solemn obligation of exceptional importance, given the constitutional role of the President. It includes fundamental commitments, such as respecting the Constitution, defending democracy, protecting the fundamental rights and freedoms of citizens and guaranteeing Romania's sovereignty, independence, unity and territorial integrity. The Constitutional Court emphasizes that the obligation to respect the Constitution is not limited to the moment of taking the oath of office or the actual exercise of the office, but is an essential and intrinsic condition for eligibility from the very stage of candidacy. Respect for the Constitution implies not only formal compliance, but also the active and responsible assumption of the fundamental values and principles enshrined in the Basic Law. This includes consistent and loyal public conduct towards the constitutional order and an explicit commitment to democratic values. All these considerations lead to the idea that the oath of allegiance becomes a condition of eligibility, the main problem being how this condition is verified in the case of other categories of dignitaries or civil servants, who are also required to take an oath of allegiance

**Keywords:** law, constitutional court, fundamental rights, president, elections

## AUTOMATED FACIAL RECOGNITION TECHNOLOGY IN THE CRIMINAL PROCESS

Ramona Coman[1]

[1]Department of Law and Public Administration, UMFST G.E. Palade Tîrgu Mureş

**Background:** The use of facial recognition technology provides undeniable support in the discovery and accountability of offenders. But an automatic use can be problematic if we consider the typical statistical-probabilistic nature of biometric discipline. The systematic introduction of biometric technologies in the criminal process brings with it problems regarding the reliability of the data resulting from their application and the compatibility between the new technology and the traditional methods of

investigation of the process penal. In general, biometric data must be analysed and assessed in terms of "" scientific accuracy and it must be understood on a case-by-case basis which type of " probative" value to be granted. At the same time, the transparency of the system of use must be guaranteed, in order to give the defense the right to challenge the evidence. A poor understanding of new technologies, automatic application and a lack of transparency of the system can lead to violation of the fundamental principles of the criminal process, to the lack of a fair trial and leads to an inquisitorial direction.

**Keywords:** facial recognition, criminal process, new technology, probative value, transparency

## JURISPRUDENCE IN THE DEVELOPMENT OF LAW

Aurelian-Olimpiu Sabau-Pop[1]

[1]Department of Law and Public Administration, UMFST G.E. Palade Tîrgu Mureş

**Background:** The development of legal relations is based on both written law and judicial practice. The practice of the courts can be much more dynamic and adapted more quickly to the new social-human realities. The permanent gap between social reality and the legislation of the newly created situation is no longer accepted, humanity is moving at a higher speed, and justice must be adapted to it. The effects of the work of artificial intelligence can be one of the situations that the justice system must deal with, of course at an unprecedented rate. The decision of the states in the matter of the legal policy to approach the subject is long awaited, its clarification can very easily come from the practice of the courts.

**Keywords:** legal relations, written law, judicial practice, courts, legislation

## THE SUPREMACY OF THE CONSTITUTION – THE FOUNDATION OF THE RULE OF LAW

Daniela Cristina Valea[1]

[1]Department of Law and Public Administration, UMFST G.E. Palade Tîrgu Mureş

**Background:** The supremacy of the Constitution represents that "feature of the Constitution which places it at the top of the political and legal institutions of organized society in the state and makes the fundamental law the source of all the regulations of that state. ... The supremacy of the Constitution is a complex notion, containing features and elements (values) political and legal, which express the overordered position of the Constitution not only in the system of law, but in the whole social-political system of a country. The supremacy of the Constitution is the consequence of several factors: The Constitution legitimizes the power and confers the authority of the governors, determines the competences of the public authorities, regulates the relations between the state and the citizens by consecrating their fundamental rights, freedoms and duties, outlines the political, ideological values that underlie the organization and functioning of the political system, it establishes and guarantees the order of law and represents the decisive landmark for assessing the validity of all legal acts and facts. Specifically, the supremacy of a constitution is materialized in the obligation of all normative acts issued by the state authorities, regardless of the field, to be in conformity with it, as well as the obligation of all subjects of law not to act contrary to the "letter and spirit" of the Constitution. Such a characteristic of a constitution resides in the fundamental character of the Constitution and the adoption of the Constitution by the Constituent Power (it represents the will of the people).

**Keywords:** constitution, supremacy of the constitution, guarantees, rule of law, judicial review

## THE BURDEN OF PROOF IN PROVING THE CULPABILITY OF THE NON-EXECUTION OF THE OBLIGATION ESTABLISHED FOR THE PUBLIC AUTHORITY BY A COURT DECISION PRONOUNCED IN THE MATTER OF ADMINISTRATIVE LITIGATION

Ximena Moldovan[1]

[1]Department of Law and Public Administration, UMFST G.E. Palade Tîrgu Mureş

**Background:** Considering the procedural phase in which disputes regulated by art. 24 paragraph 3 and 4 of Law no. 554/2004 take place, namely the execution phase, which are a consequence of an executory title, a court decision by which the administrative

litigation court already established with the authority of a res judicata the fault of the contracting authority resulting from the non-execution of an obligation to do, the interpretation of the provisions relating to the "culpable" character of the non-execution, it is necessary to remember that it is not the creditor of the obligation who is required to prove the debtor's fault in the non-execution of the obligation, but the debtor can invoke in his defense the lack of guilt and is required to prove an exoneration from liability from those provided by art. 1351-1356 of the Civil Code .

**Keywords:** court decision, execution, culpable character

# NEW TRENDS IN HUMANITIES

## BRIDGING EMPATHY AND SUPPORT: NARRATIVE PATTERNS IN MIDWIFE-WOMEN IN LABOUR'S COMMUNICATION

Annamária Marthy[1]

[1]Institute of Languages for Specific Purposes, Semmelweis University, Budapest

**Background:** This study examines the complex relationship dynamics between midwives and women in labour during childbirth, focusing on the narratives shared by both parties to understand communication patterns and relationship-building strategies. **Material and methods:** Conducted in a North Hungarian hospital's maternity ward from December 2022 to March 2023, the research involved participant observation and semi-structured interviews with 11 midwives and 15 mothers. Through open, axial, and selective coding of the data, the analysis uncovered 5 primary narrative patterns and 28 sub-patterns. **Results:** The findings highlight shared values and mutual expectations between midwives and women in labour, aligning with global research on the importance of collaboration for positive childbirth experiences. Key themes emphasize the role of empathy, respect, and supportive communication techniques in fostering optimal relationships and positive outcomes. **Conclusions:** By integrating these insights into midwifery training, healthcare professionals can enhance their communicative effectiveness, providing better support for women in labour and contributing to improved birth experiences.

**Keywords:** communication, narrative patterns, doctor-patient relationship, language for specific purposes, communication techniques

## PROMOTING THE DEVELOPMENT OF INCLUSIVE SCHOOLS THROUGH CONTINUOUS PROFESSIONAL DEVELOPMENT OF TEACHERS

Elena Lucia Mara[1]

[1]Teacher Training Department, Lucan Blaga University of Sibiu

**Background:** It is the school, the school in the school consortium, the school as an integrative community that launches a culture of quality, equity or equality. The school is seen as a learning organization, which implies a priority given to the learning process. In this in this context, learning is seen both as a process and as a value, and is constantly ensure the continuous improvement of all aspects of the organization, including products and its services. In such an organization, learning is also embedded in all activities of employees, it is a continuous process, not just an isolated event, and cooperation is the basis of all relationships. In a school as a learning organization, individuals grow and evolve, contributing to the transformation of the organization. It is recognized that such an organization is creative, learning is mutual and employees are encouraged to share what they learn, promoting efficiency and innovation. In a learning organization this is an enjoyable experience and stimulating. In the educational context, schools should cultivate a culture of lifelong learning, in which both pupils and teachers are involved in a constant process of development and improvement. Motivation for learning is recognized as intrinsic to each individual and is based on the premise that each person has the capacity and desire to learn and to self-improvement. In October 2020, UNESCO publishes the manifesto: Inclusive teaching: preparing all teachers to teach all students (2020). High quality teacher training is essential for inclusive teaching (Florian L. , 2019; UNESCO, 2009; Forlin & Chambers, Teacher preparation for inclusive education: increasing knowledge but raising concerns, 2011). Lack of preparation for inclusive teaching may result from gaps in teachers' knowledge of inclusive pedagogy. Inclusive education involves addressing education as an issue and ensuring access to education for all children.

**Keywords:** teacher formation, inclusive school, learning organisation, life long learning process, education

## INBETWEENNESS AND EMPTY SPACES IN COLM TOÍBIN'S BROOKLYN

Cristina Nicolae[1]

[1]Department of Foreign Languages, UMFST G.E. Palade Tîrgu Mureş

**Background:** *Brooklyn* tells the story of a young Irish girl of the 1950s, Eilis Lacey, stuck in a repetitive, inertial existence in her childhood Irish town of Enniscorthy. She leaves behind the geography of her hometown and ventures into the unknown, into building another present and future on another continent, across the Atlantic. Her reinvention, or coming of age, is gradual, without the rapid pace some readers would probably expect. The depth of the novel is revealed gradually and subtly, as a young woman shifts geographies and lands in a Brooklyn teeming with life, where she finds herself once again between choices: where does her life lie? Where can she truly be herself? At home in Enniscorthy or at home in Brooklyn? The layers of interpretation take us through identity coordinates, through the experience of emigration, belonging and uprootedness. The novel speaks to its readers about what it means to live between two worlds, between two lives, about choice and consequence, about change, longing, losing and finding oneself or rather reinventing oneself when the journey of identity takes you elsewhere. Colm Toibin offers us, in his own key, a story about choices and the meaning given to the empty spaces they create - choices made or left dormant.

**Keywords:** belonging, identity journey, uprootedness, topoi, change

## AUDIOVISUAL TRANSLATION FOR INCLUSION AND ACCESSIBILITY (AVTIA)

Cristina Nicolae[1], Anișoara Pop[1]

[1]Department of Foreign Languages, UMFST G.E. Palade Tîrgu Mureş

**Background:** AVTIA is a KA220 Erasmus+ project of cooperation partnerships in Higher Education, aiming to address the special needs of persons with hearing and visual disabilities to be informed and participate in social life, through audiovisual translation (AVT). The specific objectives are: a) To develop innovative content for HE lecturers to teach and assess inclusion in AVT; b) To build knowledge and skills of university students (also freelance translators) specialising in AVT; c) To generate attitude change and raise HE and other stakeholders' awareness of the disparity in inclusion services in different EU member states and the need and obligation to ensure access to information for all categories of persons. The project coordinator - G.E. Palade University of Medicine, Pharmacy, Science, and Technology of Târgu Mureș (Romania), together with partners from Romania, Italy, Spain, and Serbia, will join their efforts to create a training package for lecturers and one for students on subtitling for the hearing-impaired and audio description for the visually-impaired, and also a book on policy recommendations promoting the insertion of inclusive approaches and practices in AVT.

**Keywords:** audiovisual translation for inclusion, hearing-impaired, visually-impaired, subtitling, audio description

## MEMORIE CULTURALĂ ȘI IDENTITATE COLECTIVĂ ÎN ROMANUL E.FERRANTE PRIETENA MEA GENIALĂ (CULTURAL MEMORY AND COLLECTIVE IDENTITY IN E.FERRANTE'S MY BRILLIANT FRIEND)

Smaranda Stefanovici[1]

[1]SL1, UMFST G.E. Palade Tîrgu Mureş

**Background:** Această lucrare explorează relația complicată dintre memoria culturală și identitatea colectivă în romanul Elenei Ferrante Prietena mea genială. Prin narațiunea a două prietene care navighează prin complexitatea orașului Napoli postbelic, Ferrante încapsulează amintirile culturale și istorice care modelează identitățile individuale și colective în cadrul comunității muncitoare italiene. Bazându-se pe teoriile memoriei culturale, acest studiu examinează modul în care Ferrante portretizează procesul dinamic de transmitere a memoriei, concentrându-se pe experiențe comune de traume, reziliență și transformare socială. Analiza evidențiază în continuare modul în care personajele lui Ferrante întruchipează identitatea colectivă, modelată de memoria generațională, provocările socio-economice și un sentiment de apartenență la comunitate. În cele din urmă, lucrarea susține că romanul Prietena mea genială ilustrează modul în care literatura poate servi drept vehicul pentru memoria culturală, permițând

cititorilor să se angajeze în istorii colective care continuă să influențeze formarea identității contemporane. This paper explores the intricate relationship between cultural memory and collective identity in Elena Ferrante's novel *My Brilliant Friend*. Through the narrative of two friends navigating the complexities of post-war Naples, Ferrante encapsulates the cultural and historical memories that shape individual and collective identities within the Italian working-class community. Drawing on theories of cultural memory, this study examines how Ferrante portrays the dynamic process of memory transmission, focusing on shared experiences of trauma, resilience, and societal transformation. The analysis further highlights how Ferrante's characters embody collective identity, shaped by generational memory, socio-economic challenges, and a sense of communal belonging. Ultimately, the paper argues that *My Brilliant Friend* illustrates how literature can serve as a vehicle for cultural memory, allowing readers to engage with collective histories that continue to influence contemporary identity formation.

**Keywords:** memorie culturală (cultural memory), identitate colectivă (collective identity), Italia post-belică (post-war Italy), Elena Ferrante, Prietena mea genială (My Brilliant Friend)

## BRIDGING GAPS IN EDUCATION: IMPLEMENTING ELEARNING THROUGH THE LENS OF DIFFUSION OF INNOVATION THEORY

Ioan Laurian Soare[1]

[1]Department of Foreign Languages, POLITEHNICA BUCURESTI

**Background:** This article explores strategies for implementing eLearning in areas where traditional education systems are limited or disrupted due to factors like geographic isolation, conflict, or natural disasters. Education is essential for societal progress, but crises often severely hinder access to schooling, leading to long-lasting consequences. Research shows that both short- and long-term conflicts can interrupt education for up to a decade (Blattman & Annan, 2010), and post-conflict reconstruction demands significant time and financial investment. eLearning has proven to be an effective alternative to conventional education, particularly in remote or underserved regions. To support its implementation in crisis-affected areas, Hussein Essadi (2021) suggests three primary frameworks: AMO Theory, TOE Framework, and Diffusion of Innovation (DOI) Theory. The AMO Theory (Ability-Motivation-Opportunity) centers on enhancing individuals' skills, motivation, and access to resources for adopting eLearning. The TOE Framework (Technology-Organization-Environment) addresses the necessary technological, organizational, and environmental conditions for successful implementation. Meanwhile, DOI Theory examines how innovative practices like eLearning spread within communities. This article emphasizes the DOI Theory, first developed by Everett Rogers in 1962, as a lens for understanding the social dynamics that affect eLearning adoption in crisis-impacted regions. Applying Rogers' framework allows us to assess factors like community openness to online education, the role of eLearning as an innovative concept, and the influence of different communication channels on adoption. These insights are crucial for tailoring eLearning programs to the specific needs and characteristics of local communities, enhancing both acceptance and long-term success. Effective implementation requires not only technological and logistical support, such as internet access and devices, but also policy backing and community engagement, ensuring that eLearning can fulfill its potential to bridge educational gaps in disrupted areas.

**Keywords:** eLearning, Language Teaching, Communicaiton Studies, DOI Theory, Social Theories

## DISINFORMATION AND MANIPULATION THROUGH ARTIFICIAL INTELLIGENCE: CHALLENGES AND SOLUTIONS IN THE DIGITAL AGE

Paşcan Marius[1]

[1], UMFST G.E. Palade Tîrgu Mureş

**Background:** In the context of global digital expansion and increased access to social networks, the phenomenon of disinformation, online manipulation, represents a major challenge for information integrity and consumer protection. This research examines the generation, multiplication of disinformation using bot networks and artificial intelligence (AI), as well as the implications of these practices for commercial markets, politics and democratic processes. The main methods used by AI to generate fake content, from the automatic production of fake and tendentious messages to algorithmic manipulation and precise targeting of vulnerable users, will be examined. We will also examine advanced detection, countermeasures and countermeasures solutions, including natural language processing methods, biometric analysis to recognize deep fakes, and the use of blockchain to

increase transparency in advertising. At the same time, we will analyze the importance of digital education, the promotion of international ethical and regulatory standards, applicable to prevent and minimize the impact of information manipulation tactics. In this way, we contribute to understanding the complexity of online disinformation and emphasize the need for a multidisciplinary approach to effectively combat these threats in the digital age.

**Keywords:** disinformation, online manipulation, Artificial Intelligence (AI), bot networks, deepfake

## IMPROVING MEDICAL STUDENTS' SOFT SKILLS THROUGH LITERATURE

Letitia Goia[1], Monica Mihaela Marta[1], Marius Adelin Uzoni[1]

[1]Department of Foreign Languages, UMF Iuliu Haţieganu Cluj Napoca

**Background:** Medical humanities is a continuously developing field, more and more healthcare professionals understanding the importance of humanizing medical care. Reading books, presenting them to their fellow students, discussing sensitive topics, and debating controversial ones develop a set of skills essential to future doctors. The discussion about soft skills is fairly recent in the medical field, therefore teachers constantly look for the best means of introducing and explaining soft skills in the English class. The present paper focuses on the crucial role literature plays in cultivating and refining soft skills in a field governed by science and technology. We started the Medicine and literature project ten years ago and, throughout time, we have noticed in students' presentations the shift in focus from specific medical aspects to finer details pertaining to the area of soft skills. Students have started to choose books that have a philosophical component, or topics related to life and death, issues regarding emotions, mental health, resilience. Many of the books they choose are either autobiographies, they explore how doctors feel and how they deal with difficult situations, or they offer an in-depth perspective on how patients cope with their diseases, encouraging reflections on mortality and the human condition. This shift in perspective has made us more aware of the growing need to build soft skills in specialists that will have to interact with patients and their families, people that will work in teams, form relationships, and deal with difficult situations. The need for soft skills in the medical field is even more accute as the scientific background is intertwined with communication and decision-making abilities, as well as challenges and ethical dilemmas.

**Keywords:** literature, soft skills, medical students, medical humanities

## BUILDING ENGLISH LANGUAGE SKILLS THROUGH MOOTING AND DEBATE: THE IMPACT OF TECHNOLOGY

Nicoleta Marcu[1], Dana Rus[1]

[1]Department of Phylology, UMFST G.E. Palade Tîrgu Mureş

**Background:** This article examines how technology enhances English language development through simulation activities such as mooting and debate. These activities are highly motivating as they engage students in real-life scenarios and provide them with the opportunity of linking the specialized terminology to the relevant legal tasks and interactions. They also prepare students for their future careers as they are excellent tools to improve both their written and oral communication skills, thus making their legal English more effective and convincing. By integrating virtual platforms, AI-driven feedback, and online resources, technology makes these traditionally in-person activities more accessible and interactive. This article demonstrates how technology transforms mooting and debate, providing flexible, impactful ways to build essential English proficiency for academic and professional success.

**Keywords:** language skills, technology, mooting, debate, English for specific purposes

## BETWEEN RIGHT AND WRONG: EXPLORING GREY AREAS AND MEDICAL DILEMMAS DURING MEDICAL ENGLISH CLASSES

Anisoara Pop[1]

[1]SL1, UMFST G.E. Palade Tîrgu Mureş

**Background:** Context: In the current day-to-day practice of the medical profession, physicians are faced with questions and

situations that have an ethical dimension or a grey zone[1] that cannot be reduced to the clinical aspects. Such medical dilemmas pertain to: divergent professional and personal values versus existing/absent legal provisions, respecting patient beliefs, balancing conflicting principles, and cultural practices. Aim: The presentation will offer a model for integrating ethical debates and discussions of medical dilemmas in ME classes. The learning paradigm aims at forming critical thinking and argumentative skills related to ethical issues, practising discussion techniques (agree, disagree, clarify, and summarise) while developing ME proficiency. Material and method: Forty current, relevant, inciting articles that offer an intimate glimpse into the demanding nature of medical education and practice were selected from MedScape Medical Dilemmas area, uploaded on the ME site and distributed to the 2nd year medical students (N= 105) for autonomous reading. Reading was integrated with individual, team or group oral presentations during the ME class as part of the formative evaluation. Results: Although optional, this experiential learning paradigm was successful in terms of a) engagement: All students responded to guiding questions referring to primary for and against arguments, the ethical principles involved, and used argumentative language; b) motivation and impact measured qualitatively as the interestingness index (easily understood, potentially useful, novel), and c) alternative formative assessment with peer and teacher feedback in terms of language as well as accuracy and clarity in presenting ideas, and debating. Conclusion: The ethical crossroads of modern medicine remain an unchartered, grey territory. By tackling them early in their medical career, students learn to observe, evaluate, and understand diverse perspectives, and thus form critical thinking skills necessary for their future career while also consolidating their ME competence in a captivating manner.

**Keywords:** medical dilemmas, Medical Englsih, ethical debates, autonomous reading, formative evaluation

## LANGUAGE MATTERS – LESSONS LEARNT FROM CONNECTED FOR HEALTH PROJECT (C4H) ON COMMUNICATING WITH YOUNG PEOPLE WITH OBESITY AND EATING DISORDERS

Anisoara Pop[1], Adrian Năznean[2]

[1]SL1, UMFST G.E. Palade Tîrgu Mureş
[2]UMFST G.E. Palade Tîrgu Mureş

**Background: Context**: Young people with obesity and eating disorders (EDs) often feel prejudiced and stigmatised as a consequence of their weight. Obesity-related terms such as "fat" and "morbidly obese" can be perceived as negative and stigmatising while focusing on eating, body shape, and comparisons can lead to frustration, enhance difficult behaviours and introversion in adolescents with eating disorders. **Method**: a review of communication studies, simulations of physician-patient interviews, peer-to-peer and child-parent communication. **Results**: I will present the results of C4H project in communicating with young people with obesity and EDs in terms of: strategies of motivational interviewing (asking permission to discuss weight), identifying opening gambits, avoiding language that may be perceived as negative, language preference versus disliked terms, people-first language, the Imago dialogue. **Conclusion**: Language matters when communicating with adolescents with obesity and eating disorders. Rather than reinforcing stigma and hindering progress, the employment of positive communication strategies and supportive, non-judgmental language can shape understanding and empathy, and promote the young patients' motivation to adopt healthy behaviours.

**Keywords:** communication strategies, positive language, obesity, eating disorders

## DOUĂ JURNALE, O SINGURĂ IPOSTAZĂ : RĂZBOIUL VĂZUT PRIN OCHI DE FEMEIE/ TWO DIARIES, ONE PERSPECTIVE: WAR SEEN THROUGH A WOMAN'S EYES

Alina Bako[1]

[1]The Department of Romance Studies, Universitatea „Lucian Blaga” din Sibiu

**Background:** The study discusses two autofictional writings that filter, through the female perspective, the traumatizing aspect of war. The first proposal is related to a diary published in France in 1937 and subsequently translated, which explores the traumatic experiences generated by World War I. Arabella Yarka illustrates, through her empathetic writing, the profound effects of the global conflagration on women, highlighting how the trauma of war has influenced both individual and collective lives. The diary "From One Day to the Next. Intimate Diary. 1913-1918" describes the perspectives of a young woman in a besieged Europe, providing a

valuable analysis of the networks that are constructed between the Southeast European space and Central and Western Europe. In this context, we will also discuss Neli Cornea's "Notes from the Time of War," which complements this exploration by presenting war from a feminine perspective and emphasizing the traumatic impact of conflicts on human identity.Studiul aduce în discuție două scrieri autoficționale, care filtrează, prin ochii femeii, ipostaza traumatizantă a războiului. Astfel, prima propunere este legată de un jurnal apărut în Franța în 1937 și tradus ulterior, care explorează experiențele traumatice generate de Primul Război Mondial. Arabella Yark ilustrează, prin scrierea sa empatică, efectele profunde ale conflagrației mondiale asupra femei, evidențiind modul în care trauma războiului a influențat viețile individuale și colective. Jurnalul "De pe o zi pe alta. Carnet intim. 1913-1918" descrie perspectivele unei tinere aflate într-o Europă asediată, oferind o analiză valoroasă inclusive asupra rețelelor care se construiesc între spațiul sud-est European și Europa centrală și vestică. În aceeași direcție, vom discuta "Însemnări din vremea războiului" de Neli Cornea completează această explorare, prezentând războiul din perspectiva feminină și subliniind impactul traumatic al conflictelor asupra identității umane.

**Keywords:** Literature, War, Feminine Writings, Networks, Spatial Studies

## MODERN APPROACHES TO TEACHING SPELLING AND PUNCTUATION IN PRIMARY EDUCATION: INSIGHTS FROM ROMANIAN PRIMARY SCHOOL TEACHERS

Réka Kutasi[1]

[1]Department of Sciences and Letters 2, UMFST G.E. Palade Tîrgu Mureş

**Background:** Spelling and punctuation are two essential literacy components taught to primary school pupils through memorization and repetitive exercises. In a world that is continually changing, traditional teaching methods may fail to capture pupils' attention leading to demotivation and reduced ability to remember information. The present study aims to investigate to what extent Romanian primary school teachers perceive the effectiveness of modern teaching methods and use them in teaching spelling and punctuation. Through the use of a structured questionnaire, the study seeks to highlight the challenges primary school teachers face when teaching spelling and punctuation and explore their recommendations for adapting and improving teaching methods in primary education. The findings will also offer valuable recommendations to improve literacy education through up-to-date, pupil-centred methods.

**Keywords:** teaching spelling, teaching punctuation, primary education, modern teaching methods, pupil-centred methods

## MIRCEA CĂRTĂRESCU. ASPECTS OF AUTOBIOGRAPHICAL DISCOURSE

Iulian Boldea[1]

[1]SL1, UMFST G.E. Palade Tîrgu Mureş

**Background:** The diary of Mircea Cărtărescu is particularly notable for its interplay between concealment and revelation, highlighting a considerable gap between the superficial aspects of daily existence and the "essence" of the individual as he presents himself within a rich, fragmented, and disjointed narrative. This diary also encompasses the author's literary influences, including figures such as Hrabal, Gogol, Radu Petrescu, Borges, Virginia Woolf, and Nabokov, alongside his cultural practices. Consequently, the writing is infused with the echoes of these texts, leaning towards a specific dominance of the imaginative realm, or a coexistence of clarity with the dreamlike qualities of the imagination, wherein day and night achieve a state of equilibrium and reciprocity. The diary manifests an unstable interplay of absence and presence, aesthetic richness and diminished expression, unmet aspirations and unfulfilled commitments. It navigates its own complexities at the threshold of a partially imitated, partially suppressed authenticity, where the agonizing image of a creative struggle is cast in twilight and disorienting hues.

**Keywords:** autobiographical discourse, identity, culture, imaginary, authenticity

## PAUL ZARIFOPOL AND THE JUNIMIST STRUCTURE OF THE SPIRIT. THE PERMANENT CALL FOR ORDER AND BALANCE

Anca Rusu[1]

[1]Department of Phylology, UMFST G.E. Palade Tîrgu Mureş

**Background:** Since his earliest writings, Paul Zarifopol has been placed in the category of Junimist criticism, due to his constantly upheld aestheticism, the special attention paid to the concept of art and artistic work, as well as the fine irony he directed towards contemporary society. Advocating the voluptuous interplay of ideas, his subtle and refined criticism exudes a particular sensitivity of intelligence, distinguished by his cultivated spirit of diversity, his sharp intellect, but also by his individualistic temperament, perceived as a true artist of the spoken word. A repository of the tradition of Junimist criticism, the essayist denounces empty forms and the counterfeiting mockery, severely punishing all the "literary sins" identified in the literary works. Therefore, the present paper focuses around the image of the Junimist, who established himself as a disciple of prudent criticism through his respect for artistic work, his emphasis on the aesthetic value of the work and his genius for irony. However, it is noticeable that Paul Zarifopol continues the tradition of Junimist criticism in slightly changed conditions, through the undeniable existence of a modern way of thinking and feeling.

**Keywords:** Paul Zarifopol, junimism, aestheticism, irony, literary criticism

## UNESCO SITES FROM ROMANIA BETWEEN OPPORTUNITIES AND CHALLENGES. CASE STUDY: THE ROMAN FORTESS FROM TURDA/POTAISSA.

Fabian Istvan[1]

[1], UMFST G.E. Palade Tîrgu Mureş

**Background:** In 2024, the Roman frontier of Dacia became part of UNERSCO world heritage. Under the title "Frontiers of the Roman Empire- Dacia", the "limes" (as the Romans named their fortified frontier) became part of a bigger cultural-archaeological project. The "limes" of Roman Dacia, stretched over 1000 km, on various terrains and, it was made of legionary and auxiliary fortification, watchtowers, ramparts, roads etc. The entire frontier (not only in Dacia), proved to be an extraordinary example of the Roman's ambition not only to rule the area but, more important, it proves the Roman versatility and response to challenges represented by the terrain and the climate. As part of this heritage, the Roman fortress of Turda/Potaissa, stands not only as an important part of the ancient defense system of the province but, today is facing different challenges and opportunities. The archaeological research is just one aspect of the challenge... rising community awareness, the inclusion of the fortress in a complex circuit of archaeological tourism, and its contribution to the economic development of the area are much tougher challenges. The paper has as aim to present the approaches in order to respond to these challenges.

**Keywords:** UNESCO, Frontier, Roman, Potaissa/Turda, Heritage

## THE METAPHOR OF TRAUMA. PICIOARE DE LOTUS (LOTUS FEET), BY BOGDAN RĂILEANU

Roxana Cotruș (Ispas)[1]

[1]Department of Phylology, UMFST G.E. Palade Tîrgu Mureş

**Background:** The metaphor of trauma began to be increasingly present in Romanian literature, especially after 1990, when writers found a perennial theme in the impact that the totalitarian regime had on Romanian society. Trauma is the subject of the newbook by Bogdan Răileanu, Picioare de lotus (Lotus feet), published by Ed. Polirom in 2024, but what sets this work apart fromprevious representations of trauma is Răileanu's choice to avoid direct references to the Romanian post-Decembrist landscape. Theauthor seems to have stepped beyond the constraints of the post-Decembrist context, exploring a space that, at first glance, mightseem unappealing - the space of the small, everyday reality, which lacks the sensational. Thus, the stories in his volume function asan exhibition of traumas and prejudices that work together in banal situations, altering the individual's quality of life.

**Keywords:** Bogdan Răileanu, trauma, metaphor, plain style, contemporary Romanian short stories

## IDIOMATIC EXPRESSIONS AND GNOSEOLOGIC MODELS

Doina Butiurcă[1]

[1]SL1, UMFST G.E. Palade Tîrgu Mureş

**Background:** Language is a product, a part and a condition of a people's spiritual culture. It is a condition of culture - if we consider the fact that the latter has an architecture comparable to that of language, for example. Starting from this assertion we propose to research the relation between idiomatic expressions (selectively) in Indo-European languages and the representations of spiritual culture, ritualic behaviors, cognitive models formed along the cultural ages of (mythical, historical, experimental, cultural, religious etc). Among the derived objectives we mention: research of ritualic and religious meanings of conceptual metaphors - developed in this sum of ancestral wisdom; research of symbolic value, of anthropologic values, of social philosophy, and especially the study of the gnoseologic dimension - which individualizes itself through the considerable number of accreditations of metaphysical and cosmological principles in the microcosmos of the human being. As methods, we will use analysis, comparison and description. etc. A first conclusion is that the numerous models of religious man's behavior stem from a place *in illo tempore*, above time and space.

**Keywords:** Expressions, Indo-European, Language, Anhtropology

## TRAUMA, POSTMEMORY, AND IDENTITY IN OCEAN VUONG'S FICTION

Georgeta Matei[1]

[1]Department of Sciences and Letters, UMFST G.E. Palade Tîrgu Mureş

**Background:** This paper discusses the cultural, narratological, and pshycological complexities of Ocean Vuong's semi-biographical novel, On Earth We're Briefly Gorgeous (2019). We show how the author uses powerful images of psychic and bodily pain to explore marginalized or even taboo dimensions of the body: the queer (Little Dog, the protagonist), the mentally ill (Rose, the narrator's mother), the aging/ dying body (Lan, the narrator's grandmother). By focusing on the ambivalent relationship between mother and son, Vuong challenges norms of sexuality, representation, rememberance, and nationality, introducing an intimate perspective on war, queerness, and mental health. This study combines textual analysis with sociocultural interpretation, conceptual frameworks from postcolonial theory and gender studies, drawing also on Marianne Hirsch's concept of postmemory and Anne Whitehead's theorization of trauma fiction (2004). Ultimately, the study discusses how the writer achieves a innovative depiction of the war's aftermath and long-lasting effects on his survivors, displaying a queer mode of agency able to turn fragility and vulnerability into a powerful artistic act.

**Keywords:** trauma fiction, mental health, postmemory, queerness, war

## THE EVOLUTION OF ROMANIAN VOCABULARY THROUGH LEXICAL BORROWINGS

Diana - Irina Apostol[1]

[1]Department of Foreign Languages, Universitatea Lucian Blaga, Sibiu

**Background:** Abstract Due to word and structural borrowing from other languages, language is a dynamic system that is always

evolving. As a result, in the instance of Romanian, words and lexical structures enter the lexicon before disappearing or being completely changed in various contexts throughout the communication process. Some of these words, which are frequently used in speech, fall under what lexicologists refer to as Romania's active vocabulary, whereas other lexical structures, which are not frequently used, fall under what lexicologists refer to as Romania's passive vocabulary. The last mentioned category is (re)activated when they are used in a specific context. The purpose of this paper is to explore how linguistic contact and neologization have caused English to have an impact on Romanian. I was unable to cover all lexical and semantic errors in this paper, but I did pick a few categories that are illustrative. I paid particular attention to errors brought on by the English influence, which also offers the most variety and is best exemplified by the desire to speak pretentiously and more eloquently. **Material and methods:** Method: Case study **Results:** - **Conclusions:** A reasonable culture that seeks to advance and integrate into the chorus of civilizations cannot stop a language's evolution or forbid its renewal. However, if the process of its growth is halted, the language becomes disconnected from reality, undergoes rapid and constant evolution, and ultimately fails to fulfill its purpose.

**Keywords:** Anglicisms, Borrowings, Influence

---

## FAME AND INFAMY IN POSTMODERN AMERICAN LITERATURE. A STUDY BASED ON E.L DOCTOROW'S NOVEL BILLY BATHGATE.

Ioana Camelia Brustur[1]

[1]Department of Foreign Languages, UMF Iuliu Haţieganu Cluj Napoca

**Background:** E.L. Doctorow's *Billy Bathgate* (1989) exhibits postmodern characteristics through its fragmented narrative, unreliable narration, and its complex investigation of reality and myth. The narrative also delves into themes such as fame and infamy. In the novel, young Billy's journey into the world of organized crime under the guidance of the infamous gangster Dutch Schultz serves as both a coming-of-age story and a critical examination of celebrity and infamy. As Billy narrates his experience, his fascination with Schultz's persona reflects postmodern themes of simulated realities and constructed identities. Through Billy's lens, fame becomes a performance, a concept built on myth-making and mediated images. The novel mirrors postmodernism's skepticism regarding grand narratives and its emphasis on fragmented, subjective truths, as Billy's journey is less about finding a fixed identity and more about navigating a series of roles. In *Billy Bathgate* the concept of fame is used to explore how postmodern individuals seek meaning in a world that gradually alters reality and replaces it with illusions.

**Keywords:** postmodernism, fame, infamy, Billy Bathgate, postmodern hero

---

## RUMOR INSIDE NATO? 'ANKARA-MOSCOW-BEIJING' AXIS IN THE CONTEXT OF COVID-19

Aurel Lazăr[1]

[1]Sciences and Letters, UMFST G.E. Palade Tîrgu Mureş

**Background:** The article aims to examine how the relations between Ankara and NATO have evolved in the context of the COVID-19 pandemic, taking as a reference point the main milestones in the history of the relationship between Turkey and the Alliance. From a theoretical point of view, the analysis aims to highlight the role played by the so-called 'Neo Ottoman' ideology in Ankara's formulation of its domestic and foreign policy strategies. In the context of the COVID-19 pandemic, we examined how Turkey understood its role as a full member of NATO while maintaining relations in strategic areas with the Russian Federation and China, the main enemies of the Alliance. In this article, we used qualitative and quantitative data, and the analysis method is specific to history and political science.

**Keywords:** NATO, Turkey, Russian Federation, China, COVID-19

## GRAMMAR IN CONTEXT: TEACHING TARGETED GRAMMAR STRUCTURES IN ESP FOR MEDICAL LAB TECHNICIANS

Tetiana Kibalnikova[1]

[1]Faculty of Medicine, Masaryk University Language Center, Brno, Czech Republic

**Background:** Unlike English for General Purposes, English for Specific Purposes aims at developing language skills aligned with specific demands of any professional group. In task-based Medical English courses, the focus is on completing meaningful tasks rather than on linguistic accuracy. However, we believe that teaching grammar is essential when it is contextualized. In our new ESP course for Medical Lab Technicians, we integrated targeted grammar structures which are critical for effective communication in the laboratory environment. **Material and methods:** Along with the needs analysis, we also conducted discourse analysis of authentic texts related to the target context. This analysis identified key grammatical structures crucial for specific task completion and communication among medical lab technicians. Based on these findings, we designed activities to help the participants master the targeted grammar structures within a task-based context. **Results:** While the participants had a solid grasp of the language, they improved their ability to use passive constructions to describe procedures in an automated lab and demonstrated confidence in discussing safety rules using the structures expressing prohibition, permission and obligation, They also refined their skills of speculation about analytical mistakes and their prevention using modal verbs. **Conclusions:** Teaching grammar in context is an essential part of any ESP course because it enhances functional communication skills. By focusing on targeted grammar structures, ESP practitioners can equip participants with powerful tools to meet the unique linguistic demands of their specific professional sphere.

**Keywords:** ESP, targeted grammar structure, task-based context

## WHEN DOCTORS TURN TO LITERATURE – CASE STUDY: GABRIEL BEN MERON

Corina Lirca[1]

[1]Sciences and Letters 1, UMFST G.E. Palade Tîrgu Mureş

**Background:** The reasons why so many representatives of the medical profession turn to literature are varied. They may write to understand what occurs in their own or their patients' lives, to increase their own narrative competence, to develop empathy, and to deepen their capacities for reflection and self-knowledge, but even more than that to find a "valve" to release professional pressure. The Israeli doctor of Romanian origin Gabriel Gurman is a relevant example of a doctor-writer or, as he likes to define himself, a doctor-storyteller.The paper is intended to show the relevance of literature to doctors, specifically identifying professor Gurman's aims and practice.

**Keywords:** medical humanities, storytelling, narrative competence, doctors' stories

## PRINCIPLES AND METHODS OF TEACHING ROMANIAN TO NON-NATIVE SPEAKERS

Eduard-Titus Ciortea[1]

[1]Department of Phylology, UMFST G.E. Palade Tîrgu Mureş

**Background:** Teaching any language to non-native speakers involves a set of special approaches, with well-defined principles and methods. In this regard, teaching Romanian to non-native students is no exception. This paper represents a compilation of principles and teaching methods for the Romanian language that have proven effective in the author's teaching experience, both at the university and pre-university levels, and which can serve as sources of inspiration for colleagues in the field, students, or anyone passionate about teaching or learning Romanian. In this work, I aimed to organize the principles and methods based on two important variables, which can be expressed through two questions: 1.)Who are we teaching? and 2.) What aspect of the language are we teaching? Thus, the paper addresses the subject separately based on age groups and proficiency levels in Romanian (middle schooll students from Hungarian classes, highschool students from Hungarian classes, non-native students in English-taught programs, students enrolled in the special Preparatory Year or Romanian Language program, etc.), as well as based on the specific

area of the language being taught (vocabulary, phonetics, grammar - morphology and syntax).

**Keywords:** non-native, methods, vocabulary, phonetics, grammar

## DEMOGRAPHY AND MIGRATION: THE ROLE OF HUMANITIES

Giordano Altarozzi[1]

[1]Department of History and Political Sciences, UMFST G.E. Palade Tîrgu Mureş

**Background:** Demographic trends undoubtedly represent one of the main problems of the contemporary world. While global population growth is expected until the end of the century, regional demographic trends show profoundly different tendencies. Some regions of the world will continue to experience a highly upward demographic trend, while others are already facing - and will increasingly face - a negative demographic trend. Demographic prognoses are closely linked to another increasingly visible phenomenon: migration. Migratory flows have always posed problems, determined by the encounter of different cultures and civilizations. These aspects require a new approach and the development of policies capable of managing them effectively. This contribution has a dual purpose: to raise awareness among the scientific community about the challenges of the century, and secondly to highlight the possible contribution of the humanities in their management.

**Keywords:** Demography, Migration, Humanities, 21st Century

## TEACHING WRITING SKILLS TO HIGH SCHOOL STUDENTS: A COGNITIVE DEVELOPMENTAL PERSPECTIVE

Raluca Emilia Moldovan[1]

[1]Department of Foreign Languages, Dimitrie Cantemir University

**Background:** The novice writer is used to storytelling rather than argumentative writing, the latter requiring specific techniques and strategies. By adopting a cognitive developmental perspective teachers can create a supportive and enriching environment that helps students develop their writing skills in a way that aligns with their cognitive growth and learning needs. Planning conceptual content, generating task-based texts and cleary presenting and supporting ideas and opinions, requires advanced knowledge, good mastering of the language as well as critical thinking skills. The main cognitive processes involved are attention and focus to the task, knowledge-crafting and metacognitive skills, which are crucial in raising awareness of the writing process, in order to lead to improved results. For students to reach this stage, teachers should make use of clear instructional strategies that provide them with specific writing techniques, which would eventually ensure a better insight into concepts, structures and critical thinking.

**Keywords:** critical thinking, cognition, teaching, writing, techniques

## VALUES OF DEFINITE, INDEFINITE, AND ZERO ARTICLE AS DETERMINERS IN UNCOUNTABLE ROMANIAN NOUNS

Maria-Laura Rus[1]

[1]Department of Phylology, UMFST G.E. Palade Tîrgu Mureş

**Background:** The category of determiners (definite, indefinite, and zero articles) has different values expressed for the uncountable nouns in the Romanian language. In the singularia tantum type, the most frequent value is class, unitary or detailed individualization and only in some contexts the individualization value of a certain entity. Nouns of the pluralia tantum type synchronize very easily with the individualization of specificity (certain and unitary). The mixed class that includes nouns that can be used both as countable and as uncountable has a balanced system of values. By comparing these classes of nouns and illustrating each situation, we want to show that these specific determiners represent a well-established grammatical category in the system of noun categories, especially through the interference with the category of number, which develops systems of oppositions at the level of content and expression.

**Keywords:** determiner, uncountable, specificity, individualization

## DISCOURSE ANALYSIS OF ZAKIR NAIK'S PUBLIC SPEECHES

Iulia Staicut[1]

[1], Lucian Blaga University of Sibiu

**Background:** Zakir Naik, a prominent Islamic speaker from India, known for his engaging public speeches and debates on Islam and comparative religion, has gained international recognition for his eloquence and persuasive style, attracting large audiences through various media platforms. Naik's ability to present complex theological concepts in a simple and relatable manner has earned him a significant following among Muslims and people of other faiths. Research Objective and Significance The goal of this research is to analyze Zakir Naik's public speeches to examine the linguistic and rhetorical techniques he uses to persuade and influence his audience. It aims to uncover how Naik effectively communicates religious and ideological messages. The research also seeks to explore the impact of discourse on the audience, including their emotional responses, level of engagement, and susceptibility to persuasion. Analyzing Naik's discourse is important for several reasons: It helps understand how religious ideologies are conveyed and propagated in the modern world. Thus, researchers can gain insights into the strategies used by influential religious speakers to connect with their audience and promote their ideas. Naik's speeches often involve comparisons between Islam and other religions, making his discourse relevant to broader discussions on religious pluralism and coexistence. Understanding how language and rhetoric are used in religious speeches can also have implications for media literacy, critical thinking, and communication ethics. Methodology and Data Sources The research uses a qualitative discourse analysis approach to explore Zakir Naik's public speeches. A collection of diverse speeches delivered in various contexts and settings is gathered as the primary data source. Examples of rhetorical devices, linguistic features, and argumentative structures will be presented to illustrate Naik's persuasive techniques effectively. This research is intended to investigate Zakir Naik's discourse and its impact, contributing to the scholarship on religious communication, public speaking, and interfaith dialogues.

**Keywords:** Zakir Naik, speech, linguistics, religion

## ON THE SOCIAL AND EMOTIONAL DIMENSIONS OF TEACHING AND LEARNING AT UNIVERSITY

Andrea Peterlicean[1], Elena Cristina Berariu[2]

[1]Department of Foreign Languages, Sapientia Hungarian University of Transylvania
[2]Department of Foreign Languages, Dimitre Cantemir University, Târgu Mureş

**Background:** At present, the development of social and emotional skills in learning spaces receives more attention in primary and secondary educational institutions. Universities seem to focus more on other aspects. It is undeniable that university education comprises more than theoretical knowledge being passed from teachers to students. In order to make learning whole, should universities develop such skills? Do teachers and students in seminar rooms need to concentrate on the human dimension of the teaching and learning space? This paper attempts to clarify whether university spaces need to offer opportunities for students and teachers to develop their social and emotional skills.

**Keywords:** social, emotional, university, teaching, learning

## TEACHER-MONITORED INDEPENDENT LISTENING IN VIRTUAL CLASSROOM

Olga Kvasova[1], Roksoliana Radchuk[2]

[1]Department of Teaching Methods of Ukrainian and Foreign Languages and Literatures, Kyiv Taras Shevchenko National University
[2]Kyiv Taras Shevchenko National University

**Background:** This paper aims to explore the efficacy of developing university students' listening skills on-line instruction facilitated by the use of technologies, and offer techniques to maximize learning. Prior to the educational intervention, we surveyed second-year students of Linguistics (n= 47) to find out their overall attitude to on-line instruction including platforms and websites that

they value and/or disregard. More importantly, we sought to elicit and analyze students' perceptions of the on-line instruction's effects on a number of selected language skills, students' preferences in independent listening (IL) (topics, text types, sources), as well as their views of IL organization beyond classroom (frequency of doing IL, length of texts, etc.). The survey yielded the data that were used by us in preparing the intervention. We chose to involve the students in IL twice a week, offer them a variety of pre-selected audiotexts, with the materials being excerpts from TV series, educational videos, interviews, etc. To prepare pre-, while- and post-listening activities we resorted to liveworksheets.com.Based on the student survey, we agreed on regular evaluation of IL performance via written summary, short discussion and presentation based on the audio/video text content.

**Keywords:** on-line instruction, independent listening, listening materials, evaluation

## REPRESENTATION OF WOMEN IN DECISION-MAKING POSITIONS IN THE COMMUNITY

Maria-Ana Georgescu[1]

[1], UMFST G.E. Palade Tîrgu Mureş

**Background:** Background Our study allows us to have an image of the changing European realities on gender issues regarding women's active role in the community, through their participation in the decision-making process in public life and in international voluntary organizations, such as Rotary, an exclusive, predominantly male association until recently. Method The methodology we used consists of the quantitative approach, through the secondary analysis of the available statistical data related to the presence of women in decision-making positions in companies and at the higher levels of the administrative and judicial system, as well as the comparative aspect of the presence of women in social life in Romania the situation in European countries. The data series we have selected are the most recently published by official bodies. Results We found, as positive aspects, the fact that Romanian women occupy much more seats, than men, at the Supreme Court of Justice and are well represented in decision-making positions in the Public Administration. As a negative aspect, the low participation of women in Romania in the bodies of political power, which places the country in a low position in the rankings in this field. We even noticed an opposite trend in our country, compared to the European trend, namely the reduction of female representation in the political arena over the years. In contrast, within Rotary International volunteering, the percentage of women in District 2241, including Romania and Moldova, has gradually increased. Conclusions In conclusion, we note the underrepresentation of women in public life in Romania and especially in the political arena, by comparison with the situation in other European states.

**Keywords:** womwn, active role, public life, decision-making positions

## ENLACED: CONNECTING LANGUAGE LEARNING WITH DEMOCRATIC COMPETENCES

Dana Rus[1], Bianca Han[1], Andreea Ban[1], Smaranda Stefanovici[1], Nicoleta Marcu[1]

[1]Department of Foreign Languages, UMFST G.E. Palade Tîrgu Mureş

**Background:** We live in complex, interconnected, linguistically and culturally diverse societies that allow us to work across different countries and cultures. Navigating through this context requires a good command of foreign languages. The Council of Europe endorses plurilingualism as a key competence for professional success and personal development and urges universities to ensure that their graduates are equipped with the linguistic and cultural resources needed to participate in the democratic processes of Europe's diverse societies.Linguistic competence is intrinsically connected with democratic competence because it is a prerequisite for active engagement in democratic culture, as explained in the Intercultural Citizenship Education Theory and the Reference Framework of Competences for Democratic Culture. Embedding competences for democratic culture in foreign language education represents a methodological challenge. It requires combining foreign language teaching methodologies with practices conducive to the development of transversal competences. In view of such guidelines, the project ENLACED - Digitally-Enhanced Foreign Language Education for Active European Citizenship and Democratic Culture - aims to create a synergy between contemporary foreign language teaching methods and the practices of challenge-based learning in digital environments.

**Keywords:** language education, synergic approaches, transversal competences, language methodology, democratic competences

## BETWEEN THE SOCIAL AND THE MEDICAL MODEL OF INCLUSION

Andrea Peterlicean[1]

[1]Department of Foreign Languages, Sapientia Hungarian University of Transylvania

**Background:** In this research paper we aim to study the concept of inclusion in seminars and practical courses at university level in Transylvania, Romania. Whether we like it or not, many of us, teachers and also a number of students may have fallen into the trap of being unconsciously biased towards our peers, learners, teachers, colleagues. One of the objectives we have is to discover what the students' and teachers' perceptions are and how the teaching and learning is influenced by such factors in the seminar or course room. Another objective is to discuss how to make universities more inclusive, overcoming the barriers to inclusion.

**Keywords:** unconscious bias, inclusion, social model, teaching and learning, medical model

## CULTURAL LAYERS OF MEDICAL HUMANITIES AS PRESENTED TO ROMANIAN MEDICAL STUDENTS

Laura Ioana Leon[1]

[1]Department of Foreign Languages, UMF Gr. T. Popa Iaşi

**Background:** Foreign language teaching in Medical Schools should be regarded from a broader perspective today. Though at the level of foreign language seminars medical students should focus on what we have always included in the area of English for Specific Purposes, foreign language courses could become an opportunity for them to explore new territories such as Medical Humanities. For North American or Western European Medical Schools, the study of this topic is not a new thing. For more than 60 years now, since the first course on literature and medicine was delivered by Joanne Trautman at the Pennsylvania State University College of Medicine in 1960, studies have shown the effectiveness of Medical Humanities on medical students' training. The aim of this paper is to show how foreign language courses at the "Grigore T. Popa" University of Medicine and Pharmacy, Iasi have been adapted so as our students may approach these new topics meant to develop some essential skills in their future profession. Besides becoming better observers and communicators, students are likely to develop their empathy and tolerance, understanding the importance of seeing patients in their cultural context as our health choices are always culturally dictated.

**Keywords:** Medical Humanties, foreign language teaching, language and culture, cultural studies, medical students

## POLITICAL EXTREMISM AND RELIGIOUS IDENTITY: THE PRESS PERSPECTIVE ON NEO-PROTESTANT CHURCHES IN INTERWAR ROMANIA

Csaba-Ioan Csiki[1]

[1]Department of History and Political Sciences, UMFST G.E. Palade Tîrgu Mureş

**Background:** This article explores the perception of Neo-Protestant churches in interwar Romania through the lens of interwar press. It argues that the press did not solely categorize these religious movements as sects; rather, they frequently framed them as extensions of extremist political ideologies or enemies of the state. By analyzing various publications from the 1920s and 1930s, this study is shedding light on societal anxieties regarding the rise of these movements during a tumultuous period in Romanian history. It further examines how religious identities were politicized, highlighting the complex interplay between faith and extremism as perceived by the media. Ultimately, this article is trying to emphasise the significant role of the press in shaping public perception of religious movements.

**Keywords:** Neoprotestant, Interwar, Press, Romania

## CONNECTING THE NATION: RAILWAYS STATIONS AND SOCIAL DYNAMICS IN IN THE AFTERMATH OF THE GREAT UNION

Maria Tătar-Dan[1]

[1]SL1, UMFST G.E. Palade Tîrgu Mureş

**Background:** Beyond their primary function as transportation means and transit points, railways stations are also spaces where diverse populations intersect, thus fostering both social interaction and cultural exchange. The present paper explores the role of railways stations and travelling in shaping interwar Greater Romania's social and cultural landscape. In the aftermath of the Great War, travelling allowed individuals to engage directly with the diverse customs and communities of the newly enlarged Romanian state, thus offering a unique lens into the social transformations generated by the Great Union and the aftermath of the Great War. By analysing travel memoirs, press articles, and other contemporary accounts, the paper explores the challenges of train travel, as well as the rich interactions and reflections they inspired, highlighting the way railways and travel fostered a shared sense of national identity, while at the same time reflected the complexities and tensions of a society undergoing profound transformation.

**Keywords:** Great Union, Culture, Travel, Railway station

## ENGLISH VOCABULARY FOR MEDICAL STUDENTS – INVOLVING MEDICAL EXPERIENCE FOR BEST LEARNING OUTCOMES

Aurora Paşcan[1]

[1]Department of Foreign Languages, UMFST G.E. Palade Tîrgu Mureş

**Background:** Background: The acquisition of specific English vocabulary by medical students can be achieved through extremely diverse methods, both traditional and AI-based. Methods that involve the students' medical experience, such as anamnesis, case presentation, role-play, description of new developments in the field develop both professional and linguistic skills. Material and methods: At the end of academic year 2022-2023, 2 series of 2nd year students (N=190) presented, as the final English evaluation, a medical case, on a given structure: personal details (sex, age, occupation etc.), presenting complaint (symptoms) (c/o), past medical history (PMH), drug history (medication), family history (FH), social and personal history (marital status, addictions like smoking or drinking etc.), findings on examination (o/e), investigation results (IX), diagnosis (DX), treatment or medical procedures (PX), outcome (conclusion). Results: only 42 students presented a case encountered in their hospital practice or personal life, 65% respected the given structure, approximately 20% prepared their presentation meticulously, including the pronunciation of difficult terms. Conclusions: Despite the slightly superficial approach to the structure and presentation requirements, approximately half of the students performed better in this task than during the semesters and the majority used much more specialized vocabulary.

**Keywords:** English for Medical Purposes, medical experience, domain-specific vocabulary

## DIGITAL TRANSFORMATIONS: AI-ASSISTED TEXTUAL ANALYSIS IN HUMANITIES RESEARCH

Cristian Lako[1]

[1]Department of Foreign Languages, UMFST G.E. Palade Tîrgu Mureş

**Background:** The quick progress of artificial intelligence has led to a major change in how humanities research is conducted, especially in analyzing texts. This paper looks into the new area of AI-supported textual analysis, examining how computer-based methods are changing our comprehension of language and cultural texts. By using advanced natural language processing, machine learning techniques, and refined computational interpretation, researchers can now analyze textual collections more thoroughly and on a larger scale than ever before. Through a detailed look at computational methods, this study shows how AI tools help recognize complex patterns, create semantic networks, and carry out detailed interpretative work across various textual fields. Examples from literary criticism, historical document analysis, and comparative language studies highlight the significant impact of these methods.

The research critically assesses both the innovative strengths and the inherent challenges of AI-supported textual analysis, tackling issues like algorithmic bias, interpretative constraints, and the crucial role of human critical thinking. The paper suggests that AI should be viewed not as a substitute for human interpretation in scholarship but as an advanced collaborative tool that broadens the scope of humanities research. By providing fresh methodological perspectives and showcasing practical analytical techniques, this study adds to the ongoing conversation about the changing nature of digital humanities, positioning computational methods as an essential complement to traditional humanistic studies.

**Keywords:** Digital Humanities, AI-Assisted Textual Analysis, Machine Learning, Natural Language Processing, Computational Hermeneutics

---

## MODELS OF INTEGRATED LITERACY

Eva Monica Szekely[1]

[1], UMFST G.E. Palade Tîrgu Mureş

**Background:** The communicative imperatives of the contemporary world impose upon the return of the textual & discursive complexes in the essence of present formative programs, with the vast problematic lying at the both her moments, comprehension and interpretation, at the intersection of some reference subjects like "the death of ideologies", the priority of hermeneutics as a practical philosophy in the present, when the interpretation seems to became "the only game in town" (Stanley Fish). Our intention is that of capturing some new modeling elements in order of literacy syllabus able to render the features of the interpretative strategies for a structuring pattern of the great textual or discursive complexes in its double dimension: as a cognitive model and as a legitimate cultural negotiation pattern.

**Keywords:** comprehension, inferential interpretation, intentio auctoris, intentio operis, intentio lectoris

# SCIENCE AND TECHNOLOGY

## THE ECONOMIC AND SOCIAL CONTRIBUTIONS OF ERASMUS+ MOBILITY TO CULTURAL TOURISM IN ROMANIA

Ioan-Bogdan Bacos[1], Flavia Dana Oltean[1], Manuela Rozalia Gabor[1]

[1]Department of Management and Economy, UMFST G.E. Palade Tîrgu Mureş

**Background:** Cultural tourism is essential for fostering cross-cultural understanding and stimulating local economies, particularly within the scope of international educational programs. The Erasmus+ program, a flagship initiative of the European Union, promotes educational mobility and intercultural exchanges, generating substantial social and economic effects on tourism in host countries such as Romania. This study explores the influence of Erasmus+ students on Romania's tourism sector, examining how their presence contributes to niche tourism development and enhances Romania's global image. Through quantitative and qualitative methods, data was gathered from over 200 Erasmus+ students in Romania via an online survey, capturing their motivations, spending patterns, and general perceptions. Analysis conducted using Microsoft Power BI highlights that Erasmus+ students are key drivers of cultural tourism, traveling within Romania up to five times monthly, drawn by affordable costs and cultural diversity. This mobility helps to reduce tourism seasonality and positively impacts Romania's image abroad, as students frequently promote the destination upon their return home.

**Keywords:** Erasmus+ mobility, Cultural tourism development, Economic and social impact, Intercultural exchange

## THE ROLE OF DESIGN IN SUSTAINABLE ENGINEERING

Bogdan Bucur[1], Cristina Veres[1], Petruta Blaga[1], Bianca-Mihaela Căşeriu[2]

[1]Department of Industrial Engineering and Management, UMFST G.E. Palade Tîrgu Mureş
[2]other

**Background: Background:** Design is at the heart of sustainable engineering, shaping solutions that balance functionality, environmental responsibility and social impact. By integrating sustainability principles from the earliest stages of development, design influences the lifecycle of products, systems and infrastructure. It promotes efficient resource use, minimizes waste, and encourages the adoption of renewable materials and energy sources. Beyond technical considerations, sustainable design considers human needs, fostering inclusivity and resilience in communities.**Material and methods:** This study investigates the impact of design on sustainable engineering through a review of recent literature and case studies from sectors such as construction, energy and manufacturing. Emphasis was placed on identifying strategies that integrate sustainability into the design process, such as life-cycle analysis, eco-design methodologies, and the use of digital tools like computer-aided design (CAD) and simulation software. **Results:** The findings demonstrate that design plays an important role in advancing sustainability goals. Early-stage decisions regarding material selection, energy efficiency, and production methods significantly influence the environmental footprint of engineering projects. Integrating tools such as life-cycle analysis ensures that long-term impacts are considered, enabling more sustainable choices. Case studies revealed how innovative design approaches, such as modular construction and biomimicry, contribute to resource efficiency and reduced emissions.**Conclusions:** Sustainable engineering begins with thoughtful design. By embedding sustainability principles at every stage, from concept to implementation, design drives the creation of systems and products that are both efficient and environmentally friendly. A commitment to sustainable design not only benefits the planet but also aligns with growing societal demands for responsibility and innovation in engineering.**Acknowledgment:** This work was supported by the University of Medicine, Pharmacy, Science and Technology "George Emil Palade" of Târgu Mures Research Grant number 163 /1/ 10.01.2023.

**Keywords:** Sustainable design, Engineering,, Environmental responsibility, Innovation, Resource efficiency

# SOCIAL SCIENCES

## LEAN MANAGAMENT: WHAT DO HEALTHCARE PROFESSIONALS THINK?

Cristina Veres[1]

[1]Department of Industrial Engineering and Management, UMFST G.E. Palade Tîrgu Mureş

**Background: Background:** Lean management has emerged as a vital approach in healthcare, focusing on minimizing waste, enhancing efficiency and optimizing patient care. While Lean principles have been widely implemented in other industries, their application in healthcare is relatively new and often challenging. This study investigates how Romanian healthcare professionals perceive Lean management, particularly in the context of leadership's role. The study explores the key factors driving the successful adoption of Lean in healthcare institutions. **Material and Method:** This study employed a mixed-methods approach to assess Lean management perceptions among healthcare professionals. Data were collected via a questionnaire from respondents across Romanian hospitals. The questionnaire's reliability was confirmed through Cronbach's Alpha, and non-parametric tests (e.g., Mann-Whitney U, Kruskal-Wallis) were applied to analyze group differences. Regression analysis was used to identify predictors influencing Lean adoption, with managerial position serving as a moderator variable. **Results:** The study found significant relationships between demographic factors and Lean adoption in healthcare settings. Regression analysis indicated that age, knowledge of Lean management and managerial roles were significant predictors of waste reduction methods. Healthcare professionals in managerial positions showed higher Lean adoption rates. While most respondents were familiar with Lean principles, many had limited practical experience, highlighting a gap in effective training and leadership commitment as essential for Lean success. **Conclusions:** Lean management can greatly benefit healthcare by reducing waste and enhancing operational efficiency, yet successful implementation hinges on strong leadership and targeted training. This study underscores the need for healthcare administrators to support Lean initiatives through education and management engagement. Insights from Romanian hospitals suggest that age, experience, and managerial roles significantly impact Lean adoption, providing a valuable framework for broader application in healthcare. **Acknowledgment:** This work was supported by the George Emil Palade University of Medicine, Pharmacy, Science, and Technology of Târgu Mureş Research Grant number 172/1/09.01.2024.

**Keywords:** Lean Management, Continuous improvement, Leadership in healthcare, Healthcare management, Healthcare system

## OPPORTUNITIES AND CHALLENGES IN CIRCULAR ECONOMY DEVELOPMENT

Elena Bunduchi[1], Liviu Ciucan-Rusu[1], Mihai Timus[1], Paula Nistor[1], Maria-Cristina Herteg[1]

[1]Department of Management and Economy, UMFST G.E. Palade Tîrgu Mureş

**Background:** This research structure includes the literature review on the topic of Circular Economy and the potential assessment measurement of the Circular Economy Maturity. Also, refers to the European Union Monitoring Framework with different indicators on the topic of the circular economy with comments were authors emphasized some gaps between countries on this topic. The second part of the document consists of country profile on the circular economy potential based on the circular economy potential based on official reports and analysis. As main added value to the research, we can include the interview analysis which led us to the structure of the SWOT analysis and the gap identification. In the conclusion section we highlighted the main findings and gaps regarding Circular Economy Development. This research includes interviews with participants (SMEs, Educational institutions and Public Authorities) from 10 countries in total of 125 respondents, to find the challenges and opportunities within the region. Moreover, the research team discovered several gaps regarding the implementation of Circular Economy Business Models (CEBM) in the Danube Region, which can be a valuable support for various regional developers. This will enhance understanding of the primary issues and constraints, providing substantial support for policy development in the Danube Region. In this way, regional SMEs will gain more awareness regarding business models improvement with regards to circular economy principles.

**Keywords:** Circular Economy Maturity, Business Models, SWOT, Gap Analysis, Policy Recommendations

## FINANCIAL SUSTAINABILITY IN LONG-TERM CARE, A CONCEPTUAL FRAMEWORK FOR A COMMON MODEL

Mihaela-Liliana Göndör[1]

[1]ED1 Economics, UMFST G.E. Palade Tîrgu Mureş

**Background:** Background: Financial sustainability has become a prominent topic of scientific discussion, particularly concerning healthcare systems after the crisis generated by the COVID-19 pandemic. In the current healthcare landscape, which is evolving at a rapid pace, financial sustainability remains a pressing concern for healthcare providers and policymakers. Traditional financial models frequently contribute to rising costs without guaranteeing improved patient outcomes. As healthcare expenses continue to increase and budgets become more constrained, the urgency for innovative financing models that foster sustainability and high-quality care has never been greater. Material and methods: This study builds on the author's previous research, aiming to identify a future model that enhances financial sustainability in healthcare at the national level. Our recent research indicates that the national financial policy scenarios implemented globally to address the pandemic have varied significantly. This study is grounded in the conclusions of our earlier research, which highlighted the wide range of healthcare financing policies across the globe, lacking a specific funding model. To establish a scientific foundation for a future unified model that promotes financial sustainability in health care, this paper conducts a systematic review of recent international scientific literature and official documents to find, compare and link specific elements and concepts, to build a common definition of the 'financial sustainability in long-term care' concept. Results: Scientific literature and official international reports offer ample insights to develop an efficient and effective model that could serve as a foundation for a common framework of financial sustainability in long-term care at the national level. Conclusions: Financial sustainability in long-term care is a forward-thinking concept. While the need for financial sustainability within healthcare systems is universal, the conceptual and practical approaches to achieve it vary significantly.

**Keywords:** Financing Healthcare Systems, Financial Sustainability, Financial Healthcare Model, Public Healthcare Policies, Long-Term Care

## THE IMPORTANCE OF INTEGRATING ERGONOMICS AND HUMAN FACTORS ENGINEERING IN AUTOMOTIVE DESIGN

Petruta Blaga[1], Adrian Gligor[1], Bianca-Mihaela Caseriu[1], Bogdan Bucur[1]

[1], UMFST G.E. Palade Tîrgu Mureş

**Background:** ***Background, Material, and Method.*** The integration of ergonomics and human factors engineering into automotive design is an increasingly critical aspect of modern vehicle development. By understanding the interplay between human physiology, psychology, and technological systems, designers can create vehicles that cater to diverse user needs while improving safety and comfort. This study examines the theoretical and practical dimensions of ergonomics and human factors engineering in automotive design. A comprehensive literature review was conducted, alongside a qualitative analysis of case studies from leading automotive manufacturers. Data collection focused on ergonomic evaluations of vehicle interiors, usability studies, and feedback from both professional drivers and everyday users. **Results** The findings highlight the significant benefits of integrating ergonomics into automotive design. Enhanced driver and passenger comfort, reduced risk of musculoskeletal injuries, and improved accessibility for diverse populations are among the key outcomes. The inclusion of intuitive interfaces and adaptive technologies also minimizes cognitive load, leading to safer and more efficient vehicle operation. Furthermore, the adoption of ergonomic principles in production processes positively influences worker well-being and productivity, demonstrating a dual impact on both users and manufacturers. **Conclusions** The study underscores that the integration of ergonomics and human factors engineering is not merely an enhancement but a necessity in automotive design. By addressing the physical and cognitive needs of users, these principles contribute to the development of vehicles that prioritize safety, comfort, and inclusivity. Additionally, the alignment of ergonomic practices with sustainability goals highlights the potential for creating environmentally responsible designs without compromising user satisfaction. **Acknowledgment** This work was supported by the University of Medicine, Pharmacy, Science and Technology "George Emil Palade" of Targu Mures Research Grant number 163 /1/ 10.01.2023.

**Keywords:** Ergonomics, Human Factors Engineering, Automotive Design, Safety, Sustainability

# INDEX OF AUTHORS

# INDEX OF AUTHORS

# INDEX OF AUTHORS

# INDEX OF AUTHORS



## Z

# International Conference of PhD Students and Young Doctors

George Emil Palade University of Medicine, Pharmacy,
Science, and Technology of Targu Mures
University Days
December 9-13, 2022, Targu Mures, Romania

## ORGANIZING COMITTEE

Prof. univ. dr. Rodica Bălaşa
Prof. univ. dr. Lucian Puşcaşiu
Prof. univ. dr. Iulian Boldea
Prof. univ. dr. Anca-Meda Văsieşiu
Prof. univ. dr. Alina Scridon
Prof. univ. dr. Simona Gurzu
Prof. univ. dr. Cristina-Ioana Bica
Prof. univ. dr. Giordano Altarozzi
Prof. univ. dr. Ionela Paşcanu
Prof. univ. dr. Ovidiu S. Cotoi
Prof. univ. dr. Manuela-Rozalia Gabor
Prof. univ. dr. Silvia Imre
Prof. univ. dr. Claudia Bănescu
Prof. univ. dr. Klara Brînzaniuc
Prof. univ. dr. Liviu Moldovan
Drd. Andrada Raicea
Drd. Constantin-Claudiu Ciucanu
Drd. Eliza-Mihaela Arbănaşi
Drd. Anca Rusu
Drd. Kutasi Réka
Drd. Mădălina Anciuc
Drd. Emil-Marian Arbănaşi
Drd. Bogdan-Cristian Vlad

PhD student Ilie Marius CIORBA
PhD student Paula-Anca Şulea
PhD student Forró Timea
PhD student Robert Tiucă
PhD student Oana Coman
PhD student Raul Gherasim
PhD student Dragoş Huţanu
PhD student Andrada Raicea
PhD student Izabella-Èva Darlaci (Mureşan)
PhD student Alessandra-Aniela Cerghedi
PhD student Anca Rusu
PhD student Cristina-Daniela Pal (Lateş)
PhD student Ilie Florin Ceuşan
PhD student Maria Bogdan
PhD student Madalina-Maria Muraru
PhD student Ioan Bogdan Bacos

Daniela Dumangiu
Claudia Pop
Oana Merluş
Adriana Bota

Kinga Bota
Lucian Morariu
Teodora Mîndru
Lică Burloi

Abreviations
CSUD – Doctoral University Studies Council
CSD – Doctoral School Council

## SCIENTIFIC COMITTEE

**I.O.S.U.D. & Doctoral School**
Prof. univ. dr. Rodica Bălaşa
Prof. univ. dr. Lucian Puşcaşiu
Prof. univ. dr. Iulian Boldea
Prof. univ. dr. Anca-Meda Văsieşiu
Prof. univ. dr. Alina Scridon
Prof. univ. dr. Simona Gurzu
Prof. univ. dr. Cristina-Ioana Bica
Prof. univ. dr. Giordano Altarozzi
Prof. univ. dr. Ionela Paşcanu
Prof. univ. dr. Ovidiu S. Cotoi
Prof. univ. dr. Manuela-Rozalia Gabor
Prof. univ. dr. Silvia Imre
Prof. univ. dr. Claudia Bănescu
Prof. univ. dr. Klara Brînzaniuc
Prof. univ. dr. Liviu Moldovan

**Invited speakers**
Prof. univ. dr. Gabriel Gurman
Academician dr. Maya Simionescu

**Acta Marisiensis - Seria Medica**
Prof.dr. Adrian Man
Conf.dr. Valentin Nădăşan

**Medicine and Pharmacy**

**SECTION 1 – GASTROENTEROLOGY**
Prof. univ. dr. Simona Bățagă, Prof. univ. dr. Anca Negovan

**SECTION 2 – CARDIOLOGY**
Prof. univ. dr. Ioan Țilea, Conf. Univ. dr. Liliana Gozar

**SECTION 3 –NEUROSCIENCES**
Prof. univ. dr. Rodica Bălaşa, Conf. univ. dr. Adriana Mihai

**SECTION 4 – ENDOCRINOLOGY**
Prof. univ. dr. Ionela Paşcanu, Prof. univ. dr. Silviu Morariu

**SECTION 5 – INFECTIOUS DISEASES**
Prof. univ. dr. Anca-Meda Văsieşiu, Prof. univ. dr. Adrian Man

**SECTION 6– UROLOGY / OBSTETRICS AND GYNAECOLOGY / SURGERY**
Prof. univ. dr. Lucian Puşcaşiu, Conf. univ. dr. Vasile-Adrian Mureşan

**SECTION 7– PNEUMOLOGY AND RELATED PATHOLOGIES**
Prof. univ. dr. Gabriela Jimborean, Prof. univ. dr. Corneliu Tanase

**SECTION 8 – MORPHOLOGICAL, FUNCTIONAL AND ADDITIONAL SCIENCES**
Prof. univ. dr. Simona Gurzu, Prof. univ. dr. Ovidiu Simion Cotoi

**SECTION 9- DENTAL MEDICINE**
Prof. univ. dr. Mariana Păcurar, Prof. univ. dr. Mártha Krisztina

**SECTION 10 - DENTAL MEDICINE**
Prof. univ. dr. Székely Melinda, Conf. univ. dr. Alina Ormenişan

**SECTION 1. PHILOLOGY I**
Prof. univ. dr. Iulian Boldea, Prof. univ. dr. Alexandru Cistelecan

**SECTION 2. PHILOLOGY II**
Prof. univ. dr. Doina Butiurcă, Prof. univ. dr. Anişoara Pop

**SECTION 3. HISTORY**
Prof. univ. dr. Corina Teodor, Prof. univ. dr. Giordano Altarozzi

**SECTION 4. ENGINEERING-MANAGEMENT**
Prof. univ. dr. Liviu Moldovan, Prof. univ. dr. Ildiko Peter, Prof. univ. dr. Petruța Blaga

**SECTION 5. INFORMATICS**
Prof. univ. dr. Genge Béla, Prof. univ. dr. Iantovics László Barna

**SECTION 6. BUSINESS ADMINISTRATION**
Prof. univ. dr. Manuela Rozalia Gabor, Conf. univ. dr. Flavia Oltean

# International Conference of PhD Students and Young Doctors

# MEDICINE AND PHARMACY

# ANESTHESIOLOGY AND INTENSIVE CARE MEDICINE

## INFLAMMATORY RESPONSE AND MULTIPLE ORGAN DYSFUNCTION IN PATIENTS WITH ASCENDING AORTIC DISSECTION: A RETROSPECTIVE ANALYSIS OF INFLAMMATORY MARKERS AND CLINICAL SCORES

Mihaly Veres[1], Alexandra Lazăr[2], Janos Szederjesi[1], Bianca Grigorescu[1], Horatiu Suciu[3], Radu Balau[3], Marius Harpa[3], Leonard Azamfirei[2]

[1]Department of Anesthesiology and Intensive Care Medicine I, UMFST G.E. Palade Târgu Mureș

[2]Department of Anesthesiology and Intensive Care Medicine (II) and Emergency Medicine, UMFST G.E. Palade Târgu Mureș

[3]Department of Surgery IV, UMFST G.E. Palade Târgu Mureș

**Background:** Ascending aortic dissection is a life-threatening condition often managed with replacement of the ascending aorta using a Dacron graft. The inflammatory response triggered by surgical interventions may contribute to the development of multiple organ dysfunction syndrome (MODS). This study aims to evaluate the association between inflammatory markers and clinical outcomes in patients undergoing this procedure. **Material and methods:** This retrospective study included 180 patients who underwent surgical treatment at the Emergency Institute for Cardiovascular Diseases and Transplantation in Târgu Mureș, between October 2020 and October 2024. The patients were divided into two groups: 102 without MODS and 78 with MODS during the postoperative period. Inflammatory markers, including NLR, PLR, SII, SIRI, CRP, and PCT, as well as clinical scores (APACHE, SOFA, SAPS), were recorded preoperatively and at 12, 24, and 48 hours postoperatively. Statistical analyses included descriptive statistics, comparative analyses (t-tests, Mann-Whitney U tests), and multivariate regression to assess differences between groups. Receiver operating characteristic (ROC) curves were used to evaluate the predictive value of the markers. **Results:** Patients with MODS had significantly higher postoperative levels of NLR (24 hours: 9.1 ± 3.4 vs. 5.3 ± 2.1, $p<0.001$), SII (12 hours: 850 ± 150 vs. 620 ± 140, $p=0.002$), and CRP (48 hours: 9,8 ± 2,2 mg/L vs. 6,6 ± 1,8 mg/L, $p<0.001$) compared to those without dysfunction. The APACHE, SOFA, and SAPS scores were also significantly higher in the MODS group (SOFA at 48 hours: 12 ± 4 vs. 7 ± 3, $p<0.001$). ROC analysis demonstrated that NLR (AUC=0.81) and SII (AUC=0.78) were reliable predictors of multiple organ dysfunction. **Conclusions:** Inflammatory markers and clinical scores are associated with the development of multiple organ dysfunction in patients undergoing ascending aortic replacement. Monitoring these parameters may aid in identifying patients at risk and guiding early therapeutic interventions.

**Keywords:** Ascending aortic dissection, inflammatory response, multiple organ dysfunction

## THE ROLE OF PD-1/PD-L1 AXIS IN SEPSIS-INDUCED APOPTOSIS

Oana Coman[1], Bianca Grigorescu[2], Irina Săplăcan[2], Leonard Azamfirei[2]

[1]Department of Simulation Applied in Medicine, UMFST G.E. Palade Târgu Mureș
[2]Department of Anesthesiology and Intensive Care Medicine I, UMFST G.E. Palade Târgu Mureș

**Background:** The pathophysiology of sepsis involves a complex, dysregulated immune response to infection, marked by excessive inflammation and subsequent immune paralysis. Despite extensive research in this area, there is still limited information on diagnostic biomarkers for sepsis that can effectively evaluate the inflammatory response to pathogens and reflect immune activity. This study explores the relationships between cell death biomarkers (serum-soluble levels of programmed cell death protein 1 (PD-1), programmed death ligand 1 (PD-L1)), the percentages of various lymphocyte subsets and severity scores used in the intensive care units (ICU), in relation to the severity and progression of sepsis. **Material and methods:** This prospective, observational study included 87 critically ill patients, for whom we assessed the parameters on the first and fifth days after confirmation of either sepsis or septic shock in ICU, according to the Sepsis-3 Consensus. **Results:** Sequential Organ Failure Assessment (SOFA) score presented a statistically significant variation for all the studied groups and correlated positively with Acute Physiology and Chronic Health Evaluation (APACHE II) score. Lymphopenia was observed in all patients, together with negative correlations between helper and cytotoxic T lymphocytes across all groups. We observed correlations between PD-1 and PD-L1 expression and lymphocyte subsets in the non-survivor group of patients. **Conclusions:** The decrease in helper and cytotoxic lymphocyte subpopulations was evident from the first day of confirmed sepsis or septic shock, leading to apoptosis being identified as a key factor in disease progression. Elevated PD-1/PD-L1 expression impairs costimulatory signalling, reducing T cell responses and lymphopenia, which increases the risk of nosocomial infections. The correlation between severity scores, SOFA and APACHE II, and the PD-1/PD-L1 axis provides an accurate view of sepsis and septic shock and could serve as a predictor of mortality for these patients.

**Keywords:** sepsis, septic shock, apoptosis, lymphopenia, PD-1/PD-L1 axis

## VEGF GENE VARIANTS IN CRITICALLY ILL, SEPTIC PATIENTS

Ágota-Evelyn Timár[1]

[1]Department of Anesthesiology and Intensive Care Medicine I, UMFST G.E. Palade Târgu Mureș

**Background:** Sepsis is a heterogeneous condition, which affects many of the critically ill patients. Currently, sepsis is defined by a sum of clinical and paraclinical findings, via the third international sepsis consensus. It is recognized as a life-threatening organ dysfunction, caused by a dysregulated response of the host to an infection. Although, being a major health problem with a high mortality rate, incidence of sepsis is increasing, many of the cases remaining unreported. **Material and methods:** After DNA extraction from whole blood sample of 151 critically ill patients, using PureLink™ Genomic DNA Kit (Thermo Fischer Scientific,USA), 2 vascular endothelial growth factor variants were assessed (rs699947, rs833061) in order to determine the associations between their subgroups and the clinical status of the patients. Isolated genomic DNA was stored at -20°C until C until VEGFA rs699947 and rs833061 were genotyped, using 7500 FastDx Real-Time PCR System and corresponding Taqman real-time assays. The association analysis for all genetic models is performed by the function association that regresses case-control on the variable rs833061 and rs699947 from the dataset that already contains the SNP variables. **Results:** Subgroup analysis shows that there is an association between sepsis group and rs833061, but we did not find any statistically significant difference between homozygote and heterozygote variants (CC vs TT : OR=1.56, 95% CI 0.63-3.86, p=0.3766, CT+TT: OR=1.67, 95% CI=0.81-3.44, p=0.16). Also, we found association between sepsis group and rs699947 (AA vs CC: OR=1.15, 95% CI 0.49-2.75, p=0.45), with no statistical significant differences between genotypes. Determining the haplotype frequencies within organ dysfunctions and gender, we found statistically significant association between TCCT and CGAC haplotype and multiple organ dysfunction among male patients (OR=4.03, 95% CI 1.22-13.27 and OR=17.12, 95% CI 2.81-104.42), while CGAT has a protective role regarding development of sepsis (OR=0.11 95% CI 0.02-0.84). **Conclusions:** There is an association between the assessed polymorphisms and occurance of sepsis.

**Keywords:** sepsis, genotyping, critically ill

## BIOMONITORING ROPIVACAINE IN RATS AFTER PLANE BLOCK ANESTHESIA

Mihaela Butiulca[1], Lenard Farczadi[2], Alexandra Lazar[1]

[1]Department of Anesthesiology and Intensive Care Medicine I, UMFST G.E. Palade Târgu Mureș
[2]Department of Analytical Chemistry and Drug Analysis, UMFST G.E. Palade Târgu Mureș

**Background:** The pharmacokinetics and tissue distribution of drugs are crucial for ensuring patient safety and optimizing therapeutic outcomes, particularly for anesthetics. Local anesthetics are widely used in various clinical settings, but they often present challenges due to their relatively low therapeutic indices and the potential for adverse drug reactions. **Material and methods:** In the study, 54 rats received ropivacaine via plane block anesthesia, with blood samples collected at nine intervals from 15 to 2880 minutes post-administration. Ropivacaine concentrations in various tissues—such as liver, lung, brain, kidney, heart, adipose tissue, muscle, and plasma—were measured using high-sensitivity liquid chromatography-tandem mass spectrometry (LC-MS/MS). **Results:** The results showed rapid absorption of ropivacaine into the bloodstream, followed by gradual metabolism and elimination. Ropivacaine reached peak concentrations in the lungs (954.63 ng.g-1), kidneys (850.26 ng.g-1), and adipose tissue (624.26 ng.g-1) within the first hour, with hepatic metabolism occurring soon after. Its metabolite, 3-OH-ropivacaine, reached high levels in the plasma (30.20 ng.g-1), heart (38.44 ng.g-1), lung (137.97 ng.g-1), and liver (1092.17 ng.g-1) quickly (within one hour) but accumulated more slowly in the brain (73.75 ng.g-1), muscle (22.58 ng.g-1), and adipose tissue (10.61 ng.g-1). Ropivacaine showed a particular tendency to accumulate in adipose tissue, whereas the metabolite exhibited a more even distribution across tissues. Both ropivacaine and its metabolite were primarily cleared through hepatic and renal pathways. **Conclusions:** This study provides insights into the tissue-specific distribution and clearance mechanisms of ropivacaine, contributing to a more comprehensive understanding of its therapeutic and toxicological profiles. Future research, including clinical studies in humans, will be essential for translating these findings to enhance the safety and efficacy of ropivacaine in medical practice.

**Keywords:** ropivacaine, bioavailability, HPLC, rats, LC-MS/MS

## RESPIRATORY INDEX AND PULMONARY SHUNT RELATIONSHIP: ASSESSING THE IMPLICATIONS OF ONE-LUNG VENTILATION - A PILOT STUDY

Irina Saplacan[1], Leonard Azamfirei[1]

[1]Department of Anesthesiology and Intensive Care Medicine I, UMFST G.E. Palade Târgu Mureș

**Background:** One-lung ventilation (OLV) is necessary for several thoracic procedures, including lung, esophagus, aortic, or mediastinal surgeries. In OLV with patients positioned laterally, there exists a significant danger of substantial intrapulmonary shunting of deoxygenated pulmonary arterial blood, potentially leading to hypoxemia. **Material and methods:** The correlation between the respiratory index (RI = alveolar-arterial oxygen gradient [P(A-a)O2] normalized by PaO2) and the pulmonary shunt (Qsp/Qt) was examined in a group of 20 patients before and after undergoing one lung ventilation. **Results:** A positive and statistically significant correlation was observed between the RI-Qsp/Qt ratio and the duration of postoperative mechanical ventilation, with a correlation coefficient of r= 0.48 and a p-value of 0.003. **Conclusions:** This study shows the relationship between RI and Qsp/Qt was notably elevated in patients necessitating extended hours of postoperative mechanical ventilation.

**Keywords:** one lung ventilation, pulmonary shunt, respiratory index

# BIOMEDICAL RESEARCH

## OPTIMIZATION OF ISOLATION PROTOCOL AND IMMUNOPHENOTYPIC PROFILING OF ADIPOSE-DERIVED MESENCHYMAL STEM CELLS

Monica Duță[1], Doina Manu[2], Alina-Roxana Cehan[2], Dorin-Constantin Dorobanțu[2], Minodora Dobreanu[1]

[1]Department of Clinical Laboratory, UMFST G.E. Palade Târgu Mureș
[2]other, UMFST G.E. Palade Târgu Mureș

**Background:** Adipose-derived stem cells (ADSCs) represent a distinct type of mesenchymal stem cells with significant potential in regenerative medicine and transplantation. Reliable protocols for their isolation and characterization are crucial to ensure reproducibility and to support their application in advanced biomedical research. This pilot study aimed to optimize a method for isolating ADSCs and to perform their immunophenotypic characterization. **Material and methods:** Residual biological samples of human adipose tissue, obtained from the abdominal region of three subjects during surgical procedures performed at the Plastic Surgery, Reconstructive Microsurgery, and Burn Unit of the Clinical County Emergency Hospital of Târgu-Mureș, were utilized for this study. All experimental procedures were performed at the Advanced Center for Medical and Pharmaceutical Research, Târgu-Mureș. ADSCs were isolated through enzymatic digestion of the adipose tissue using the collagenase method, followed by in vitro culture until adequate confluency was reached. The resulting cells were analyzed via flow cytometry to evaluate the expression of mesenchymal stem cell markers (CD73, CD90, CD105) and negative markers (CD34, CD45, CD11b, CD79A, and HLA-DR) to confirm the absence of significant contamination with hematopoietic or other cell types. Each sample was analyzed in triplicate, with a minimum of 30,000 events acquired per analysis. **Results:** The cells isolated from the three subjects demonstrated consistent expression of mesenchymal stem cell markers. The mean expression levels were 62.8% ± 13.8% for CD73, 98.4% ± 0.4% for CD90, and 90.2% ± 1.1% for CD105, confirming the mesenchymal stem cell phenotype. Additionally, low expression (≤3.1%) of the negative markers CD34, CD45, CD11b, CD79A and HLA-DR confirmed minimal contamination by non-mesenchymal cell populations. **Conclusions:** The optimized isolation method for ADSCs provides a reproducible and efficient approach in yielding mesenchymal stem cells with consistent and well-defined phenotypic characteristics. These findings contribute to the advancement of standardized protocols, facilitating their broader application in future experimental studies.

**Keywords:** adipose-derived stem cells, mesenchymal stem cells, collagenase digestion, flow cytometry, immunophenotyping

# CARDIOLOGY

## REFERENCE BIVENTRICULAR LONGITUDINAL STRAIN LIMITS IN HEALTHY FETUSES WITH 34-39 GESTATIONAL WEEKS USING SPECKLE TRACKING ECHOCARDIOGRAPHY

Andreea Cerghit-Paler[1], Mihaela Iancu[2], Amalia Fagarasan[1], Dorottya Gabor-Miklosi[1], Claudiu Marginean[3], Liliana Gozar[1]

[1]Department of Pediatrics III, UMFST G.E. Palade Târgu Mureş

[2]other, UMF Iuliu Haţieganu Cluj Napoca

[3]Department of Gynecology II, UMFST G.E. Palade Târgu Mureş

**Background:** In recent years, for the improvement of both the diagnosis and treatment of cardiac pathologies, the need for objective quantification of myocardial function in fetal period has risen. Our aim was to analyze the function of the fetal myocardium through speckle tracking and establish reference values for biventricular longitudinal strain in healthy fetuses with gestational age between 34 and 39 weeks. **Material and methods:** We conducted a prospective study, from February 2021 to August 2023, in which 56 fetuses between 34 and 39 weeks of gestation underwent echocardiographic evaluation. The inclusion criteria were: heathy fetuses with normal growth, singleton pregnancies, without maternal comorbidities. The exclusion criteria were: intrauterine growth retardation, cardiac or extracardiac malformations, twin pregnancies, maternal pathologies, suboptimal echocardiographic acquisitions. Fetal echocardiograms were performed using a Philips Epiq 7 ultrasound. The images were later stored in Digital Imaging and Communications in Medicine format and were analyzed offline, using Philips-Qlab13 software. **Results:** 49 fetuses between 34 and 39 weeks of gestation were eligible for the current study. Mean maternal age was 27.57 years (SD 3.58). All fetuses had good intrauterine growth. For the fetal echocardiografy, the median frame rate used was 88 Hz [81,90]. The mean ejection fraction was 55.65% (9.42). Left ventricle (LV) segmental references ranges of strain for basal, medial and apical segments were: [-22.96,-8.48], [-22.42,-7.39] and [-22.90,-6.61], respectively. Global LV references ranges of strain were [-20.19, -8.88]. For the right ventricle (RV), segmental references ranges of strain for basal, medial and apical segments were: [-19.99,-8.43], [-17.37,-7.65], and [-17.72,-5.61], respectively. Global RV references ranges of strain were [-16.98, -7.80]. Interventricular septum segmental references ranges of strain for basal, medial and apical segments were: [-20.06, -8.03], [-19.64, -9.70], [-21.71, -6.32], respectively. **Conclusions:** Global LV and RV references ranges of strain for 34-39 gestational weeks were -20.19 to -8.88. and -16.98 to -7.80, respectively.

**Keywords:** pediatric cardiology, myocardial function, speckle-tracking ecocardiography, fetal echocardiography

## INCIDENCE, RISK FACTORS, AND MANAGEMENT OF ACUTE CORONARY SYNDROME AT OUR CARDIOLOGY CLINIC: A RETROSPECTIVE STUDY

Botond - Barna Matyas[1]

[1]Department of Internal Medicine VI, UMFST G.E. Palade Târgu Mureș

**Background:** Cardiovascular diseases remain the leading cause of morbidity and mortality globally, affecting both the aging and younger populations. Acute myocardial infarction (AMI) is a critical condition, and prompt management is essential to reduce mortality and morbidity. The COVID-19 pandemic has significantly disrupted the care of patients with acute coronary syndrome, necessitating rapid reconfigurations of medical services. **Material and methods:** This retrospective cohort study included all consecutive patients admitted for AMI at the Cardiology Clinic of the Târgu Mureș County Emergency Clinical Hospital between January 1, 2018, and December 31, 2023, aged under 80 years. Patients were divided into three age groups: under 45 years, 45-59 years, and 60-79 years. The data were statistically analyzed to evaluate the incidence, risk factors, clinical presentation, treatment, and outcomes of the patients. **Results:** During the study period, 5051 patients with AMI were admitted, of which 4175 were aged between 0 and 79 years. Patients under 45 years were predominantly male (79.80%), active smokers (58.17%), obese (29.81%), and had a family history of AMI (44.23%). They also presented higher levels of LDL cholesterol and a higher likelihood of having non-obstructive coronary disease (14.42% compared to 10.02%, $p<0.001$) compared to older patients. The COVID-19 pandemic caused a significant reduction in emergency presentations for AMI, with a 34.58% decrease in admissions in 2020 compared to 2019. Despite this, the proportion of STEMI patients arriving in time for percutaneous coronary intervention (PCI) increased, due to a reduction in late presentations. **Conclusions:** AMI affects both young and elderly individuals, with risk factors such as smoking and obesity predominating in younger patients. The COVID-19 pandemic reduced emergency presentations for AMI, highlighting the need to adapt STEMI networks and treatment protocols. It is essential to improve the control of risk factors to reduce recurrent cardiovascular events, especially in young people.

**Keywords:** acute coronary syndrome, acute myocardial infarction, COVID-19 pandemic, regional STEMI networks, cardiovascular risk factors

## ANTI-CMV AND ANTI-TOXOPLASMA ANTIBODIES-IMPLICATIONS IN POST-OPERATIVE OUTCOMES IN HEART TRANSPLANT PATIENTS

Laurentiu Huma[1], Anca-Ileana Sin[1], Diana-Andreea Moldovan[2], Horatiu Suciu[3]

[1]Department of Cell Biology, UMFST G.E. Palade Târgu Mureș

[2]Department of Internal Medicine III and Family Medicine, UMFST G.E. Palade Târgu Mureș

[3]Department of Surgery V, UMFST G.E. Palade Târgu Mureș

**Background:** Heart transplant represents the final therapeutic resource for patients with end-stage heart failure, in whom all other options have been exhausted. The success of the procedure is influenced by both mechanical and biologic factors, thus identifying and using these factors for their potential prognostic value is of utmost importance. The aim of this study was to investigate a potential link between the presence of certain immunoglobulins in the serum of heart transplant recipients and post-operative complications and histopathological response. **Material and methods:** We included patients who received a heart transplant at the Emergency Institute for Cardiovascular Diseases and Transplant of Târgu-Mureș between 2011 and 2023. Collection of data included baseline characteristics of patients, including age, gender, BMI, BSA, etiology of the baseline cardiomyopathy, qualitative determination of serum IgM and IgG for CMV, Toxoplasma and Epstein-Barr virus, as well as immediate or acute post-operative complications (e.g. graft rejection, diabetes mellitus, thyroid disease, development of AF, AKI). Our initial cohort included 51 patients, out of whom 8 were excluded for insufficient data records. The final study cohort consisted of 43 patients for whom statistical analysis was performed. All data has been processed using IBM SPSS Statistics version 30.0. The significance thresholdhas been set to 0.05. **Results:** Significant correlations between the presence of CMV IgM in the recipients' serum and graftrejection (r=0.38, CI=0.08-0.61, p=0.13) as well as the development of Quilty effect (r=0.33, CI=0.03-0.58, p=0.28) weredetermined. Correlations have also been found between the presence of anti-Toxoplasma IgG and the development of DM (r=0.39,CI=0.09-0.626, p=0.01). These findings have been tested using contingency tables, which resulted in a significant associationbetween anti-Toxoplasma IgG and DM (OR=6.66, p=0.01). **Conclusions:** Serum levels of certain immunoglobulins may serve aspredictors for post-operative complications in heart transplant patients. Further studies are necessary for validating the results of this analysis.

**Keywords:** heart transplant, immunoglobulins, graft rejection, diabetes mellitus

# MULTI-ORGAN DYSFUNCTION IN PULMONARY HYPERTENSION: A 12-MONTH EVALUATION OF RENAL, HEPATIC, AND LIPID METABOLIC CHANGES IN PAH AND CTEPH PATIENTS

Dragos-Gabriel Iancu[1], Andreea Varga[1], Liviu Cristescu[1], Ioan Țilea[1]

[1]Department of Internal Medicine III and Family Medicine, UMFST G.E. Palade Târgu Mureș

**Background:** Pulmonary hypertension (PH) is a cardiopulmonary disorder with widespread organ impact, including renal, hepatic, and lipid metabolism abnormalities. This study investigates the prevalence and progression of these dysfunctions over 12 months in patients with pulmonary arterial hypertension (PAH) and chronic thromboembolic pulmonary hypertension (CTEPH). **Material and methods:** A retrospective analysis was conducted on 49 patients diagnosed with PAH (35 patients) or CTEPH (14 patients) between 2015-2024, managed in the PH Center, County Emergency Clinical Hospital, Targu Mures, Romania. Parameters related to kidney and liver function, along with lipid profiles, were evaluated at baseline, 6 and 12 months. **Results:** At baseline, kidney dysfunction was diagnosed in 12.24% of the entire cohort, with a significantly higher prevalence among CTEPH patients at 35.71%, compared to 2.86% in those with PAH. Over a 12-month period, improvements in renal function were observed, reducing the prevalence of dysfunction to 8.16%. Hepatic impairment was even more prevalent, detected in 57.14% of patients at baseline and more common in the CTEPH group. By 12 months, hepatic dysfunction decreased to 42.86%, particularly among PAH patients, although levels of alkaline phosphatase and gamma-glutamyl transferase remained significantly higher in CTEPH patients throughout the study. Abnormalities in lipid metabolism were present in 22.45% of patients at baseline, decreased to 16.33% at 6 months, but rose again to 24.49% at 12 months. There were no significant differences between the PAH and CTEPH groups in this regard, potentially due to the use of statins. **Conclusions:** This study demonstrates the multi-organ involvement in PH, highlighting a higher prevalence of renal and hepatic dysfunction in CTEPH patients and more notable hepatic improvement in PAH patients. Tailored management of PH patients is essential, focusing on the specific challenges presented by each subtype.

**Keywords:** pulmonary arterial hypertension, chronic thromboembolic pulmonary hypertension, kidney dysfunction, hepatic impairment, lipid metabolism abnormalities

# THE IMPACT OF PHYSICAL ACTIVITY ON VENTRICULAR-ARTERIAL COUPLING: INSIGHTS FROM A ROMANIAN PRIMARY CARE COHORT

Paula-Anca Sulea[1], Liviu Cristescu[1], Dragos-Gabriel Iancu[1], Diana-Andreea Moldovan[1], Andreea Varga[1], Ioan Tilea[1]

[1]Department of Internal Medicine III and Family Medicine, UMFST G.E. Palade Târgu Mureș

**Background:** Ventricular-arterial coupling (VAC), reflecting the interplay between myocardial function and arterial properties, serves as a valuable marker of cardiovascular health. Age-related arterial stiffening increases cardiovascular risk, but physical activity may mitigate these effects. This study investigates the relationship between physical activity, measured in metabolic equivalents (METs), and VAC, assessed via the carotid-femoral pulse wave velocity to global longitudinal strain (cfPWV/GLS) ratio, in a primary care population. **Material and methods:** A retrospective cross-sectional study was conducted on 81 adults aged between 21 and 76 years from an urban primary care cohort. Demographic information and cardiovascular risk factors were collected and analyzed. Participants were categorized into four groups based on quantified physical activity levels: sedentary (Group1:METs<1.5) and active subgroups (Group 2:METs:1.5-2.9; Group 3:METs 3-5.9; Group 4:METs:≥6). cfPWV measurementswere obtained using an innovative wireless, portable diagnostic device—the MESI mTABLET wireless medical tablet system(MESI, Ltd., Ljubljana, Slovenia). All subjects underwent transthoracic echocardiography using the GE Vivid E9 system (GEVingmed Ultrasound AS, Horten, Norway), and VAC was calculated using the cfPWV to GLS ratio. Statistical analyses includedKruskal-Wallis tests and linear regression to evaluate the association between METs and VAC. **Results:** The cfPWV/GLS ratiodiffered significantly across activity groups (p=0.0127), with the lowest values observed in G3 (METs:3-5.9), indicating optimalVAC. Linear regression demonstrated an inverse relationship between METs and VAC, with a decrease of 0.0149 units incfPWV/GLS per MET increase (p =0.0054). These findings suggest that moderate physical activity reduces arterial stiffness andenhances myocardial function. **Conclusions:** Physical activity is inversely associated with VAC, highlighting its protective role in cardiovascular health. Moderate-to-vigorous physical activity significantly improves VAC, emphasizing its potential as a non-invasive strategy for cardiovascular risk reduction. Routine assessment of VAC in primary care could support personalized lifestyle interventions to mitigate cardiovascular disease risk.

**Keywords:** Ventricular-arterial coupling, physical activity, arterial stiffness, metabolic equivalents, cardiovascular prevention

## HFPEF PHENOTYPES AND H2FPEF SCORE APPLICABILITY IN THE ROMANIAN POPULATION – A SINGLE CENTER STUDY

Diana-Andreea Moldovan[1], Laurentiu Huma[2], Radu-Adrian Suteu[3], Milla Kainlauri[3], Liviu Cristescu[1], Dragos-Gabriel Iancu [1], Andreea Varga[1], Ioan Tilea[1]

[1]Department of Internal Medicine III and Family Medicine, UMFST G.E. Palade Târgu Mureș

[2]Department of Cell Biology, UMFST G.E. Palade Târgu Mureș

[3]other, UMFST G.E. Palade Târgu Mureș

**Background:** Heart failure with preserved ejection fraction(HFpEF) represents a complex syndrome involving symptoms and/or signs of heart failure(HF) and evidence of structural and/or functional cardiac abnormalities. Its importance originates from the high rates of mortality from cardiovascular cause, similar to HF with reduced EF. H2FPEF score aims to identify the probability of underlying HFpEF. **Material and methods:** A descriptive study was conducted on 146 patients (83 females) admitted to the Cardiology Department—Internal Medicine II Clinic Targu Mures, Romania (January 2022-September 2024). Inclusion criteria included adult patients who provided informed consent, diagnosed with HFpEF according to the 2021 ESC guidelines. The demographics and phenotypic characteristics of these patients were evaluated, as well as the applicability of the H2FPEF score inthe Romanian population. The aging phenotype was characterized by patients≥80 years, and pulmonary hypertension (PH) was determined based on high echocardiographic probability or signs of right ventricular dysfunction. **Results:** The mean age of the entire group was 71.2 years(IQR:36-92). NYHA functional class (FC) II experienced 53.4% of the cases, followed by 37.6%NYHA III FC. Arterial hypertension was present in 86.9% of the cases. The obese phenotype was identified in 36.3% of the cases,while 16.4% had PH phenotype. Chronic coronary syndrome(CCS) was present in 32.2% of the patients and 17.1% had an aging phenotype. Atrial fibrillation(47.2%) and type 2 diabetes mellitus(35.6%) were the most common comorbidities. By applying the H2FPEF score on this cohort, high-probability score was met in 35.7% of the cases, 61.6% had an intermediate probability and 2.7% had a low-probability score. **Conclusions:** HFpEF phenotypes coexist and have interdependent pathophysiology, but obese and CCS phenotypes were more commonly observed in our population. Additionally, H2FPEF represents an accurate tool to identify patients at risk, but an important proportion needs further testing for HF confirmation, because of the suboptimal sensitivity of the intermediate probability class.

**Keywords:** heart failure with preserved ejection fraction, phenotypes, H2FPEF score, comorbidities

## IRON DEFICIENCY AND HEART FAILURE: PATIENT PROFILES AND PREVALENCE PATTERNS

Robert-Adrian Dumbrava[1], Andreea Varga[1], Dragos-Gabriel Iancu[1], Paula-Anca Sulea[1], Radu-Adrian Suteu[1], Ioan Tilea[1]

[1]Department of Internal Medicine III and Family Medicine, UMFST G.E. Palade Târgu Mureș

**Background:** Iron deficiency (ID) is a common comorbidity in heart failure (HF), affecting 44-75% of patients based ondiagnostic criteria, HF severity, and ventricular phenotype. Iron deficiency (ID) is associated with worsened symptoms, diminishedquality of life, reduced exercise capacity, and increased mortality, even in the absence of anemia. **Material and methods:** Aretrospective, observational study was conducted at the Internal Medicine II Clinic of Targu Mureș County Emergency Hospitalbetween May and September 2022. The study included 63 consecutive chronic hospitalizations of HF patients, diagnosed in linewith the 2021 ESC guidelines. Exclusion criteria included acute coronary syndrome, severe respiratory failure, end-stage chronickidney disease, and lack of informed consent. ID was defined as serum ferritin<100ng/mL or serum ferritin 100-299ng/mL withtransferrin saturation (TSAT)<20%. **Results:** The study analyzed 63 patients (39 men) with a mean age of 64.2±10.2 years and amean left ventricular ejection fraction (LVEF) of 45.7±12.5%. ID was identified in 19 patients (30.16%), with anemia coexistingin 7 cases. Most patients (57%) were from rural areas. Hospitalization duration averaged 8.7±6.2 days. NYHA functionalclassification revealed 5 patients in class I, 27 in class II, 15 in class III, and 16 in class IV. Stratified by HF phenotype, 40 patientshad HF with preserved ejection fraction (HFpEF), 13 (32.5%) of whom had ID; 10 had HFmrEF, with 2 (20%) showing ID; and13 had HFrEF, with 4 (30.77%) having ID. **Conclusions:** This study highlights the significant prevalence of ID among HFpatients and its substantial clinical impact. ID's association with advanced NYHA classes and prolonged hospitalization underscoresthe need for routine screening. Effective ID management could enhance quality of life, reduce hospitalizations, and mitigate complications, emphasizing the necessity of integrated care protocols to optimize outcomes and reduce healthcare burdens.

**Keywords:** heart failure, iron deficiency, ferritin, transferrin saturation, prevalence patterns

# CARDIOVASCULAR SURGERY

## THE ROLE OF PREOPERATIVE VASCULAR MAPPING IN LONG-TERM ARTERIO-VENOUS FISTULA (AVF) FAILURE IN DIALYSIS PATIENTS

Emil-Marian Arbănași[1], Eliza-Mihaela Arbănași[2], Constantin Claudiu Ciucanu[2], Reka Bartus[3], Adrian Vasile Mureșan[3], Eliza Russu[3], Toader Septimiu Voidăzan[4], Traian Vasile Chirila[3]

[1]Vascular Surgery, UMFST G.E. Palade Târgu Mureș

[2]Doctoral School of Medicine and Pharmacy, UMFST G.E. Palade Târgu Mureș

[3]other, UMFST G.E. Palade Târgu Mureș

[4]Department of Epidemiology, UMFST G.E. Palade Târgu Mureș

**Background:** Arteriov-enous fistula (AVF) represents the primary vascular access choice for patients undergoing chronic hemodialysis, as it poses a reduced risk relative to arteriovenous grafts and central venous catheters (CVC). The main scope of this study is to examine the impact of pre-operative vascular mapping on the long-term functionality of AVF. **Material and methods:** In this retrospective observational study, we enrolled 173 patients diagnosed with end-stage chronic kidney disease who were hospitalized in the Vascular Surgery Clinic between January 2019 and July 2024 to create an AVF surgically. For each patient, before the surgical procedure, we documented the diameter of the artery and vein and the depth of the vein during vascular mapping. In the long term, we evaluated AVF patency through follow-up communications with chronic dialysis centers. This research was funded by George Emil Palade UMFST of Targu Mureș, Romania, grant number 170/3/09.01.2024. **Results:** In the AVF failure cohort, we observed a higher incidence of female patients (p=0.020), atrial fibrillation (p=0.018), and diabetes (p=0.038). Furthermore, at vascular mapping, we recorded lower values of arterial diameter (2.87 vs. 3.21 mm, p=0.009) and venous diameter (2.73 vs. 3.27 mm, p=0.003). The ROC Curve analysis revealed a strong association between preoperative vascular diameter and long-term AVF failure, with an optimal cut-off value of 2.25 mm for the artery (89.5% sensitivity, 66.7% specificity, p=0.014) and 3.25 mm for the vein (57.9% sensitivity, 88.9% specificity, p=0.005). The Kaplan-Meier survival curve indicated that values lower than the optimal cut-off for vascular diameter correlate with an increased incidence of AVF failure (p=0.003 for artery and p=0.005 for vein). Moreover, Cox regression analyses indicated that lower arterial (HR:3.29, p=0.005) and venous (HR:4.78, p=0.012) diameters are associated with long-term AVF failure. **Conclusions:** The pre-operative assessment of the arterial and venous diameters, as determined during vascular mapping, is significantly correlated with the long-term failure of AVF.

**Keywords:** vascular access, Arteriovenous fistula, vascular diameter, vascular mapping, vascular surgery

# DENTAL MEDICINE

## EXPLORING SUSTAINABLE PRACTICES IN DENTISTRY

Szilárd Dávid Kovács[1], Szilvia Zörgő[2]

[1]Institute of Behavioural Sciences, Semmelweis University
[2]other, other

**Background:** Global warming is a major challenge of the 21st century, both impacting the healthcare sector while being exacerbated by the sector's high energy consumption, transportation needs, and material demand. The focus of this research is dentistry, a resource-intensive branch of medicine. The aim of the study is to describe dentists' habits in material usage and to evaluate their willingness to implement more sustainable methods in their clinical routine. **Material and methods:** The initial sample size is planned to be 10 dentists. We will employ quotas based on the funding of the clinic (public or private), sex, and age. Data will be collected with structured observation and semi-structured interviews. The items in the observation will each be assigned a derived variable, indicating whether the dentist opted for the environmentally more sustainable alternative. Interviews will be coded using codes created inductively, and the co-occurrences of these codes will be used to extract meaningful patterns via Epistemic Network Analysis. **Results:** The results of the observation will provide insights into attitudes toward recycling and reusing materials in public and private dental clinics. Moreover, the results will shed light on whether a preventive approach opting for less invasive procedures is applied regularly, or whether the rise of digital technologies has substantially reduced the need for material usage. The networks depicting code co-occurrences of dentist narratives will help identify areas where environmentally more sustainable options are feasible. **Conclusions:** This study addresses the growing need to consider sustainability when developing healthcare policies and the discussion on the ethical obligations of medical professionals in managing their practices sustainably. The sustainable options examined in this study do not aim to undermine the concept that a medical professional's priority remains their patient's well-being. Instead, they focus on readily available possibilities dentists could implement in their practices that promote sustainability without compromising the quality of care.

**Keywords:** Sustainability, Dental ethics, Planetary health

## EFFECT OF RESIN MATERIALS ON THE ACCURACY OF 3D PRINTED DENTAL MODELS

Dénes Palaszkó[1], Anna Németh[2], Kata Kelemen[2], Judit Schmalzl[2], Boldizsár Vánkos[2], Péter Hársfalvi[2], Péter Hermann[2], Judit Borbély[2], Barbara Kispélyi[2]

[1]Department of Prosthodontics, Semmelweis University

[2]other, other

**Background:** Open 3D printing systems offer the flexibility to use various materials. This study aimed to evaluate how different model resin materials affect the printing accuracy of an open-system 3D printer. **Material and methods:** A maxillary typodont model with partial edentulism and four prepared teeth was used to create a reference STL file. Sixteen markers were placed on the model for superimposition and point-based measurements. Four resins were tested: Asiga DentaMODEL Almond (AS), Dreve FotoDent Model2 (DR), Harzlabs Dental Model Gray (HL), and Pro3Dure Printodent GR13.1 (PD) (n=10 each). Models were printed on an Asiga Pro 4K80 printer with 50 µm layer thickness and a 30-degree build angle. Post-processing followed manufacturer instructions. The printed models were scanned and analyzed in Geomagic Control X to assess accuracy based on whole deviation and linear measurements, expressed in root mean square (RMS) values. Data were analyzed using one-wayANOVA and post-hoc Tukey tests ($p \leq 0.05$). **Results:** Significant differences in whole deviation were found between PD and theother materials. While no significant difference was observed in vertical distance for tooth #11, AS resin showed the best accuracyacross all measurements (whole deviation: 63.1 ± 17.0 µm; vertical distance for #11: 57.9 ± 20.9 µm; horizontal distance between#14 and #17: 41.3 ± 40.8 µm; precision: 46.6 ± 15.0 µm). **Conclusions:** The material type affected the accuracy of 3D printedmodels, though all resins provided clinically acceptable results (deviations < 120 µm). AS resin, from the printer's own brand,showed the highest accuracy.

**Keywords:** 3D printing, dental models, accuracy

## INVESTIGATING PERIODONTAL PARAMETERS IN TRADITIONAL AND HEATED TOBACCO PRODUCT USERS

Orsolya Vámos[1], Márta Losonczi[2], Laura Pál[3], Péter Hermann[2], Péter Hegyi[4], Barbara Kispélyi[2]

[1]Department of Prosthetic Dentistry and Oral Rehabilitation, Semmelweis University, Budapest, Hungary

[2]Department of Prosthetic Dentistry and Oral Rehabilitation, other

[3],

[4]Department of Internal Medicine I, other

**Background:** Traditional cigarette consumption is decreasing because of global prohibitions. Alternative tobacco products, including heated tobacco products (e.g., IQOS), are experiencing an increase in popularity, particularly among younger generations. Many people believe that these are less harmful alternatives to traditional cigarettes, but there are conflicting results in the literature about their health effects. The objective of our study was to examine the clinical, radiographic, and immunological periodontal parameters of traditional cigarette smokers (CS), heated tobacco product users (HTP) and non-smokers (NS). **Material and methods:** Demographic data of 60 patients was collected using a questionnaire including age, gender, education, oral hygiene habits, duration, and daily frequency of smoking. Clinical parameters (full mouth plaque index (PI), bleeding on probing (BOP), probing pocket depth (PPD), clinical attachment loss (CAL) was recorded during a clinical examination. Marginal bone loss was evaluated in digital periapical radiographs. Gingival crevicular fluid (GCF) volume was assessed with Periotron 8000. **Results:** 20 CS, 20 HTP, 20 NS were included in this study. There was no sign of CAL or radiological bone loss in either of the groups. PPD, PI, BOP, number of sites with PPD≥4 mm, number of sites with PPD≥3 mm and BOP+ were 1.84±0.26; 26.40±14.33; 21.80±12.01; 2.80±5.08; 12.95±8.49 in HTP; 1.89±0.18; 32.65±13.01; 21.85±7.53; 3.45±4.76; 16.55±8.16 in CS and 1.52±0.17; 20.65±12.82; 17.75±10.17; 0.35±0.67; 3.40±3.17 in NS. GCF volume was 0.46±0.41 in HTP; 0.35±0.27 in CS and 0.28±0.32 in NS. **Conclusions:** The periodontal parameters of HTP were comparable to those of CS, whereas NS exhibited the most favourable parameters. Larger sample size studies are required in future research to evaluate the impact of HTPs on periodontal health.Grant: Faculty Research Grant 2023

**Keywords:** smoking, heated tobacco products, periodontal parameters

## CLINICAL AND STATISTICAL STUDIES ON CHANGES IN FACIAL AND CEPHALOMETRIC PARAMETERS IN PATIENTS WITH RESPIRATORY SLEEP DISORDERS

Iulia Dumitrescu[1]

[1]Department of Pediatric Dentistry and Orthodontics, UMFST G.E. Palade Târgu Mureș

**Background:** Respiratory disorders of snoring type (habitual snoring), obstructive hypopnea and apnea have a complex etiology, insufficiently elucidated, with the involvement of several anatomical entities in the oro-facial, pharyngeal and laryngeal segment. These affect also the facial appearence. Recent international studies indicate an alarming increase in this pathology in children and teenagers, especially those with various dento-maxillary disharmonies.**The aim of the study** We have proposed a correlation of ENT clinical manifestations with cephalometric changes in a group of patients with respiratory sleep disorders **Material and methods:** The study was conducted on 15 patients with respiratory speep disorders of the snoring type and obstructive apnea type, radiological (cephalometric) and clinically investigated (ENT and orthodontic examination). Patients were divided into 2 age groups: 7-11 years (mixed dentition) and 12-16 years (permanent dentition) and each group in 3 subgroups depending on the apnea/hypopnea index (AHI index). The parameters considered for correlation with ENT pathology were, as follows: - posterior respiratory space- length of soft palate - distance between the tangent taken to the edge of the mandible and hyoid-mandible- SNA, SNB angle We evaluated the parameters of facial growth: - naso-labial angle - naso-frontal angle- goniac angle **Results:** Following the ENT examination, it shows that the deviation of the nasal septum and the hypertrophy of the inner cornet are associated with snoring, and changes in the oro-pharynx and hypopharynx are more common in obstructive apnea .The facial angles demonstrated a mandibular retrognathism and an increase value of naso-labial angle. There is a greater share of cephalometric changes in boys compared to girls. **Conclusions:** The interrelation between ENT pathology (cornet deviation, amygdala hypertrophy) is a certainty, but the degree of involvement of various anatomical structures in the occurrence of respiratory sleep disorders is different. The level cranio-facial changes is directly proportional to the AHI index.

**Keywords:** respiratory sleep disorders, sleep apnea, sleep hypopnea, cephalometric, AHI index

## THE INFLUENCE OF THE ORAL MICROBIOME ON THE HOST'S GENETIC FACTORS RELATED TO ORAL AND SYSTEMIC HEALTH AND DISEASE: A SYSTEMATIC REVIEW

Esztella-Éva Gálfi (Kis)[1], Krisztina Mártha[1]

[1]Department of Pediatric Dentistry and Orthodontics, UMFST G.E. Palade Târgu Mureș

**Background:** The human body hosts a significant and varied group of microorganisms known as the microbiome. A deeper comprehension of oral diseases like caries and periodontitis relies on a thorough grasp of the microbial ecological processes driving disease progression. This paper offers an overview of the essential molecular ecology techniques that have greatly enhanced a better understanding of how human oral biofilms develop, the interactions between different species, and the biogeography of the microbiome.. The oral microorganisms engage with the body's immune system and are vital for maintaining oral and overall systemic health. **Material and methods:** This research was conducted by electronic searches in the PubMed database using specific keywords such as 'microbiome,' 'oral microbiome,' and 'host genetics'. Cross-sectional studies published between the 1st of January 2020 and to 28th of July 2024 were included. **Results:** Most oral microbiome research used 16S rRNA gene amplicon sequencing and therefore focused on bacteria exclusively. Oral microbial imbalance primarily contributes to oral health issues like tooth decay and gum disease. Additionally, it is linked to various systemic conditions, including asthma and allergies, inflammatory bowel disorders, autoimmune diseases, obesity and metabolic syndrome, colon cancer, peripheral vascular conditions, high blood pressure, unusual reactions to medications, and depression. **Conclusions:** The oral microbiome shows significant potential for use in diagnostic applications. Novel treatment methods that focus on promoting beneficial bacteria while reducing harmful oral bacteria could represent a groundbreaking medical approach to the prevention and management of various disease conditions.

**Keywords:** oral microbiome, host genetics, microbial genetics

## TREATMENT OF COMPLEX BONE DEFECTS AFTER MAXILLAFACIAL BALLISTIC TRAUMA

Radu Ioan Neacsu[1], Alexandru Metea[2], Alina Ormenișan[1]

[1]Department of Oral and Maxillofacial Surgery, UMFST G.E. Palade Târgu Mureș
[2]Department of Oral and Maxillofacial Surgery, other

**Background:** Tissue injuries of the facial skeleton due to firearms and explosive devices have major morphological and functional consequences, as they may alter sight, speech, breathing, feeding, or aesthetics. **Material and methods:** We report a series of two cases of post-traumatic maxillofacial sequelae involving the middle and lower thirds of the face, respectively. Both casualties required staged restorative surgical treatment using preoperative 3D planning. The first case sustained a gunshot wound resulting in left anophtalmia, orbital rim and hard palate defects with swallowing, speech and aesthetic disturbances. A two-stage posterior-based buccinator myomucosal (Bozola's) flap was used to close the oronasal fistula, while the lower orbital rim was restaured by means of an iliac bone graft. In the second case, a blast trauma resulted in the loss of frontal part of the mandible along with much of the adjacent soft tissue. Refracture of the viciously consolidated bones and reconstruction using multifragmentary iliac bone graft and titanium plates was performed. **Results:** The three-dimensional analysis and design have brought more precision to reconstructive surgery. Functional and not ad integrum restauration was obtained in each case, avoiding extensive interventions. **Conclusions:** 3D visualization together with 3D printed models can be considered a sine qua non method in reconstructive surgery nowadays. However the need for serial operations on hard and soft tissues cannot be ruled out.

**Keywords:** ballistic trauma, maxillofacial, customized reconstruction, bone graft, myomucosal flap

## STUDY REGARDING THE CORRELATION BETWEEN THE TYPE OF ADHESIVE CEMENT AND SHEAR BOND STRENGTH IN FIXED PROSTHODONTICS

Izabella-Èva Darlaci (Mureșan)[1], Kinga Maria Jánosi[1], Dóra Anna Giliga[1], Diana Cerghizan[1], Krisztina Martha[1]

[1]Department of Prosthetic Dentistry and Oral Rehabilitation, UMFST G.E. Palade Târgu Mureș

**Background:** In the last few years, thanks to increased aesthetic needs, ceramics have received more and more attention. In addition to aesthetics, it is also essential to properly prepare the tooth surface and obtain an excellent shear bond strength (SBS) for the long-term success of prosthodontic restorations. The purpose of the current study is to evaluate the SBS of two types of ceramics, feldspathic and lithium disilicates, using a light-cured ( Variolink esthetic LC) and a dual-cured (Maxcem Elite) adhesive luting cement. **Material and methods:** For the study, 100 healthy molars were used, with the indication of extraction, preserved in artificial saliva. 5X5 mm flat surfaces were prepared on the axial walls of the molars in enamel by a Microcut 151 Metcon device. The cementation of the ceramic blocks followed the preparation of the surfaces according to the universally accepted luthing protocols. SBS tests were performed with a universal testing machine (Universal Testing Machin DTEC-DDW Quality). Shear loading was applied at a cross speed of 1 mm/minute. The null hypothesis was that there is no significant difference in SBS among the different resin cements and adhesion types. Statistical analysis was performed, and the statistically significant differences were defined at alfa=0,05. **Results:** The results of the current study agree with those from the literature, highlighting the importance of luting at the level of dental enamel. The SBS recorded showed higher values in the case of lithium disilicate ceramics. Following the data analysis, there were statistically significant differences between the two types of ceramics ($p<0,05$). **Conclusions:** With higher values of SBS and improved mechanical and optical qualities, lithium disilicate is a viable alternative to feldspar ceramics.

**Keywords:** ceramics, adhesive luting cement, shear bond strength

## INDIRECT EMISSIONS OF THE CARBON FOOTPRINT OF ORAL SURGERY INTERVENTIONS

Szidonia Krisztina Veress[1], Bernadette Evelyn Kerekes-Máthé[2], Bálint Botond Bögözi[3], Melinda Székely[2]

[1]Department of Oral and Maxillofacial Surgery, UMFST Tîrgu Mureş
[2]Department of Morphology of Teeth and Dental Arches, other
[3]Department of Oral and Maxillofacial Surgery, other

**Background:** Health care greatly contributes to climate change and dental treatments have a significant carbon dioxide emission. The carbon footprint is an indicator that shows how human activity affects the environment. The level of indirect emissions of the carbon footprint shows the amount of CO2 emissions generated by the energy used during the treatment. The objective of this study was to calculate the indirect emissions of the carbon footprint of different oral surgery interventions. **Material and methods:** In order to establish the indirect emissions, we determined the amount of energy used during 10 different oral surgery procedures (primary tooth extraction, tooth extraction with forceps, elevator and root separation, alveolotomy, odontectomy of submucosally and intraosseously impacted teeth, apex resection, premolarization, bone ridge regularization) with 3 different scenarios: ideal, average and worst case, and based on these we calculated the carbon footprint. **Results:** Looking at the average case, the oral surgery activities with the highest carbon emissions are premolarization and extraction with root separation (approx. 94,629g and 91,092g CO2 respectively), while the least environmental impact has extraction of primary teeth and tooth extraction with an elevator (22,746g and 23,559g CO2). Odontectomy of intraosseously impacted teeth results in higher carbon dioxide emissions than submucosally impacted teeth, and the physiodispenser consumes less energy per unit of time than the dental compressor required to operate the turbine. We found a statistically significant difference regarding the indirect carbon emissions of the investigated oral surgery treatments in the case of the best, average and worst scenarios. **Conclusions:** Regarding oral surgery interventions, we must strive to use resources as efficiently as possible, since even minor modifications can significantly reduce carbon emissions. To gain an accurate understanding of treatment-related carbon emissions, we must assess additional influencing factors and identify those that can be adjusted to promote more environmentally conscious practices in oral surgery.

**Keywords:** sustainability, oral surgery, carbon footprint

## CLINICAL AND RADIOLOGICAL EVALUATION OF IMMEDIATE POST-EXTRACTION IMPLANT PLACEMENT - A NARRATIVE REVIEW

Mădălina Mihali[1], Alina Ormenișan[1]

[1]Department of Oral and Maxillofacial Surgery, UMFST G.E. Palade Târgu Mureș

**Background:** Prosthetics on implants is one of the many treatment options accessible today for all types of edentates. To choose the best option, certain conditions must be fulfilled. Quick post-extraction implant placement is a controversial surgical method that has recently gained popularity. The objective of this narrative review is to compare various surgical approaches for implanto-prosthetic restorations. Postextraction implant placement without bone addition, implant insertion with guided bone regeneration, socket-shield technique and immediate dento-alveolar restoration are the most popular and recent implant surgical techniques that will be covered. **Material and methods:** To get information for this study, electronic searches were conducted in PubMed and Embase using the phrases implant, surgery, and post-extractional. Only original prospective longitudinal studies carried out through 2020 were included. **Results:** Numerous studies have shown that single-surgery treatment plans are less traumatic and provide very predictable and successful results. Certain trials have demonstrated that GBR, in combination with autogenous and xenogeneic grafts in the form of particles and i-PRF, is effective for both vertical and horizontal bone growth in the maxillary and mandibular regions, providing sufficient bone gain for the implantation of future implants. **Conclusions:** Effective management of the soft tissues and bone in the post-extraction sockets is crucial for both functional and esthetic success. Choosing the appropriate technique will allow for the installation of a temporary crown, which is something that many patients ask for.

**Keywords:** implant, surgery, post-extraction, radiology

## DIGITAL VS. CONVENTIONAL REMOVABLE COMPLETE DENTURES: A CASE REPORT

Alessandra-Aniela Cerghedi[1], Miruna-Nicumina Denes[1], Cristina-Stanca Molnar-Varlam[1], Melinda Szekely[1]

[1]Department of Morphology of Teeth and Dental Arches, UMFST G.E. Palade Târgu Mureș

**Background:** The digital procedure for the realization of removable complete dentures has been developed in recent years, reducing the number of sessions necessary to obtain the prosthetic piece and reducing the discomfort for the patient. This case report aimed to compare the complete dentures obtained by a digital workflow with full dentures manufactured using conventional technology in terms of stability, adhesion, and aesthetics. **Material and methods:** A 79-year-old bimaxillary edentulous male patient with a history of oncologic disease, laryngeal cancer, radiotherapy, and tracheostomy received oral rehabilitation with conventional and digital removable complete dentures. The difficulty of the case was characterized by a marked atrophy of the mandibular crest, accompanied by a hyposialy due to radiotherapy treatment, with the frequent formation of prosthetic stomatitis. The patient has been a complete denture wearer for more than twenty years, using old, infiltrated dentures causing decubitus lesions. The old prostheses were used as individual impressions trays. An addition silicone of three different consistencies was used for an accurate impression of the prosthetic field, and also a silicone for bite registration. For the maxillary and mandibular impressions, the closed-mouth registration technique was used. All materials used were scannable for accurate transmission of information to the technical laboratory. A pair of digital complete dentures were made by 3D printing and also by conventional technology of acrylic full dentures. **Results:** Digitally manufactured removable complete dentures using the printing process have been shown to be as good in terms of fit and suctions as dentures made by the conventional process. **Conclusions:** Complete dentures made by a digital process represent a favorable alternative by reducing the number of sessions and inconveniences for the patient. Printed full dentures showed as good adhesion and stability as conventional prostheses, and from an aesthetic point of view, they were more favorable

**Keywords:** complete-denture, digital, conventional

## RETROSPECTIVE ANALYSIS OF ENAMEL THICKNESS IN THE CERVICAL AREA OF MAXILLARY CENTRAL INCISORS USING CONE BEAM COMPUTED TOMOGRAPHY

Izabella-Èva Darlaci (Muresan)[1], Kinga Mária Jánosi[1], Diana Cerghizan[1], Krisztina Martha[1]

[1]Department of Prosthetic Dentistry and Oral Rehabilitation, UMFST G.E. Palade Târgu Mureș

**Background:** Enamel thickness at the cervical third of the teeth plays a vital role in the success of minimally invasive adhesive restorations. This study aims to assess the variation in enamel thickness in the cervical area of maxillary central incisors across different age groups using Cone Beam Computed Tomography (CBCT). **Material and methods:** 100 CBCT scans were analyzed on sagittal slices, which were obtained from patients referred to the Radiological Department of "George Emil Palade" University of Medicine, Pharmacy, Science, and Technology and were provided for diagnostic or therapeutic reasons. Enamel thickness was measured 1 mm and 3 mm above the cementoenamel junction (CEJ) using the OnDemand3D Communicator CBCT program. Statistical Analysis was performed using GraphPad Instat Prism software to compare thickness measurements across tooth regions. **Results:** Statistically significant differences were found between the two age groups (20-40 years; >40 years) in enamel thickness at 1 mm and 3 mm from the CEJ ($p < 0.0001$, $p = 0.0214$) of the central incisor`s labial surface. **Conclusions:** With aging, a reduction in enamel thickness was observed at the cervical area of the central incisors. To enhance the long-term success of adhesive restorations, the finish line placement in this area must be reconsidered by the prosthodontists adapted to the patient's age.

**Keywords:** adhesive, CBCT, enamel thickness, minimally invasive

# REVIEW ON THE EFFECT OF TYPE 1 DIABETES ON ORAL HEALTH IN CHILDREN AND ADOLESCENTS AGED 6-12 YEARS

Maria Simona Damasaru [1], Mariana Cornelia Tilinca[2]

[1]Ortodontie si Ortopedie dento-faciala, Universitatea Ovidius Constanța
[2]Department of Internal Medicine I, UMFST G.E. Palade Târgu Mureș

**Background:** In contemporary society, diabetes is a common systemic disease whose incidence is constantly increasing in children and adolescents. Children are mainly diagnosed with DM type 1. Genetic factors as well as environmental factors contribute to the risk of the disease, indicating a multifactorial etiology. Along with chronic periodontitis and other oral manifestations: the increased incidence of dental caries, aphthous ulcers, the qualitative and quantitative changes in saliva represent an important element of the complications of diabetes.In recent years, many articles have been published in the specialized literature that examined the relationship between these chronic diseases. The purpose of this review is to investigate oral health indicators in children with type 1 diabetes and how they are influenced by its presence. **Material and methods:** This paper provides an overview of the prevailing findings from research conducted using MEDLINE, Europe PMC and PubMed. A number of 128 articles published between March 2020 and March 2024 were analyzed. **Results:** This paper describes the relationship between oral health in children with type 1 diabetes and DM and answers the following questions: the presence of diabetes and the incidence of dental caries, periodontal disease,microbial infections, as well as the implications of diabetes on orthodontic treatment and measures to be considered during the management of these patients. **Conclusions:** The scientific evidence reviewed supports the fact that diabetes has a negative effect on oral health, and this has a negative effect on glycemic control and diabetes-related complications.The association between diabetes and oral health is often forgotten or ignored and for this reason the diagnosis and early treatment of some oral conditions are late resulting in tooth loss and severe complications. Further research is needed to clarify these relationships and large prospective studies to establish that treating oral conditions can positively influence blood glucose and possibly reduce the burden of diabetes-related complications

**Keywords:** type I diabetes, dento-maxillary anomaly, oral pathology, dental management.

# SALIVARY MALONDIALDEHYDE AS A BIOMARKER OF OXIDATIVE STRESS IN CHILDREN WITH SEVERE EARLY CHILDHOOD CARIES: AN HPLC-BASED STUDY

Oana Stoica[1], Alexandra Stoica[2], Daniela Esian[1], Cristina-Ioana Bica[1]

[1]Department of Pediatric Dentistry and Orthodontics, UMFST G.E. Palade Târgu Mureş
[2]Department of Odontology and Periodontology, UMFST G.E. Palade Târgu Mureş

**Background:** Malondialdehyde (MDA) is a biomarker of oxidative stress caused by lipid peroxidation, reflecting cellular damage induced by reactive oxygen species. In the oral environment, oxidative stress plays a significant role in the pathogenesis of various dental conditions, including severe early childhood caries (S-ECC). S-ECC is a multifactorial disease associated with microbial activity, diet, and host response, where oxidative stress exacerbates tissue damage. Elevated salivary MDA levels have been strongly linked to S-ECC, making it a promising indicator for assessing the oxidative burden in affected children. This study aimed to quantify salivary MDA levels in children with S-ECC using high-performance liquid chromatography (HPLC) and evaluate its correlation with caries severity. **Material and methods:** Saliva samples were collected from 115 children diagnosed with S-ECCand 43 caries-free controls. MDA concentrations were measured using HPLC, and statistical analyses were conducted to comparemean values across groups and examine gender-based differences in oxidative stress markers. **Results:** The mean salivary MDA levelwas significantly higher in the S-ECC group (22.90 ± 2.81 ng/mL) compared to the control group (21.12 ± 2.18 ng/mL; $p < 0.001$). Boys in the S-ECC group showed a mean MDA level of 23.04 ± 2.86 ng/mL versus 20.96 ± 1.95 ng/mL in the controls(mean difference: 2.08 ng/mL; $p = 0.005$), while girls exhibited 22.80 ± 2.79 ng/mL compared to 21.26 ± 2.38 ng/mL (meandifference: 1.54 ng/mL; $p = 0.019$). These findings underscore the association between elevated oxidative stress and caries severity. **Conclusions:** Elevated salivary MDA levels in children with S-ECC highlight the role of oxidative stress in the pathogenesis of this condition. MDA may serve as a reliable biomarker for assessing caries risk and guiding preventive strategies aimed at reducing oxidative stress in pediatric populations.

**Keywords:** Severe Early Childhood Caries (S-ECC), Malondialdehyde (MDA), Oxidative Stress

# DERMATOLOGY

## PYODERMA GANGRENOSUM AND VENOUS LEG ULCER: OVERLAPPING AND DISTINCTIVE FEATURES

Andreea-Beatrix Bălan[1], Mircea Ambros[1], Oana Tiucă[1], Silviu-Horia Morariu[1]

[1]Department of Dermatology, UMFST G.E. Palade Târgu Mureș

**Background:** Chronic venous insufficiency in its final stage and pyoderma gangrenosum represent important causes of lower limb ulcers development. Their differential diagnosis is crucial for the right management of the case. **Material and methods:** We present the cases of two patients admitted to the Dermatology Hospital in Targu-Mures for the development of lower limb ulcers, having relatively similar clinical aspects, but with different onset, evolution and symptomatology. **Results:** Pyoderma gangrenosum is an inflammatory disease characterized by neutrophilic infiltrates, painful ulcerations which often develop after trauma, the pathergy being present in 25% of the cases. Unlike venous leg ulcer, which represents the final stage of chronic venous insufficiency, pyoderma gangrenosum shows a rapid and centrifugal progression, developing especially in areas predisposed to trauma, it is intensely painful, with purple edges and frequently associated with other systemic diseases. In comparison, lower leg ulcer shows a prolonged progression, is often painless, the lower third posteromedial aspect of the leg being the most frequent localization. The management of these diseases requires a tailored approach as to target the different underlying pathophysiological mechanisms. **Conclusions:** Although the clinical aspects of both of the diseases may overlap, early differentiation can prevent the occurrence of complications through applying the appropriate therapeutic approach.

**Keywords:** ulcers, chronic venous insufficiency, pyoderma gangrenosum, differential diagnosis

# EPIDEMIOLOGY

## SARS-COV-2 SEROSURVEY IN ROMANIA BETWEEN 2020–2022

Réka Bodea[1], Toader Septimiu Voidăzan[1], Zoltán Ábrám[2]

[1]Department of Epidemiology, UMFST G.E. Palade Târgu Mureș
[2]Department of Hygiene, UMFST G.E. Palade Târgu Mureș

**Background:** Public health professionals routinely use the calculation of indicators within epidemiological surveillance to estimate the impact of a disease. With diagnostic protocols and a well-developed surveillance methodology, this approach can be effective, but it becomes useless when the number of asymptomatic cases or with minimal symptoms is high. The superior way to estimate the cumulative number of cases, being able to detect patients who have gone through the disease and were asymptomatic or can check if immunity against COVID-19 has been formed, is to perform a test to detect antibodies. Seroprevalence studies were and are research efforts designed to estimate the proportion of a population exposed to the SARS-CoV-2 virus that causes COVID-19.
**Material and methods:** We analyzed 51533 results of qualitative detection of high-affinity antibodies (IgG) to SARS-CoV-2 nucleocapsid (N) protein from a private laboratory with national coverage to estimate the scale of illnesses in Romania during the first two years of the COVID-19 pandemic. **Results:** Participants aged between 18-49 years old (60.5%) has the highest representation. According to the data participants who underwent serological testing 18980 tested positive. This corresponds to a seroprevalence rate of 36.8%, indicating that over a third of individuals who underwent serological testing had been infected with COVID-19 at some point prior to the test **Conclusions:** The burden of infection is more than twice that of clinical cases reported by the National Institute of Public Health, with a significantly higher rate of prior infection among young adults. This study can be used to inform and improve strategies to prevent the spread of infectious diseases and mitigate the impact of future outbreaks.

**Keywords:** COVID-19, epidemiology, public health, serosurvey

# GENETICS

## ASSOCIATION OF XPC, XPD, XPF, AND XPG GENE POLYMORPHISMS WITH THE RISK OF MYELOPROLIFERATIVE NEOPLASMS

Adriana-Stela Crișan[1], Florin Tripon[1], Erzsébet Lazar[2], Marcela Cândea[3], Claudia Bănescu[1]

[1]Department of Genetics, UMFST G.E. Palade Târgu Mureș

[2]Department of Internal Medicine III and Family Medicine, UMFST G.E. Palade Târgu Mureș

[3]Department of Internal Medicine II, UMFST G.E. Palade Târgu Mureș

**Background:** Myeloproliferative neoplasms (MPN) represent a subgroup of bone marrow cancers characterized by the excess production of one or more types of myeloid blood cells. The most common types of MPN *BCR-ABL* negative include essential thrombocythemia (ET), polycythemia vera (PV), and primary myelofibrosis (PMF). The driver mutations identified at the level of one of the three genes: *JAK2* (Janus kinase 2), *MPL* (myeloproliferative leukemia proto-oncogene - thrombopoietin receptor), and *CALR* (Calreticulin) are useful in diagnosis. To restore the genome quality, some defects in DNA molecules are detected and corrected by nucleotide excision DNA repair (NER). We consider that the occurrence of myeloproliferative neoplasms (MPN) is influenced by the *XPD, XPF, XPG*, and *XPC* gene polymorphisms. **Material and methods:** We analyzed the *XPD 2251A>C*, *XPF 11985A>G*, *XPF-673C>T*, *XPC 1496C>T*, *XPG 3507G>C*, and *XPC 2920A>C* polymorphisms by RFLP analysis (polymerase chain reaction- restriction fragment length polymorphism) in 393 MPN patients and 323 healthy controls. **Results:** Taking everything into account, we discovered that the *XPF 11985A>G* SNP was associated with a decreased risk of MPN, and the *XPD2251A>C* polymorphism was associated with an increased risk of developing. **Conclusions:** According to our results, *XPG 3507G>C, XPC 2920A>C*, and *XPC 1496C>T* SNPs are not risk factors in MPN evolution. A protective role for MPN is represented by *XPF 11985A>G* and *XPF-673C>T* single nucleotide polymorphisms.

**Keywords:** myeloproliferative neoplasms, BCR-ABL negative, NER, gene polymorphisms

# HEMATOLOGY

## AUTOLOGOUS STEM CELL TRANSPLANTATION IN CASE OF A HODGKIN LYMPHOMA PATIENT WITH DILATED CARDIOMYOPATHY – CASE REPORT

Annamária Zsigmond[1], Erzsébet Lázár[2], Cristina Tătar[2], Imre Benedek[3]

[1]Department of Internal Medicine VII, UMFST G.E. Palade Târgu Mureş
[2]Department of Internal Medicine III and Family Medicine, UMFST G.E. Palade Târgu Mureş
[3]Department of Internal Medicine V, UMFST G.E. Palade Târgu Mureş

**Background:** The autologous stem cell transplantation represents the standard of care in case of relapsed or refractory malignant lymphoma. In fact of the appearance of novel chemotherapy and immunotherapy agents used in treatment of lymphoma some of them still cause toxicity. Anthracyclines are used in first line chemotherapy for patients with malignant lymphomas, causing cardiotoxicity this way increasing the mortality of cancer survivors. **Material and methods:** We present the case of a 46-year-old male patient without previous cardiological medical history who was diagnosed with Mixed cellularity Hodgkin Lymphoma, benefited 12 applications of ABVD chemotherapy regimen (Epirubicin, Bleomycin, Vinblastine, Dacarbazine) followed by relapse of the lymphoma, necessitating 3 courses of DHAP regimen (Dexamethasone, Cisplatin, Cytarabine) followed by stem cell mobilization and harvesting. During the second line chemotherapy treatment the patient presented dyspnea, peripheral edemas and tachycardia and the cardiological examination confirmed dilated cardiomyopathy. After his cardiological status permitted autologous stem cell transplantation was performed in order to obtain remission of the malignant lymphoma. Although during the conditioning regimen no cardiological complications appeared, in the period of posttransplantation aplasia cardiological decompensation was observed necessitating cardiological medical reevaluation and medication assessment **Results:** Due to the rigorous cardiological and hematological follow-up of the patient the hematopoietic stem cell transplantation was successful and hematological remission was obtained with improved cardiac status. **Conclusions:** The interdisciplinary collaboration is essential in the evaluation of the cardiological status of the malignant lymphoma patients this way determining the potential cardiological complications and decreasing mortality.

**Keywords:** hematopoietic stem cell transplantation, malignant lymphoma, dilated cardiomyopathy

# INFECTIOUS DISEASES

## EVALUATION OF T-LYMPHOCYTE SUBSETS FOR COVID-19 OUTCOME PREDICTION

Akos Vince Andrejkovits[1], Adina Huțanu[2], Doina Manu[2], Anca-Meda Văsieșiu[1]

[1]Department of Infectious Diseases, UMFST G.E. Palade Târgu Mureș
[2]other, UMFST G.E. Palade Târgu Mureș

**Background:** The role of laboratory parameters in outcome prediction of SARS-COV-2 infection is still a subject of discussion. We aimed to evaluate the predictability of T-lymphocyte subsets for disease outcome. **Material and methods:** The prospective study comprised 53 COVID-19 patients, confirmed by RT-PCR test, admitted to the 1st Infectious Disease County Hospital Târgu Mureș from December 2021 to February 2022. Lymphocyte levels (absolute number and percentage), peripheral lymphocyte subsets (CD3+, CD4+, CD8+, CD19+, B and NK cells) were determined, CD3+/CD19+, CD3+/NK, neutrophile to lymphocyte ratios (NLR) calculated and correlated with disease outcome. Statistical analyses were performed using MedCalc®, $p<0.05$ was considered to indicate statistical significance. **Results:** In the study group the mean age was 72±12 years, 27 (50.9%) were male, 33 (62.3%) had severe disease, 14 (26.4%) were vaccinated, 42 (79.2%) survived, 11 (20.7%) died. Significant differences were between survivor and non-survivors only in the absolute number of CD3+ ($p=0.023$) and CD3+CD4+ ($p=0.038$). Univariate logistic regression analysis has shown that only the total absolute number of CD3+ has a predictive capacity for outcome. ROC analysis showed CD3+ cut-off value of 0.520x103/µL for fatal outcome, with an AUC of 0.723 (95%,CI:0.583–0.837), $p=0.007$. Incorporating patient's age and oxygen saturation, AUC was 0.909 (95%,CI:0.795–0.971), sensitivity: 81.8% (95%,CI:48.2–97.7), specificity: 90.0% (95%,CI:76.3–97.2), pConclusions: The absolute number of CD3+ lymphocytes can be used as an independent predictor for the fatal outcome. CD3+ combined with other biomarkers (ferritin and NLR), age and SpO2 provides the best predictive model for the assessment of COVID-19 outcome. This research is a part of the doctoral thesis within IOSUD of G.E.P. UMPST of Târgu Mureș Doctoral School. This research was funded by G.E.P. University of Medicine, Pharmacy, Science, and Technology Targu Mures, Romania, grant number 10126/1/17.12.2020

**Keywords:** COVID-19, T-lymphocyte subset, outcome prediction

# BEYOND INFECTION: EXPLORING THE IMPACT OF PERINATAL HIV EXPOSURE ON CHILD HEALTH

Tudor Fleseriu[1], Lorena Melit[2], Anca-Meda Vasiesiu[1]

[1]Department of Infectious Diseases, UMFST G.E. Palade Târgu Mureș
[2]Department of Pediatrics II, UMFST G.E. Palade Târgu Mureș

**Background:** The global burden of HIV and mother-to-child transmission (MTCT) continues to present profound public health challenges, especially in sub-Saharan Africa where over 90% of new pediatric infections occur. **Material and methods:** This literature review examines current research on MTCT of HIV, with a focus on the effectiveness of antiretroviral therapy (ART) in reducing transmission rates and the complex health implications for HIV-exposed but uninfected (HEU) children. **Results:** While ART has reduced MTCT rates to below 1% in developed regions, disparities persist in high-prevalence areas. HEU children, though uninfected, show increased morbidity and mortality, particularly in the first years of life. Elevated risks include respiratory infections, growth deficits, and vulnerabilities to pathologies like gastroenteritis or sepsis. Studies indicate that ART may contribute to metabolic and immunological disruptions in exposed children, with emphasis on mitochondrial damage, lipid dysregulation and persistent immune activation leading to increased overall disease susceptibility. ART during pregnancy is of critical importance in limiting HIV transmission but is associated with adverse pregnancy outcomes such as preterm delivery, low birth weight and stillbirths. These outcomes are hypothesized to stem from ART-induced mitochondrial stress, endoplasmic reticulum stress and altered lipid metabolism, exacerbating immune system activation and inflammation. Although ART's role in HIV prevention is critical, the long-term impacts on HEU children's health require tailored monitoring and care to address their unique health needs.
**Conclusions:** In conclusion, this review underscores the need for comprehensive strategies that address both HIV transmission prevention and the broader health challenges faced by HEU children. Further research is essential to delineate the specific effects of ART and HIV exposure on infant development and to optimize intervention strategies, with the goal of improving survival and quality of life for this vulnerable population.

**Keywords:** HEU, HIV, ART, Perinatal, Negative outcomes

# INTERNAL MEDICINE

## DEVELOPING A NEW DIABETES KNOWLEDGE ASSESSMENT TEST FOR TYPE 2 DIABETES PATIENTS – FIRST IMPRESSIONS

László Marton[1], Mónika Szabó[1], Andrea-Ildikó Gáspárik[2], Zoltán Ábrám[3]

[1]Department of Internal Medicine I, UMFST G.E. Palade Târgu Mureș

[2]Department of Public Health and Healthcare Management, UMFST G.E. Palade Târgu Mureș

[3]Department of Hygiene, UMFST G.E. Palade Târgu Mureș

**Background:** Several studies indicate that higher diabetes knowledge correlates with higher education, stable employment, and diabetes-related complications. Adequate diabetes knowledge can play a crucial role in reducing diabetes-related complications. Conversely, a lack of awareness often leads to misconceptions, which, along with insufficient knowledge, create additional barriers to comprehensive diabetes control. **Material and methods:** We aimed to develop a culturally and linguistically tailored, bilingual assessment test for patients with type 2 diabetes, with or without insulin use. Following the pre-test, we conducted our study among adults in Mureș County with a minimum one-year history of type 2 diabetes. Data collection occurred in diabetes care centers with patients documented in clinical records. In addition to assessing diabetes knowledge, we collected data on participants' sociodemographic characteristics (e.g., socioeconomic status, social context, living conditions, healthcare access) and on metabolic control and diabetes-related complications. **Results:** Our assessment test comprises 30 true-or-false statements on diabetes mellitus, divided into three domains of 10 items each, covering risk factors, complications, and treatment (including lifestyle interventions and medication). Preliminary findings indicate that the treatment domain was the most challenging, with the lowest mean score. Further validation and psychometric testing, including analyses of discriminative power, construct validity, internal consistency, and floor/ceiling effects, are required. **Conclusions:** This assessment test could offer practical value for diabetes care centers, enabling systematic and efficient diabetes knowledge evaluation. Hence, it allows clinicians to assess patients' understanding of risk factors, complications, and lifestyle interventions early in disease progression. Once validated, it could be a valuable resource for future interventional studies evaluating educational program effectiveness in type 2 diabetes care.

**Keywords:** diabetes knowledge, assessment test, type 2 diabetes mellitus

# IMPLEMENTATION OF SELF-ADMINISTRATION TRAINING FOR INTRAVENOUS TREATMENTS IN HEREDITARY ANGIOEDEMA PATIENTS FROM ROMANIA

Noemi Anna Bara[1], Valentin Nadasan[2], Diana Deleanu[3]

[1]Department of Internal Medicine I, UMFST G.E. Palade Târgu Mureș

[2]Department of Hygiene, UMFST G.E. Palade Târgu Mureș

[3]Department of Internal Medicine I, UMF Iuliu Hațieganu Cluj Napoca

**Background:** Hereditary angioedema (HAE) is a rare, autosomal inherited disease that results in episodes of angioedema in various organs, including the gastrointestinal tract, skin, and larynx. Therapeutic approaches include both acute and prophylactic treatments. Recent guidelines advise that all HAE patients should be considered for self-administration therapy. Our study evaluated the implementation of self-administration training for intravenous treatments in patients with hereditary angioedema from Romania. **Material and methods:** It was a noninterventional survey of the Romanian HAE patients/parents, whoparticipated in the intravenous medication self-administration training sessions organized in April and October 2022. During theseactivities, two questionnaires were completed: one before and one at the end of the training. An interim analysis was performed toassess the effectiveness of this type of educational program. **Results:** A total of 73 patients/parents were informed by email aboutthe training. Of these, 20 patients (7 men and 13 women, with a mean age of 41.3) and one parent participated in the first event.The second training was attended only by five patients (two men and three women, with a mean age of 43.0) and one parent. Atthe first meeting, all participants considered the training extremely (17) or very useful (4). When asked if they would try this typeof administration, 13 patients answered "very likely, yes," two "somewhat likely" and one "no." With better knowledge of the procedure, 18 would choose self-administration, while 14 would choose home-based intravenous administration by a healthcare professional. At the second training, none of the participants wanted to try the self-administration procedure. **Conclusions:** The results suggest that, even though the participants from the first training considered the training useful, the practical implementation of this procedure is hardly accepted by patients with HAE in Romania

**Keywords:** angioedema, hereditary angioedema, self-administration, treatment

# THE IMPORTANCE OF REAL-TIME OPTICAL DIAGNOSIS IN PRECANCEROUS LESIONS OF LOWER GASTROINTESTINAL TRACT

Kinga Noemi Szekely[1], Danusia Maria Onisor[1], Andrada Lavinia Matei[1], Daniela Ecaterina Dobru[1]

[1]Department of Internal Medicine VII, UMFST G.E. Palade Târgu Mureş

**Background:** Although the detection of GI neoplasia at an early and curable stage is essential,the endoscopic visualization of early stages can be difficult, which may lead to neoplasia miss rates. Endoscopic optical imaging technologies have made greatprogression in recent decades. They allow modern endoscopists to provide accurate and effective optical diagnosis in realtime. Device-based IEE (image enhanced endoscopy),such as NBI (narrow band imaging), enables visualization of vascularstructures by emission of blue and green light of a defined wavelength. Practically, these technical enhancements provide opticaldiagnosis of the lesions. The aim of our study is to correlate the histopathological results of colonic lesions with the opticalendoscopic diagnosis using the NBI and the NICE classification, predicting polyp histopathology from its endoscopiccharacteristics. **Material and methods:** The study enrolled adult patients admitted to the Gastroenterology Department of theMures county Clinical Hospital between january 2020 and October 2024 with diagnosis of colonic polyps or who underwentroutine colonoscopies resulted in colonic polyps evidentiation followed by polypectomy with histopathological results.Each polypwas characterized in real time using white light and Narrow Band Imaging. **Results:** Our research involved 157 patients, agebetween 44 -81 years, female male rate 68:89. 279 polyps were analyzed during real-time endoscopy by conventional white lightand NBI image enhanced endoscopy applying NICE classification for all of the polyps. All of analized polyps had histopatologicalexamination. In 82.65% of cases correlation was found between endoscopic and histopatological result. **Conclusions:** Accuratedifferentiation of colonic polyps during endoscopy has the advantage that on-table decisions can be made. In case of a suspectedpremalignant lesion, endoscopic resection may be performed immediately,whereas bening lesions may be left in situ. Suchapproaches could improve the quality and safety of patient care by avoiding the risks associated with unnecessary polypectomy andby shortening procedure times,furthermore,minimalize the biopsies and polipectomies costs.

**Keywords:** NBI, real time optical diagnosis, colonic polyps, histopathology, endoscopy

# THE ROLE OF SCREENING AND EARLY INTERVENTION IN THE DETECTION AND MANAGEMENT OF COLORECTAL LESIONS, A SHORT SURVEY IN THE GASTROENTEROLOGY DEPARTMENT

Andrada Lavinia Matei[1], Daniela Ecaterina Dobru[1], Kinga Noemi Szekely[1], Adina Andone[1]

[1]Department of Internal Medicine VII, UMFST G.E. Palade Târgu Mureş

**Background:** The risk of developing colorectal cancer in asymptomatic patients over the age of 45, without additional risk factors, is 5% over the average lifetime, according to the WHO. One of the pathways through which colorectal cancer develops is the malignant transformation of adenomatous and serrated polyps. Colonic polyp lesions are often asymptomatic and are typically discovered only during screening, though they may sometimes present with symptoms such as iron deficiency. Among patients over 65 with iron deficiency anemia, 9% are found to have gastrointestinal cancer upon evaluation. **Material and methods:** Wereviewed data from patients admitted to the Gastroenterology Department of Mures County Clinical Hospital from January toMarch 2024, who underwent colonoscopy and had polypoid lesions or tumor formations identified along the colonic tract. Anumber of 41 patients resulted, we divided them into two lots, patients with colonic polyps(n=25) and patients with colonicneoplasia found while performing the colonoscopy (n=16), and data regarding the sex, age, admission symptoms, endoscopydiagnosis, hemoglobin and iron level were collected. **Results:** The average age of patients with polyps was 65.04±2.26, while theaverage age of those diagnosed with colorectal tumors was 70.2±2.36. Symptoms in patients with lesions along the colonic tractwere predominantly iron deficiency anemia, affecting 75% of those diagnosed with colonic tumor formations and 20% of thosewith colonic polyps. Weight loss was reported in 56% of cancer patients and 24% of patients with polyps. Rectal bleeding wasobserved in 43% of colorectal cancer cases and 20% of polyp cases. **Conclusions:** Although colonic polyps are often asymptomatic,their potential for malignant transformation warrants removal via therapeutic colonoscopy. Patients already diagnosed withcolorectal cancer tend to experience a wider range of symptoms, but treatment is more challenging and often complicated. Thisunderscores the importance of screening programs, which enable early detection of malignant lesions.

**Keywords:** anemia, colonic polyps, colorectal cancer, screening

## CLINICAL, BIOLOGICAL, AND ENDOSCOPIC FINDINGS IN PATIENTS WITH ACTIVE AND NON-ACTIVE PANGASTRITIS

Sabrina-Nicoleta Munteanu[1], Ana-Maria Filip[1], Anca Elena Negovan[1]

[1]Department of Internal Medicine III and Family Medicine, UMFST G.E. Palade Târgu Mureş

**Background:** Chronic inflammation is closely associated with carcinogenesis, especially in the digestive system. This single-center study aims to investigate clinical, endoscopic, and histopathological characteristics in patients with active or non-active pangastritis compared to those without gastric lesions. **Material and methods:** A retrospective analysis was conducted on 173 patients: 87 with histologically confirmed active or non-active pangastritis (25 patients with non-active gastritis and 62 with active gastritis) and 86 individuals without gastric lesions. Clinical symptoms, endoscopic findings, and laboratory parameters were compared between groups. **Results:** Pangastritis was more prevalent in males (66.67% vs. 46.51%, p=0.0092, OR=2.3, 95% CI: 1.23-4.22). Weight loss was more common in patients with pangastritis (21.84% vs. 9.30%, p=0.034, OR=2.7, 95% CI: 1.17-6.35), but not pyrosis (8.05% vs. 26.74%, p=0.0012, OR=0.2397, 95% CI: 0.0938-0.6036). No significant differences regarding other symptoms (epigastric pain, nausea/vomiting/bloating, loss of appetite) or endoscopic changes (erhytematous mucosa, erosions, ulcers, or submucosal hemorrhage) were identified among groups. Regarding premalignant gastric lesions, neither group has reached the statistical threshold. However, patients with inactive gastritis seem to be 2.3 times more likely to develop these lesions (64.00% vs. 43.55%, p = 0.10, OR = 2.3, 95% CI 0.92-5.74). The hemoglobin, mean corpuscular volume, and serum iron levels were lower in patients with pangastritis but did not differ significantly. **Conclusions:** Active and non-active pangastritis is associated with higher rates of weight loss, particularly in males. The absence of significant symptoms, or changes in regular biologic parameters, underlines the importance of histopathological surveillance for early detection and prevention of gastric malignancy in patients with chronic gastric inflammation, especially pangastritis phenotype.

**Keywords:** active pangastritis, non-active pangastritis, gastric inflammation, premalignant gastric lesions

## CLINICAL, ENDOSCOPIC, AND HISTOPATHOLOGICAL DIFFERENCES BETWEEN HELICOBACTER PYLORI-ASSOCIATED AND AUTOIMMUNE ATROPHIC GASTRITIS

Ana-Maria Filip[1], Sabrina-Nicoleta Munteanu[1], Anca Elena Negovan[1]

[1]Department of Internal Medicine III and Family Medicine, UMFST G.E. Palade Târgu Mureş

**Background:** This study investigates the differences in clinical, endoscopic, biological, and histopathological features between Helicobacter pylori-associated and autoimmune gastric atrophy. **Material and methods:** We conducted a retrospective analysis on 95 patients, including 43 with H. pylori-related antral and corporal atrophy and 52 with autoimmune corporal atrophic gastritis. **Results:** H. pylori-associated atrophy shows a significant male predominance (p=0.007, OR=3.24) compared to autoimmune atrophy. Comorbidities and lifestyle factors are similar between groups, but unintentional weight loss is more frequent in H. pylori atrophy (p=0.0177, OR=3.94). Corporal erosions strongly associate with H. pylori-related atrophy (p=0.04, OR=8.27), while other mucosal lesions appear comparable. Dyslipidemia, indicated by altered triglyceride (p=0.018) and cholesterol levels (p=0.029), occurs more often in autoimmune atrophy. Low triglyceride levels independently predict H. pylori-related antral and corporal atrophy (p=0.04), with no other clinical or hematological parameters showing predictive value. **Conclusions:** Male patients are more likely to present with H. pylori-associated corpus atrophic gastritis. While clinical and biological characteristics are generally similar, dyslipidemia tends to be more frequently linked with autoimmune atrophic gastritis, while unintentional weight loss is more prevalent in H. pylori-related pangastritis. Additionally, corpus mucosal erosions are a distinguishing endoscopic finding in H. pylori-induced atrophy.

**Keywords:** Atrophic gastritis, Helicobacter pylori, Autoimmunity

# ROLE OF ARGON PLASMA COAGULATION HEMOSTASIS FOR VARICEAL BLEEDING IN CRITICALLY ILL CHIRROTIC PATIENTS

Ilie Marius Ciorba[1], Nicoleta Craciun-Ciorba[2], Simona-Maria Bățagă[1]

[1]Department of Internal Medicine I, UMFST G.E. Palade Târgu Mureș
[2]Department of Internal Medicine II, UMFST G.E. Palade Târgu Mureș

**Background:** Esophageal variceal bleeding (EVB) is the most life threatening complication of liver cirrhosis. Endoscopic injection sclerotherapy and endoscopic band ligation are the two effective methods for hemostasis in EVB. However, in critically ill patients, these techniques may not be feasible due to hypovolemia, shock or availability. Argon plasma coagulation is a validated option for hemostasis in these cases, when available. **Material and methods:** We performed argon plasma coagulation in 5 cases of EVB where band ligation was not possible due to the collapse of EV secondary to hemorrhagic shock associating hypovolemia. We chose the technique as to prevent using the Sengstaken-Blakemore catheter. The patients were followed up clinically and endoscopically up to discharge. **Results:** Hemostasis was achieved in all cases that underwent the procedure, with no rebleeding within 6 months of discharge. Patients stabilized after hemostasis was achieved and none required transfer to the ICU. Hepatic encefalopathy was noted in one case but no acute liver failure or other common complications associated with band ligation were found. Also, none of the patients succombed during admittance or in the follow up period. **Conclusions:** Argon plasma coagulation is a valid and efficient alternative for achieving hemostasis in EVB where other techniques are unable to be performed or unavailable. We noted no significant post-procedural complications immediately or in the follow up period. Our results are similar with result cited in literature.

**Keywords:** argon plasma coagulation, esophageal variceal bleeding, cirrhosis, GI bleeding, endoscopic hemostasis

# NEONATOLOGY

## COMPARISON OF INTERLEUKIN-6 DETECTED FROM UMBILICAL CORD BLOOD VS PERIPHERAL VENOUS BLOOD TO PREDICT EARLY-ONSET NEONATAL SEPSIS

Maria-Andreea Răcean[1], Manuela Cucerea[1], Cristina Oana Mărginean[2]

[1]Department of Pediatrics IV, UMFST G.E. Palade Târgu Mureş
[2]Department of Pediatrics I, UMFST G.E. Palade Târgu Mureş

**Background:** Diagnosing neonatal sepsis is a challenge, as its clinical symptoms are not specific. The use of biomarkers in early-onset neonatal sepsis has remained an important area of research in the past decades. There is no ideal diagnostic biomarker for detecting early-onset neonatal sepsis and thus management of possible sepsis cases often leads to empirical treatment. Interleukin-6 has shown great promise in diagnosis of early-onset neonatal sepsis and guiding appropriate treatment of neonates. This review aims to assess if interleukin-6 detected from umbilical cord blood is superior to its determination from peripheral venous blood of the neonate to predict early-onset neonatal sepsis. **Material and methods:** Pubmed and Web of Science were searched with keywords: "interleukin-6 and early onset neonatal sepsis" to retrieve potentially relevant papers that analyzed interleukin-6 detected from umbilical cord or from peripheral venous blood shortly after birth to predict early-onset neonatal sepsis. **Results:** Some studies report that an interleukin-6 value done at the time of presentation of signs and symptoms suggestive of infection is useful in the early diagnosis of neonatal sepsis. Other studies suggest that no individual determination of interleukin-6 from peripheral venous blood can on its own identify infected neonates. However, in utero infection is associated with increased levels of interleukin-6 when compared to infection acquired following birth. That is the reason why fewer studies try to reach interleukin-6 from umbilical cord blood to predict neonatal sepsis. Results are controversial because sample collection timing is an important factor for detection of high plasma interleukin-6 level in neonates with early-onset neonatal sepsis. **Conclusions:** Interleukin-6 is a potent biomarker for evaluation of early-onset neonatal sepsis. The levels detected from umbilical cord blood may improve diagnostic accuracy and clinical management of septic neonates. More studies centred on the combination of biomarkers detected from umbilical cord blood are needed to clearly predict early-onset neonatal sepsis.

**Keywords:** neonate, interleukin-6, umbilical cord blood, peripheral venous blood, early-onset neonatal sepsis

# CHALLENGES IN MOLECULAR DIAGNOSTICS FOR NEONATAL RESPIRATORY DISTRESS SYNDROME: ADVANCEMENTS IN NEXT-GENERATION SEQUENCING WITHIN RESOURCE-CONSTRAINED ENVIRONMENTS

Mădălina Anciuc-Crauciuc[1], Manuela Cucerea[2], Marta Simon[2], Claudia Bănescu[1]

[1]Department of Genetics, UMFST G.E. Palade Târgu Mureș

[2]Department of Pediatrics IV, UMFST G.E. Palade Târgu Mureș

**Background:** Respiratory failure is the primary cause of early infant mortality, creating an urgent need for advanced diagnostic approaches. Genetic factors are central in this context, with genes responsible for encoding surfactant proteins (SPs) A, B, C, D,and key regulatory proteins such as ABCA3 and TTF-1 playing essential roles in surfactant production and function. In resource-limited settings, however, the high expense of genetic testing presents a barrier to its widespread implementation, highlighting the need for affordable classification methods to identify genetic contributors to respiratory distress syndrome (RDS). **Material and methods:** Our study enrolled 290 preterm infants of European descent, all under 36 weeks of gestational age, admitted to theTargu Mures Emergency Clinical County Hospital's high-level care facility's maternity unit. We employed multiplex ligation-dependent probe amplification (MLPA) analysis and genotyping to investigate variations in the ABCA3 and SFTPC genes. **Results:**Results revealed exon 15 abnormalities in the ABCA3 gene in three cases; two of these infants suffered severe RDS, with adverseoutcomes including mortality. We also identified exon 9 abnormalities in a case requiring extensive postnatal intervention.Genotyping of ABCA3 polymorphisms (rs323043, rs170447, and rs13332514) did not yield significant correlations with RDS($p>0.05$), and analyses across recessive and overdominant models, as well as allele frequency, showed no significant findings between RDS and control groups. Notably, pathogenic ABCA3 variants were associated with more severe RDS presentations, underscoring the value of genetic testing in guiding clinical strategies. However, the high cost of genomic sequencing limits its accessibility in resource-constrained regions, though it holds substantial promise for understanding RDS's genetic basis. **Conclusions:** In conclusion, our findings underscore the importance of genetic testing in refining RDS phenotypes, reducing diagnostic misclassifications, and supporting evidence-based clinical management. Despite economic limitations, genetic diagnostics provide critical insights that have the potential to significantly enhance the care of infants with severe respiratory distress.

**Keywords:** ABCA3, RDS, SFTPC

# NEUROLOGY

## MICRORNAS – BIOMARKERS OF THE FUTURE THAT COULD MARK THE DIFFERENCE BETWEEN RELAPSING-REMITTING MULTIPLE SCLEROSIS AND SECONDARY PROGRESSIVE MULTIPLE SCLEROSIS.

Oana Mosora[1]

[1]Department of Neurology, UMFST G.E. Palade Târgu Mureş

**Background:** Multiple sclerosis (MS) is chronic neuroinflammatory and neurodegenerative disease of the central nervous system (CNS) and is the leading cause of non-traumatic disability in young adults. Currently, the diagnostic of MS is based on the medical history of the patient, neurological examination and paraclinical examinations such as magnetic resonance imaging, optical coherence tomography measures, blood, and cerebrospinal fluid (CSF) tests. **Material and methods:** Relapsing-remitting MS (RRMS) is the most common subtype of disease, characterized by intermitting periods of worsening and relative stabilization. The progressive degrees of disability, leads in time to secondary-progressive MS (SPMS), the most debilitating stage, with no clear remissions, leading to irreversible neurological disability. RRMS is characterized by inflammatory processes, while in SPMS, neurodegeneration is the main pathogenic mechanism. **Results:** Distinguishing the different phenotypes in MS by using blood-derived biomarkers could lead to personalized treatment with disease-modifying drugs (DMTs) and be used as predictor biomarkers of treatment response in clinical practice. Currently, there are no reliable indicators that can correlate the disease stage and its activity degree. MiRNAs expression dysregulation are often observed in early stages of MS. These molecules remain stable in the circulation of biological fluids and are released from membrane-bound vesicles called exosomes, which protect them from RNase activity. Some studies showed that miRNAs have an important role in the blood-brain barrier integrity by targeting tight junction and adherence junction molecules and can influence the expression of inflammatory cytokines. **Conclusions:** Determining a diverse miRNAs panel expression that can differentiate between MS subtypes, could be a reliable biomarker to identify the patients with high risk of progressive MS.

**Keywords:** relapsing-remitting multiple sclerosis, secondary-progressive multiple sclerosis, miRNAs, neurodegeneration, biomarkers

## PURIFICATION OF MICROGLIA-DERIVED EXTRACELLULAR VESICLES FOLLOWING ACUTE ISCHEMIC STROKE

Timea Forró[1], Doina Manu[2], Rodica Bălașa[1]

[1]Department of Neurology, UMFST G.E. Palade Târgu Mureș
[2]other, UMFST G.E. Palade Târgu Mureș

**Background:** Recent evidence indicates that microglia, the resident immune cells of the central nervous system (CNS), secrete extracellular vesicles (MDEVs) that actively mediate neuroprotection and neurorepair following stroke. A protocol has been designed to isolate MDEVs from plasma samples of acute ischemic stroke (IS) patients. **Material and methods:** EVs were isolated from patients' plasma using the ExoQuick® ULTRA EV precipitation kit at three key moments (24 hours, 7 days, and one month) after symptoms onset. Subsets of MDEVs were identified based on the expression of tetraspanins (CD9, CD63, CD81) as general markers of EVs and TMEM119 as a marker for microglia, using the Basic Exo-Flow Capture kit via antibody-coupled magnetic beads. The obtained complexes were stained with Exo-FITC Exosome FACS stain and then analyzed in the BD FACSAria™ IIIflow cytometer. Data were processed using the BD FACSDiva™ v8.0 Software. **Results:** The flow cytometry analysis showed apure, rich MDEV suspension suitable for downstream applications. We observed similar FITC-median fluorescence intensities(MFI) across the evaluated time points. These comparable values indicate that we obtained a consistent and equal amount of EVsfrom each subject with uniform capture capabilities. **Conclusions:** Studying EV populations represents a great challenge due totheir heterogeneity. This MDEV purification protocol may provide a novel, noninvasive method for CNS monitoring, serving as a valuable tool for biomarker discovery and IS outcome studies. **Acknowledgement:** This work was supported by the University of Medicine, Pharmacy, Science and Technology "George Emil Palade" of Târgu Mureș, Research Grant number 164/15/10.01.2023.

**Keywords:** microglia-derived extracellular vesicles, TMEM119, flow cytometry, acute ischemic stroke

## PREDICTIVE FACTORS OF DIABETIC PERIPHERAL NEUROPATHY IN TYPE 2 DIABETES

Andrei Manea[1], Adina Stoian[2]

[1]Department of Radiology, UMFST G.E. Palade Târgu Mureș
[2]Department of Pathophysiology, UMFST G.E. Palade Târgu Mureș

**Background:** Diabetic neuropathy is the most common complication of diabetes and affects almost all organ systems, causing cardiovascular symptoms such as resting tachycardia and postural hypotension, urinary retention due to neurogenic bladder, and even sexual dysfunction. This issue additionally impacts the extremities, with lower limbs being the most afflicted. Initially, vibratory sensitivity is altered, followed by thermoalgesic sensitivity. The differential diagnosis in the upper limbs must include carpal tunnel syndrome, which is frequently associated with diabetes. **Material and methods:** The current study is an observational study that took place between September 1, 2023 and May 1, 2024 in the Neurology Clinic no. I of the Emergency County Clinical Hospital in Târgu Mureș. The study lot consisted of diabetic patients which were divided into two groups based on the peripheral neuropathy (PN) diagnosis. Anthropometric measurements, laboratory tests, and electromyographic examination results were analysed. **Results:** The gender distribution was roughly equal (40 male and 34 female), the major environment of origin was urban (47 urban and 27 rural), and the average age of the group was 67,19 years ± 9 years.Comparing the two groups of patients, we identified a statistically significant difference in height (p=0.038), monocyte levels (p=0.044), and creatinine (p=0.019), with values being greater in patients with PN. Patients with PN showed lower estimated glomerular filtration rate (p=0.044) and low density lipoproteins (p=0.044) levels compared to those without. Otherwise, there were no statistically significant changes between the laboratory results of the two groups. **Conclusions:** Diabetic neuropathy is the most prevalent diabetes consequence, reducing patients' quality of life. Multiple blood tests, such as lipid profile, blood sugar, and immune system cell ratios, can help predict the incidence and progression of this condition. Acknowledgement This work was supported by George Emil Palade University of Medicine, Pharmacy, Science and Technology of Targu Mures, Research Grant number 163/8/10.01.2023.

**Keywords:** diabetes mellitus, peripheral neuropathy, inflammation, electromyography

# BIOMECHANICAL CHARACTERISTICS OF THE POLYGON OF WILLIS ARTERIES IN ALZHEIMER'S DISEASE: PRELIMINARY RESULTS

Eliza-Mihaela Arbănași[1], Emil-Marian Arbănași[1], Eliza Russu[2], Claudia Bănescu[3], Bogdan-Andrei Cordoș[2], Romeo Racz[2], Laura Chinezu[4], Toader Septimiu Voidăzan[5], Roxana Cărare[6]

[1]Doctoral School of Medicine and Pharmacy, UMFST G.E. Palade Târgu Mureș
[2]other, UMFST G.E. Palade Târgu Mureș
[3]Department of Genetics, UMFST G.E. Palade Târgu Mureș
[4]Department of Histology, UMFST G.E. Palade Târgu Mureș
[5]Department of Epidemiology, UMFST G.E. Palade Târgu Mureș
[6]Department of Neurology, other

**Background:** Alzheimer's disease (AD) is the most common dementia, characterized by cognitive decline and brain changes. The arteries of the Polygon of Willis regulate blood flow to the brain. Changes in biomechanical properties like stiffness and elasticity indicate cerebrovascular impairment in AD. The objective of the present study is to examine the biomechanical behavior of the arteries that comprise the Polygon of Willis in individuals diagnosed with AD, with the aim of elucidating their contribution to cerebral vascular dysfunction and the overarching pathology associated with neurodegeneration. **Material and methods:** Arterial segments from the Polygon of Willis were collected during autopsies at the Târgu Mureș Institute of Legal Medicine. Tissue samples from six individuals (3 control and 3 subjects with AD) were gathered as part of routine post-mortem procedures. After excision, the specimens were immersed in phosphate-buffered saline (PBS) to preserve their structure and biochemical integrity. The samples were then sent to the Regenerative Medicine Laboratory for analysis. Biomechanical properties (Cauchy stress and Young's modulus) were evaluated using uniaxial tensile testing with the BioTester CellScale 5000. **Results:** Our findings indicate significantly higher values of Cauchy stress for the anterior cerebral artery (ACA) when compared to the posterior cerebral artery (PCA) and the internal carotid artery (ICA) (for all $p<0.05$). However, we did not observe any differences in the biomechanical properties of the specimens between the right and left hemispheres. Furthermore, in subjects with AD, an increase in stiffness was recorded in the middle cerebral artery (MCA) ($p=0.0012$), ACA ($p=0.0468$) and PCA ($p=0.0225$). **Conclusions:** Our preliminary findings suggest an increased stiffness of the cerebral arteries in subjects with AD. This phenomenon may elucidate the dysregulation of intramural periarterial drainage and the elevated risk of AD progression.

**Keywords:** Alzheimer Disease, Polygon of Willis, Biomechanic

# ARTICIAL INTELLIGENCE BASED NEURO INFORMATION SYSTEM FOR THE DIABETIC NEUROPATHY

Barkha Khurana[1], Rodica Balasa[1]

[1]Department of Neurology, UMFST G.E. Palade Târgu Mureş

**Background:** The global epidemic of diabetes and prediabetes has led to many other associated complications. One of the major complications is neuropathy, of which symmetrical distal polyneuropathy is very common. Diabetic neuropathy is a loss of sensory function beginning distally in the lower extremities that is also characterized by pain and substantial morbidity. Over time, at least 50% of patients with diabetes develop diabetic neuropathy. Presently, the Nerve conduction studies and EMG suggest the involvement of nerve fibers and conduction of impulses. The era of Artificial Intelligence has been a boon for the Healthcare. Presently, machine learning is being used for the predictive model for diabetes. **Material and methods:** This project will focus on the development of an AI Device that will be created with the help of algorithms and models. This device will give the data of the peripheral nerve injury / damage, its extent of damage and the speed of conduction of impulse. This device aims at being minimally invasive, like EMG and also display the details in numerical forms, rather than a graphical representation as in Nerve conduction studies. The data will be collected from the patients with diabetic neuropathy and will be trained with the help of Artificial Intelligence. **Results:** The AI device will be non- invasive and will work on Neuro-Information System (NIS) that may predict the extend of nerve damage. **Conclusions:** The AI has been the growing technology and is being used in medical sciences as well. This device may help the patients of neuropathy to keep an eye on their level of damage, and also the effect of treatment. In future studies, nanomedicine can also be integrated with the use of device.

**Keywords:** Diabetic neuropathy, Artificial Intelligence, predictive model, nerve conduction study, machine learning

# NUTRITION AND DIABETES

## VITAMIN D AND DIABETES IN PEDIATRIC PATIENTS

Adriana Pana[1], Attila Brassai[1]

[1]Department of Pharmacology, UMFST G.E. Palade Târgu Mureş

**Background:** This study aimed to identify, summarize, and critically analyze available and relevant publications on the effect of vitamin D deficiency on children's health, with a focus on its role in type 1 and type 2 diabetes. **Material and methods:** We conducted a review of studies published in English up to September 2024, sourced from PubMed, MEDLINE, Embase, Google Scholar, and Cochrane. The search included MeSH terms and keywords related to vitamin D deficiency, type 1 diabetes, and type 2 diabetes. The sample consisted of the 30 most relevant and recent articles that met the following inclusion criteria: 1) original research articles; 2) studies containing information on the relationship between vitamin D deficiency, type 1 diabetes, and type 2 diabetes; 3) participants were human subjects aged ≤18 years. **Results:** In type 1 diabetes, vitamin D deficiency increased levels of circulating inflammatory markers (platelet-to-lymphocyte ratio, neutrophil-to-lymphocyte ratio, systemic immune-inflammation index, and plasma atherogenic index), insulin resistance, and decreased insulin sensitivity. Moreover, 1,25-dihydroxyvitamin D promoted insulin secretion directly by its interaction with vitamin D receptor in the pancreatic  cell. In addition, higher levels of 25-hydroxyvitamin D indicated a potential protective role. In type 2 diabetes, low vitamin D levels were correlated with reduced insulin sensitivity and a higher risk of metabolic syndrome. Additionally, a sufficient circulating level of vitamin D reduced platelet activation and platelet intracellular reactive oxygen species. **Conclusions:** In conclusion, vitamin D plays a multifaceted role in diabetes in pediatric patients by supporting immune regulation, enhancing insulin secretion. Furthermore, elevated vitamin D levels are associated with improved insulin sensitivity and reduced metabolic and oxidative risks, underscoring its protective potential in diabetes control. More research is required.

**Keywords:** pediatrics, review, type 1 diabetes, type 2 diabetes, vitamin D deficiency

# NUTRITION AND DIETETICS

## EXPLORING THE ABILITY OF ARTIFICIAL INTELLIGENCE TO IMPROVE NUTRIENT COMPOSITION OF STUDENTS' MEAL PLANS

George Vrapcea[1]

[1]Community nutrition and food safety, UMFST G.E. Palade Târgu Mureș

**Background:** Nutritional knowledge among students, particularly those in rural areas, is often limited, leading to suboptimal dietary habits that do not align with recommended nutritional guidelines. Artificial Intelligence (AI) has the potential to enhance meal planning by analysing and optimizing the nutritional content of student meals, ensuring a better alignment with dietary standards. **Material and methods:** Our study utilized 24-hour food recalls from students in rural Romania to assess their dietary intake. The web platform Nutrition ARTS calculated the nutritional values of five pairs of meal plans. Each pair consisted of an initial meal plan based on a 24-hour recall and a revised plan optimized using AI intervention. Nutritional quality was assessed by calculating the z-scores for each nutrient, indicating how far each nutrient value deviated from the Dietary Reference Intake (DRI). Lower z-scores (closer to zero) indicated better alignment with the DRI. A paired t-test was conducted to compare each meal plan's overall z-scores before and after AI intervention. **Results:** The initial 24-hour recall had an overall z-score of 4.31 for the first meal plan, which improved to 0.69 after AI optimization. The second pair showed a z-score reduction from 2.01 to 1.63. The third pair enhanced from 3.05 to 1.40, the fourth from 3.15 to 1.19, and the fifth from 2.15 to 1.48. The paired t-test analysis revealed a statistically significant difference between the z-scores of the initial and AI-optimized meal plans ($p = 0.0444$). **Conclusions:** The findings indicate that AI can significantly improve the nutritional quality of students' meal plans, demonstrating its potential as an effective tool for enhancing student nutrition. Future studies involving larger sample sizes and diverse demographic groups are recommended to validate these findings further.

**Keywords:** meal plans, students, web platform, nutrition, artificial intelligence

# OBSTETRICS AND GYNECOLOGY

## CAN LOW FETAL FRACTION PREDICT GESTATIONAL DIABETES MELLITUS?

Mihai Muntean[1]

[1]Department of Gynecology II, UMFST G.E. Palade Târgu Mureș

**Background:** In recent years, low concentrations of cell-free DNA (cfDNA) in the maternal blood flow during fetal aneuploidy screening tests in the first trimester of pregnancy have been associated with several pregnancy-related complications. The study investigates the association between low cfDNA at 11-13 weeks of pregnancy and gestational diabetes mellitus (GDM). **Material and methods:** We performed a prospective study from 01.02.2022 to 31.07.2024 in the Obstetrics and Gynecology Clinic of the Mureș County Clinical Hospital. Based on the availability of cfDNA results, 114 patients were included in the study. After the glucose tolerance test results, we divided the group into 80 control patients and 34 patients with gestational diabetes. These groups were divided into low (<4%) and standard cfDNA fractions (⩾4%)**Results:** We didn't find significant differences between the pre-pregnancy BMI of GDM and control patients with low concentrations of cfDNA (p=0.12). There was also no significant association between low fetal fraction at first-trimester screening for fetal aneuploidy and GDM (p=0.12). The small and disproportionate groups limited the study. **Conclusions:** A low fetal fraction of cfDNA was not associated with GDM in our cohort.

**Keywords:** pregnancy, cell-free DNA, gestational diabetes mellitus

## THE IMPACT ON MORBIDITY AND MORTALITY RATES ASSOCIATED TO UTERINE RUPTURES IN 36 HOSPITALS FROM SUB-SAHARAN AFRICA

Andrada-Ioana Crisan[1], Lucian Puscasiu[1]

[1]Department of Gynecology I, UMFST G.E. Palade Târgu Mureș

**Background:** Obstetric complications that lead to severe outcomes are still at an increased rate, especially in underdeveloped countries that lack proper access to both prenatal and perinatal care. Uterine ruptures represent major life-threatening events that consist of a tear in the uterine wall; they are usually preceded by the pre-rupture syndrome characterized by specific signs and symptoms. Without emergent intervention, most cases are fatal. Known risk factors worldwide include previous uterine scar and the aggressive use of uterotonic drugs. However, these do not apply in Sub-Saharan environment where the leading causes of uterine ruptures are multiparity, obstructed and neglected labor and undiagnosed malpresentations. **Material and methods:** AUDOBEM Trial ("Audits of Obstetric Emergencies") was a pre-registered Clinical Trial financed by the European Union with over 3 million euros. It was a randomized cluster-controlled trial that included 36 hospitals from Benin (15), Burkina Faso (15) and Niger (6). Analysis was based on data collected during the 18 months evaluation period. The present study aims to assess the impact of uterine ruptures. **Results:** The total number of births recorded was 133204. The overall C-section rate was 2.91%. The incidence of uterine ruptures was 0.93%. Uterine rupture has been associated with higher parity (of at least 2), the majority being recorded in the over 4 or more category. The overall maternal death rate was 0.11% in association to uterine ruptures. 9% of cases with ruptured uterus were fatal. Fetal mortality rate was 18.7% in pre-rupture syndrome and 76.8% in uterine ruptures. In case pre-rupture syndrome was diagnosed, 92.2% underwent delivery through c-section. Uterine ruptures required laparotomy with suture in 77.5% of cases, and hysterectomy in 16.1% cases. **Conclusions:** Maternal and neonatal mortality and morbidity associated to uterine ruptures is much higher compared to developed countries. Further improvement and access to universal standardized healthcare might be a solution.

**Keywords:** uterine ruptures, sub-saharan africa, mortality, morbidity, pre-rupture syndrome

# ONCOLOGY

## THE IMPORTANCE OF THE SYSTEMIC INFLAMMATORY SYNDROME AS A PROGNOSTIC FACTOR IN PATIENTS WITH ADVANCED LUNG CANCER

Corina Florica Ionita[1], Ioana Iulia Cojocaru[1], Andrei Manea[1], Bogdan Andrei Suciu[1]

[1]Department of Anatomy, UMFST G.E. Palade Târgu Mureș

**Background:** Lung cancer is currently the main cause of cancer death, many patients been diagnosed in advanced stages. The aim of this paper is to study the systemic inflammatory syndrome as a prognostic factor in patients with inoperable lung cancer. **Material and methods:** We performed a retrospective observational study. The study included 110 patients, diagnosed with advanced stages of lung cancer between 2022-2023 in the oncologic department of Topmed Hospital. In all patients we calculated NLR (neutrophil to lymphocyte ratio), LMR (lymphocyte to monocite ratio), PLR (platelet to lymphocyte ratio), SIRI (systemic inflammation response index) and SII (systemic immune inflammation index) at the beginning and at the end of the oncological treatment. We compared the distribution between NLR, LMR, PLR, SIRI and SII at the beginning of the treatment and at the end of it, for all the cancer types. **Results:** More than half of the patients are still alive at 2 years after the beginning of the treatment (73 patients -66.4%). We observed a difference between the initial NLR and final NLR using the Wilcoxon test ($p = 0.022$), the end values being higher than the initial values. There were no differences between the other variables at the beginning of treatment and at the end of it. In the case of initial LMR ratio we obtained a value of $p = 0.010$. **Conclusions:** The study of the systemic inflammatory syndrome may have prognostic significance in lung cancer patients in advanced stages of the disease.

**Keywords:** lung cancer, inflammation, prognosis

# PATHOLOGY

## EXPRESSION OF PROGNOSTIC MARKER VISTA IN CUTANEOUS AND OCULAR MELANOMA

Andreea-Cătălina Tinca[1], Ovidiu Simion Cotoi[1]

[1]Department of Pathophysiology, UMFST G.E. Palade Târgu Mureş

**Background:** VISTA (V-domain Ig suppressor of T cell activation) is a homolog of PD-L1. This novel marker is expressed in myeloid lineage cells and T lymphocytes. Positive expression is pathophysiologically correlated with the suppression of the immune response and a poor prognosis. **Material and methods:** The present study aimed to analyze the marker's immunohistochemical stain and correlate it with important prognostic factors in 105 cases (92 of cutaneous melanoma and 12 of ocular melanoma). To quantify the expression of this marker, we used an adapted score called H-Score, which was analyzed in the positive cells. **Results:** We identified positive reactions in 65 cutaneous and 8 ocular melanomas. These patients showed statistically significant associations with an increased Breslow index, advanced tumor stages, high number of mitoses, and Ki-67 proliferation index. Additionally, patients with a high H score more frequently exhibited epithelial ulceration, older age, and a high number of macrophages and lymphocytes in the peritumoral and intratumoral stroma. **Conclusions:** Positive expression of VISTA is associated with advanced clinical and pathological stages in patients with cutaneous and ocular melanoma, making it a valuable prognostic marker. Further studies are required for the analysis of the tumor microenvironment to provide better outcomes for the patients.

**Keywords:** melanoma, prognostic, vista

## ARE INTERSTITIAL FIBROSIS AND THE QUILTY EFFECT INVOLVED IN CARDIAC ALLOGRAFT REJECTION?

Anca Otilia Farcas[1], Gabriel Serac[2], Ciprian Mihai Stoica[3], Toader Septimiu Voidazan[4], Anca-Ileana Sin[1]

[1]Department of Cell Biology, UMFST G.E. Palade Târgu Mureș
[2]Department of Anatomy, UMFST G.E. Palade Târgu Mureș
[3]Department of Internal Medicine IV, UMFST G.E. Palade Târgu Mureș
[4]Department of Epidemiology, UMFST G.E. Palade Târgu Mureș

**Background:** Endomyocardial biopsy represent the "gold standard" diagnostic procedure for monitoring rejection in heart transplanted patients. This study aims to analyze the histopathological features of EMBs and explore possible correlations between histopathological changes—such as fibrosis, vasculitis, Quilty effect, and myocyte damage—and episodes of acute rejection. **Material and methods:** This retrospective study included 200 EMBs from 65 patients who received heart transplants at the Emergency Institute for Cardiovascular Diseases and Transplantation in Targu Mures between 2012 and 2024. Histopathological features, including fibrosis and Q.E. were evaluated microscopically to assess correlations with rejection episodes. **Results:** The mean age of patients was 38.18 years (SD 15.67), with 76.5% of biopsies from males, the fewest biopsies being recorded in the 61-70 age group, 7.9%. Among acute cellular rejection (ACR) cases, 5,71% (2/35 biopsies) were ISHLT 3R, both cases being registred in the 41-50 age group. Women were more frequent affected by antibody-mediated rejection (AMR) - 23.4% compared to men - 8.5%. Among the 27 biopsies that showed mild ACR, 15 were associated with fine frames of fibrosis (score 1), among the 6 cases of moderate rejection, 3 cases were associated with fibrosis score 1. 86.7% (39 cases) with fibrosis score 3 and 71.4% (15 cases) with fibrosis score 2 were recorded in men, compared to 28.6% (6 cases) with fibrosis score 2 in women ($p = 0.013$). The Q.E. appeared in 13% of biopsies and was observed in 3-4 successive biopsies in some cases. 10 of 17 cases of ISHLT 1R, were associated with Q.E., also this being identified in 2of 4 cases with ISHLT 2R ($p=0.001$). **Conclusions:** Fibrosis was morefrequently observed in men and in old patients In addition to histopathological changes specific to acute rejection, otherabnormalities, such as Q.E. appear to be closely associated with rejection. Further extensive studies are needed to confirm thesefindings.

**Keywords:** heart transplant rejection, endomyocardial biopsy (EMB), histopathology, acute cellular rejection (ACR), antibody mediated rejection (AMR)

## HISTOPATHOLOGICAL INSIGHTS INTO BLADDER CANCER SUBTYPES

Andrada Raicea[1], Maria-Cătălina Popelea[1], Andrada-Claudia Tătar[1], Andrada Loghin[1], Călin Chibelean[2], Angela Borda[1]

[1]Department of Histology, UMFST G.E. Palade Târgu Mureș
[2]Department of Urology, UMFST G.E. Palade Târgu Mureș

**Background:** Invasive urothelial carcinoma (UC) is characterized by a wide range of morphological variations. UC is usually found as a pure, conventional carcinoma or can be associated with different histological subtypes and divergent morphological features. Most of these subtypes are characterized by aggressive behavior and require a specific therapeutic approach. **Material and methods:** A 58-year-old male patient, initially diagnosed four years ago with a low-grade papillary urothelial carcinoma, returned to the Urology Department for a routine follow-up. Cystoscopy revealed a recurrent tumor, and transurethral resection of the bladder (TUR-B) was initiated. However, due to significant intraoperative bleeding, a partial cystectomy was performed. The resected specimen was sent to the Pathology Department for histopathological diagnosis. **Results:** At microscopy a high-grade papillary urothelial carcinoma was identified, associated with an extensive infiltrative component (conventional urothelial carcinoma). Moreover, different divergent differentiation and histological subtypes were also observed: clusters and sheets of various sizes, composed of pleomorphic tumoral cells, surrounded by a desmoplastic stroma, with areas exhibiting gland-like structures(glandular differentiation), lipoblast-like cells containing one or more cytoplasmic vacuoles with peripherally located nuclei ("lipid-rich" areas), small nests and micropapillary structures without fibrovascular cores, surrounded by lacunae that mimic vascularinvasion (micropapillary areas) and abnormal, pleomorphic giant tumor cells with bizarre morphology (giant cell areas). The finaldiagnosis was muscle-invasive high-grade urothelial carcinoma conventional type with glandular, "lipid-rich", micropapillary, andgiant cell differentiation. **Conclusions:** Recognizing specific subtypes of urothelial carcinoma is crucial given their aggressive natureand a poorer prognosis. Any component must be identified and documented, as close monitoring and appropriate treatment areessential for patient management.

**Keywords:** invasive urothelial carcinoma, subtypes, high-grade papillary urothelial carcinoma, prognostic

## SMALL CELL NEUROENDOCRINE CARCINOMA OF THE BLADDER – A 5-YEAR STUDY

Andrada-Claudia Tătar[1], Andrada Raicea[1], Maria-Cătălina Popelea[1], Andrada Loghin[1], Angela Borda[1]

[1]Department of Histology, UMFST G.E. Palade Târgu Mureș

**Background:** Small cell neuroendocrine carcinoma (SCNC) is a rare entity, accounting for less than 1% of all bladder malignancies. It is associated with an aggressive profile and poor prognosis, with most cases being diagnosed at an advanced stage. **Material and methods:** We present a series of SCNC cases diagnosed over a period of 5 years (2019-2024) at the Pathology Department of the County Clinical Hospital of Târgu Mureș, Romania. From a total of 1090 bladder malignancies, five cases were SCNC, detected by transurethral resection of the bladder. **Results:** On microscopy, the tumours were muscle invasive, composed of cells arranged in large sheets or trabeculae. The cells were small to medium in size, with scant cytoplasm and round to oval nuclei with "salt and pepper" chromatin, high N/C ratio and nuclear molding. The tumours were mitotically active, with a high Ki-67 index. Small or large areas of necrosis were present. No component of conventional urothelial carcinoma or carcinoma in situ was noticed. The cells expressed CD56 and were negative for GATA3 and LCA. In four cases Synaptophysin and Chromogranin A were also positive. In one case, a characteristic "dot-like" perinuclear Cytokeratin AE1/AE3 was noticed. **Conclusions:** Although the classic small cell morphology is the best diagnostic criteria for SCNC, clinical data and immunohistochemistry are mandatory to rule out other tumours with resembling morphology, such as lymphoma, high□grade poorly differentiated urothelial carcinoma or metastatic SCNC. Due to its aggressive behaviour, any small cell component should be recognized and must be reported.

**Keywords:** small cell neuroendocrine carcinoma, rare entity, bladder malignancies

# IN VITRO STUDY ON THE EFFECTS OF MICRO-FRAGMENTED ADIPOSE TISSUE ON GLIOBLASTOMA PROLIFERATION

Alex Salagean[1], Adela Nechifor-Boila[1], Mark Slevin[2]

[1]Department of Histology, UMFST G.E. Palade Târgu Mureș
[2]other, UMFST G.E. Palade Târgu Mureș

**Background:** Mesenchymal stromal cells (MSCs) are non-hematopoietic, pluripotent stem cells with self-renewal capacity. They are found in the stroma of many, if not all, human organs and tissues. Numerous preclinical and clinical studies have evaluated their effectiveness. MSCs are now recognized for their varied physiological roles, including maintaining tissue homeostasis, promoting regeneration, and exhibiting immunomodulatory properties suitable for therapeutic applications. Microfragmented adipose tissue (MFAT) and its devitalized equivalent (D-MFAT) are biological matrices known for their high MSC content. Recent studies have increasingly highlighted the potential of these biomaterials (MFAT/D-MFAT) in cancer therapies. This study aimed to investigate the antiproliferative and tumor growth-inhibitory effects of D-MFAT in vitro using cell cultures. **Material and methods:** Two series of in vitro experiments were conducted using U-87 MG glioblastoma tumor cell lines (Uppsala 87 Malignant Glioma, ATCC, LGC). The first experiment assessed the antiproliferative effects of D-MFAT-CM-24 (culture medium collected after 24 hours) and D-MFAT-CM-72 (collected after 72 hours) on U-87 MG cultures. The second experiment evaluated the direct effect of D-MFAT on tumor cell cultures using "trans-well" inserts. Cell counts were performed at the end of each incubation period. **Results:** Cell counts revealed the most potent inhibitory effect of D-MFAT-CM-24 at 125 µl, while D-MFAT-CM-72 showed the strongest antiproliferative effect at 62 µl. The second experiment indicated the lowest tumor cell count when 100 µl of D-MFAT was used in co-culture. **Conclusions:** Our study demonstrated the antiproliferative and tumor growth-inhibitory effects of D-MFAT on U-87 MG glioblastoma cells in vitro. Both D-MFAT-CM (24/72) and direct D-MFAT co-culture showed significant effects. D-MFAT-CM-24 exhibited stronger antiproliferative activity than CM-72, suggesting that antiproliferative cytokines are primarily released during the initial 24-hour incubation, after which they may be metabolized, reducing their effectiveness.

**Keywords:** Mesenchymal stromal cells, Devitalized microfragmented adipose tissue, Cell culture, Glioblastoma, Biomaterials

# PEDIATRIC NEPHROLOGY

## IS FUNCTIONAL MAGNETIC STIMULATION A THERAPEUTIC ALTERNATIVE IN THE MANAGEMENT OF LUTS IN NEUROLOGICALLY NORMAL CHILDREN ?

Edva Anna Frunda[1], Andras Kiss[2], Orsolya Martha[3], Carmen Muntean[1]

[1]Department of Pediatrics I, UMFST G.E. Palade Târgu Mureş
[2]other, other
[3]Department of Urology, UMFST G.E. Palade Târgu Mureş

**Background:** LUTS in children include overactive bladder, voiding postponement, hypoactive bladder, enuresis, incontinence of different types. The first line treatment is urotherapy, a combination of behavioral changes and restricted diet. The next step is biofeedback, different alternative modalities such as:anticholinergics, alfablocants, beta3agonists and neuromodulation. In recent years FMS has emerged as an effective treatment method for pelvic floor rehabilitation,and urinary incontinence. **Material and methods:** This retrospective study, processed of 32 children with LUTS, treated with urotherapy(13 patients) and 19 children with urotherapy and Magneto Stym device, using the special FMS technology -(applicator built in the seat of the chair and in the back of the chair). The pulsed magnetic field generated by the device causes the muscles of the pelvic floor to contract without the need for any electrodes. **Results:** From total of 32 children, 13 patients, aged 7-15y(6,69y), mainly girls were treated with UT, in the rest of 19 children, aged 7-17y(13,57y) FMS was associated to UT. After 8 sessions(20 min, 35 MHz, every second day), PLUTSS (Pediatric Lower Urinary Tract Symptome Score) questionnaire, ultrasound control, micturition diary for 3 days and uroflowmetry were performed. In case of good results a total of 12 sessions were performed, continued, 2 sessions weekly for a total of 3 month. Indication for UT and EMS: DSD(2 cases), enuresis nocturna (3patients), meningomyelocele op.(1girl), OAB dry (3cases), OAB wet (4 girls), hyperactive detrusor with VUR reflux (2 cases), Asperger syndrome (2 cases), ADHD (1boy), stress UI (1girl). **Conclusions:** FMS associated with urotherapy proved to be an effective alternative to treat LUTS in children, mainly in cases refractory to urotherapy.Magnetic fields are less painful than electrical stimulation, allow deep penetration into heterogeneous biological tissue and do not require skin contact, the patient learns how to properly perform exercises that strengthen the muscles.

**Keywords:** functional magnetic stimulation FMS, urotherapy, LUTS, uroflowmetry

# PEDIATRICS

## NEUTROPHIL TO LYMPHOCYTE RATIO AND PLATELET TO LYMPHOCYTE RATIO IN YOUNG CHILDREN WITH URINARY TRACT INFECTION

Iulia Cozea[1], Cristina Oana Marginean[1], Carmen Muntean[1]

[1]Department of Pediatrics I, UMFST G.E. Palade Târgu Mureş

**Background:** Urinary tract infection (UTI) is a common bacterial infection that causes an inflammatory response and can associate severe complications such as renal scars or chronic renal failure, leading to serious morbidity in infants and children. Neutrophil-to-lymphocyte ratio (NLR) and platelet-to-lymphocyte ratio (PLR) are simple, non-invasive, and inexpensive inflammatory markers which have been shown to be strong predictors of inflammation and of unfavorable prognosis in a variety of conditions. The aim of our study was to establish the utility of these biomarkers in UTI in pediatric ages. **Material and methods:** We conducted a transversal study on 316 pediatric patients diagnosed with UTI, aged between 2 weeks and 17 years, including children admitted to the Pediatrics Clinic 1 Târgu Mureş and Nephrology department of Emergency Pediatric Hospital Cluj-Napoca, Romania, between January 2016 - December 2018. **Results:** Out of a total of 316 patients 211 presented febrile UTI. The gender distribution favored girls 1.25:1, in our study we included 176 girls and 140 boys. Approximately 35% of the children presented multidrug resistance (MDR) UTI while 65% where without MDR. Renal malformations where present in 44% of the patients. Children with febrile UTIs are more commonly found to have significantly higher value of NLR than children without febrile UTIs (p=0.0001). We found no significant difference regarding the NLR or PLR between the groups with MDR strains and non-MDR strains (p=0.3759/p=0.6766) and no significant difference regarding the NLR or PLR between the groups with or without renal malformations (p=0.4386/p=0.9536). **Conclusions:** Noninvasive inflammatory markers, such as NLR is an important marker for febrile UTIs in pediatric ages.

**Keywords:** urinary tract infection, inflammatory markers, children

## THE CONTRIBUTION OF GLOBAL LONGITUDINAL STRAIN IN ASSESSMENT OF LEFT VENTRICULAR FUNCTION IN BICUSPID AORTIC VALVE AT CHILDREN

Simina Ghiragosian-Rusu[1], Maria Oana Sasaran[2], Amalia Fagarasan[1]

[1]Department of Pediatrics III, UMFST G.E. Palade Târgu Mureş
[2]Department of Pediatrics I, UMFST G.E. Palade Târgu Mureş

**Background:** Bicuspid aortic valve is a common congenital heart disease that remains difficult to manage in childhood. Left ventricular ejection fraction is the routine method in the assessment of left ventricle systolic function. Currently, left ventricleglobal longitutdinal strain is accepted as a more sensitive measurement that allows quantitavie assessment of global and segmental venticular function by determining myocardial deformation. **Material and methods:** A prospective study was conducted from January 10, 2023 to January 10, 2024, in a tertiary pediatric cardiology referral center enrolling children aged 6 to 17 years with aortic bicuspid presenting for periodic evaluation and a group control (matched for anthropometric data). Primary Objective: To analyze the degree of global and segmental left ventricular dysfunction in children with bicuspid aortic valve compared to a control group. **Results:** These data represent preliminary results of a study funded by the University of Medicine, Pharmacy, Science and Technology "George Emil Palade" of Târgu Mureş Research, grant number 163/1/10.01.2023. 73 patients were included in BAV group and 55 patients in group control. Bicuspid aortic valve was more common among male patients (78%). When comparing bicuspid aortic valve group and control group, strong correlations were found for global longitudinal strain from apical four chamber view (p: 0,022) and segmental strain. The mean value for global longitudinal strain in bicuspid aorta valve was -20,49% comparing with control group -21,25%. **Conclusions:** Impaired of left ventricular global longitudinal strain in bicuspid aorticvalve at children with preserved left ventricle ejection fraction is not infrequently and was independently associated with increasedrisk of events.

**Keywords:** bicuspid aortic valve, global longitudinal strain, prognosis

## INTRAABDOMINAL SYNOVIAL SARCOMA IN AN ADOLESCENT GIRL. CASE REPORT

Ema Morariu[1], Mihaela Chincesan[1], Carmen Muntean[1], Emoke Horvath[2], Cristina Oana Marginean[1]

[1]Department of Pediatrics I, UMFST G.E. Palade Târgu Mureş
[2]Department of Pathology, UMFST G.E. Palade Târgu Mureş

**Background:** Synovial sarcoma is a connective tissue tumor that most frequently localizes close to the large joints. The incidence of sarcoma is rare at 15-19 years (0.3 cases/100,000 people), and much lower in the case of atypical locations. **Material and methods:** We report the case of a 16-year-old female patient, diagnosed with stage I, III-degree biphasic intraabdominal synovial sarcoma for highlighting the burden of the diagnosis and management of this disease in children. **Results:** The patient's history revealed intermittent pain in the left renal fossa from 2 months ago, being sharper in the last few days, significant weight loss, and the presence of a tumoral formation in the left abdominal flank. The abdominal ultrasound revealed a hyperechoic, inhomogeneous formation of 3.3/2.6 cm with a Doppler signal, in the left abdominal flank, which was confirmed to be located between the internal and external oblique muscles on the left side by abdominal CT examination. Surgical excision of the tumor is performed, and the histopathological examination confirms the diagnosis of III-grade biphasic synovial abdominal sarcoma. We found no evidence of infectious disease, so we initiated treatment according to the CWS 2009 protocol, completing all nine cycles of chemotherapy with favorable evolution. **Conclusions:** This condition requires a close partnership between the physician and the family. Because it is a tricky diagnosis, the differential diagnosis is complex, and correct disease management is necessary.

**Keywords:** synovial sarcoma, intraabdominal tumor, rare tumor, chemotherapy

# SMALL INTESTINAL BACTERIAL OVERGROWTH AND THE CYTOKINE IMBALANCE IN CHILDHOOD OBESITY: A NEW FRONTIER

Ana-Maria-Roxana Koller[1], Maria Oana Sasaran[1], Cristina Oana Marginean[1]

[1]Department of Pediatrics I, UMFST G.E. Palade Târgu Mureș

**Background:** Childhood obesity is a global health concern linked to chronic low-grade inflammation and metabolic disorders. Recent research suggests that small intestinal bacterial overgrowth (SIBO) may contribute to this complex interplay. This review explores the association between SIBO, childhood obesity, and microinflammation, with a focus on gut-centric mechanisms.
**Material and methods:** SIBO, characterized by excessive bacterial proliferation in the small intestine, disrupts intestinal barrier integrity and nutrient metabolism, promoting systemic endotoxemia and inflammation. Gut dysbiosis associated with SIBO may influence adiposity by enhancing energy harvest, altering hormonal regulation, and triggering pro-inflammatory cytokine release. Key mediators, interferon-gamma (IFN-) and interleukin-10 (IL-10), are central to this inflammatory response.**Results:** IFN- exacerbates systemic inflammation and adipose tissue dysfunction, contributing to insulin resistance. Conversely, IL-10 plays a protective role by suppressing pro-inflammatory cytokines and maintaining immune balance. Dysregulated levels of these cytokines, driven by SIBO-related dysbiosis, may amplify the inflammatory environment linked to childhood obesity. In pediatric populations, these mechanisms may worsen obesity-related metabolic dysfunction and increase the risk of long-term complications.
**Conclusions:** Interventions targeting SIBO, such as dietary changes, prebiotics, probiotics, and antibiotics, show promise in reducing obesity and its inflammatory impacts. A gut-focused approach, incorporating diagnostic tools like breath tests and stool microbiome analysis, may identify SIBO as a therapeutic target. Addressing SIBO and restoring IL-10 and IFN- balance could represent a novel strategy for managing childhood obesity and its metabolic consequences.

**Keywords:** Childhood obesity, Small intestinal bacterial overgrowth (SIBO), Gut dysbiosis, Inflammation, Cytokine imbalance

# VITAMIN D DEFICIENCY IN MATERNAL AND OFFSPRING VULNERABLE ROMA POPULATIONS: A CROSS-SECTIONAL STUDY

Andreea-Bianca Stoica[1], Maria Oana Săsăran[2], Laura Mihaela Suciu[3], Adina Huțanu[4], Claudiu Mărginean[5]

[1]Doctoral School, UMFST G.E. Palade Târgu Mureș
[2]Department of Pediatrics III, UMFST G.E. Palade Târgu Mureș
[3]Department of Pediatrics IV, UMFST G.E. Palade Târgu Mureș
[4]Department of Clinical Laboratory, UMFST G.E. Palade Târgu Mureș
[5]Department of Gynecology II, UMFST G.E. Palade Târgu Mureș

**Background:** The Roma community faces significant socioeconomic challenges, marked by limited access to education, healthcare, and social services. Although they are at an increased risk for various health issues, there is a scarcity of comprehensive data on health outcomes within this population, including vitamin D deficiency. This study aimed to assess the prevalence of vitamin D deficiency and examine its effects on the anthropometric measurements of newborns among Roma mothers and their infants in Romania. **Material and methods:** This study includes preliminary data from a larger study involving 90 Roma mothers and their newborns. Data collection focused on measuring vitamin D levels in both the mothers and newborns at birth. Additionally, we recorded key neonatal anthropometric parameters such as birth weight, length, and head circumference. Socioeconomic variables were evaluated, encompassing education level, employment status, household income, and living conditions. Factors influencing vitamin D status, including sun exposure, use of sunscreen, fish consumption, and skin type, were also taken into consideration. **Results:** The majority of mothers and nearly all newborns exhibited vitamin D deficiency, with 25-hydroxyvitamin D levels measuring below 20 ng/ml. A significant correlation was observed between maternal and neonatal vitamin D levels; however, this relationship did not extend to neonatal anthropometric measures, such as birth weight and length. Most participants in the study were found to have a low socio-economic status, characterized by significant challenges related to education, employment andliving conditions. **Conclusions:** Vitamin D deficiency represents a major public health concern among Roma women and theirnewborns, potentially exacerbated by the socioeconomic hardships faced by this at-risk population.

**Keywords:** Vitamin D deficiency, Roma, newborn, maternal health, socioeconomic factors

# PHARMACY

## DEVELOPMENT AND VALIDATION OF A STABILITY-INDICATING HPLC-UV METHOD FOR SIMULTANEUOUS DETERMINATION AND QUANTIFICATION OF BISOPROLOL AND ITS IMPURITIES IN PEDIATRIC SUSPENSION

Carmen-Maria Jîtcă[1], Lenard Farczadi[1], Silvia Imre[1]

[1]Department of Analytical Chemistry and Drug Analysis, UMFST G.E. Palade Târgu Mureș

**Background:** The lack of approved medication in pediatric cardiology represents both a challenge and an opportunity for developing safe and effective pediatric formulations. Currently, there are several practices in hospital pharmacies that cover the administration of medication for infants and children, however, routine preparation of pediatric formulations requires dose uniformity and validated methods of quality control. In this sense, a proper stability-indicating (quality control) method is proposed for bisoprolol (BSP) and its impurity (impurity L), from pediatric suspension, BSP being routinely used in the treatment of several cardiovascular diseases in infants and children. **Material and methods:** The method was an improved one based on the United States Pharmacopoeia (USP) monography for Bisoprolol and a forced degradation study. The separation was achieved on a Phenomenex Luna LC-8 chromatographic column (150 x 4.6 mm, 3 µm) using as mobile phase a mixture of water and acetonitrile (65:35 v/v), at a flow rate of 1 mL/min and an injection volume of 10 µL. The eluted compounds were detected at 273 nm. The method was applied on an in-house prepared pediatric suspension of BSP 60 µg/mL. **Results:** The method presents a good linearity in the range of 30-90 µg/mL for BSP and 5-50 µg/mL for impurity L. The selectivity was demonstrated towards the excipients used in suspension, having no interference with the main peaks of interest at LLOQ for BSP and its impurity. Intra- and inter-day precision and accuracy were found to be within acceptable limits and BSP shows good stability under forced degradation conditions. Sample recovery ranged within 80-86%, which indicates slight difficulty in achieving dose uniformity. **Conclusions:** The present method can be applied for the determination and quantification of BSP in stability studies of pediatric suspensions.This research was funded by George Emil Palade University of Medicine, Pharmacy, Science, and Technology of Targu Mures, grant number 164/24/10.01.2023.

**Keywords:** off-label, pediatrics, bisoprolol

# PNEUMOLOGY

## COMPARATIVE EFFICACY OF BENRALIZUMAB AND DUPILUMAB IN THE MANAGEMENT OF SEVERE EOSINOPHILIC ASTHMA

Nimród László[1], Cristina-Alexandra Man[1], Corina Marginean[1], Gabriela Jimborean[1]

[1]Department of Pulmonology, UMFST G.E. Palade Târgu Mureș

**Background:** Severe eosinophilic asthma (SEA) presents challenges in treatment, with persistent symptoms and frequent exacerbations. This study compares the efficacy of two biologic treatments, Benralizumab and Dupilumab, among SEA patients at Mureș County Clinical Hospital. **Material and methods:** A prospective observational study included 30 SEA patients: 23 treated with Benralizumab and 7 with Dupilumab. Benralizumab was administered at 30 mg with an initial three doses every four weeks, followed by maintenance every eight weeks. Dupilumab was given bi-weekly. Primary outcomes, including reductions in eosinophil counts, pulmonary function improvements, and quality of life enhancements, were evaluated over three years **Results:** Both treatments significantly reduced eosinophil counts ($p=0.001$) and improved pulmonary function, with similar increases in forced vital capacity (FVC) and Tiffeneau-Pinelli index across groups ($p<0.001$). Quality of life scores showed marked improvement for both treatments ($p<0.001$), though patients on Dupilumab reported slightly better control of daily symptoms. **Conclusions:** Both Benralizumab and Dupilumab are effective in reducing exacerbations and enhancing life quality in SEA patients, with comparable efficacy.

**Keywords:** Benralizumab, Dupiluma, biologic therapy, Severe eosinophilic asthma

## ADVANCES IN EXOSOME-DERIVED MIRNA PROFILING FOR LUNG CANCER: METHODS, CHALLENGES, AND BIOMARKER POTENTIAL

Dragos Hutanu[1], Gabriela Jimborean[1]

[1]Department of Pulmonology, UMFST G.E. Palade Târgu Mureș

**Background:** Lung cancer remains one of the most deadly cancers worldwide, underscoring the urgent need for early, accurate, and minimally invasive biomarkers. MicroRNAs (miRNAs), encapsulated within exosomes—small extracellular vesicles released by various cell types—offer significant potential as biomarkers due to their stability and role in tumorigenesis. This review aimed to examine the methods for exosome isolation, miRNAs extraction and profiling, and diagnostic and prognostic relevance assesment in lung cancer. Exosomal miRNAs have emerged as promising biomarkers, reflecting cellular conditions and holding potential in non-invasive cancer diagnosis and monitoring. However, challenges remain in standardizing methods for isolation, profiling, and clinical application. **Material and methods:** This review explored various exosome isolation techniques, including ultracentrifugation, polymer-based precipitation, and microfluidics. We also evaluated miRNA extraction and profiling methodologies, such as quantitative PCR, microarray analysis, and next-generation sequencing, to determine their effectiveness and limitations in the context of lung cancer. **Results:** Specific exosomal miRNAs, such as miR-21, miR-126, and miR-155, are strongly linked with lung cancer progression, prognosis, and treatment response. miRNA panels derived from exosomes also show potential in distinguishing lung cancer patients from healthy individuals and differentiating cancer subtypes, like NSCLC versus SCLC. Different isolation and profiling techniques, including ultracentrifugation, size-exclusion chromatography, and microfluidics, impact miRNA yield and purity, affecting diagnostic accuracy. Standardizing these methods is essential for validating exosomal miRNAs as reliable biomarkers in clinical settings. **Conclusions:** The findings highlight the potential of exosomal miRNAs as biomarkers in lung cancer, with advancements in isolation and profiling techniques enhancing their clinical relevance. Further research is essential to address standardization and validation challenges to realize the full potential of exosomal miRNA biomarkers in personalized cancer care.

**Keywords:** lung cancer, exosomes, miRNA

## THE ROLE OF INFLAMMATORY CYTOKINES AND CHEMOKINES IN THE ASSOCIATION BETWEEN LUNG CANCER AND COVID-19

Szabolcs-Attila László[1], Gabriela Jimborean[1]

[1]Department of Pulmonology, UMFST G.E. Palade Târgu Mureș

**Background:** The emergence of COVID-19 has posed significant challenges, especially for patients with lung cancer, a group that presents a particularly high susceptibility to severe outcomes. This susceptibility is partly due to shared inflammatory pathways between these conditions, mediated by specific cytokines and chemokines, including IL-6, IL-1, TNF-, IL-8 (CXCL8), IL-17 (IL-17A), CCL2, and CXCL9 (MIG). **Material and methods:** We reviewed literature examining the involvement of these inflammatory markers in COVID-19 and lung cancer comorbidity. Key studies highlighted the elevated presence and role of these cytokines in exacerbating clinical outcomes and contributing to cytokine storms. **Results:** The analysis indicates that IL-6 is frequently elevated in lung cancer and COVID-19, often correlating with inflammatory severity and poor prognosis. IL-1 enhances tumor progression and intensifies SARS-CoV-2 inflammation, while IL-8 and IL-17A are associated with increased angiogenesis and chronic inflammation. High levels of CCL2 and CXCL9 suggest a notable relationship with immune cell infiltration and response alteration in the lungs of affected patients. **Conclusions:** The detailed profiling of IL-6, IL-1, TNF-, IL-8, IL-17, CCL2, and CXCL9 enriches our understanding of their dual roles in driving inflammation and facilitating disease progression in lung cancer amidst COVID-19. Understanding the complex role of these cytokines in lung cancer patients with COVID-19 provides a way to target therapeutic interventions that could mitigate inflammation-related morbidity and mortality in this vulnerable group. Future research is essential to unravel the genetic and immunological connections between lung cancer and COVID-19, ultimately leading to more effective, personalized therapeutic strategies and improved patient care.

**Keywords:** Inflammatory Pathways, Cytokine Dysregulation, SARS-CoV-2 and Tumor Microenvironment, IL-6, IL-1, and TNF- in Comorbidities, Targeted Immunomodulatory Therapies

# PSYCHIATRY

## NEGATIVE AND COGNITIVE SYMPTOMS IN SEVERE MENTAL ILLNESS: IDENTIFICATION AND APPROACH , A LITERATURE REVIEW

Ana Ioana Secelean[1], Andrea Aureliana Muntean (Gergely)[1], Adriana Mihai[1]

[1]Department of Psychiatry, UMFST G.E. Palade Târgu Mureş

**Background:** Negative and cognitive symptoms are the most challenging aspects to address and manage in severe mental illnesses. While positive symptoms are "noisy" and attract attention in psychiatric approaches, the same cannot be said for negative and cognitive symptoms, which remain under-investigated and untreated in current practice. **Material and methods:** I have reviewed 23 articles published in the last five years on Medscape,BMJ, JAMA, using the keywords "negative symptoms," "cognitive symptoms," "approach," "identification", and "functioning" **Results:** In identifying negative symptoms, five key aspects are crucial: alogia, flat affect, anhedonia, avolition, and reduced interest in human interaction. It is important to differentiate these from depressive syndrome, which is dominated by sadness and low energy accompanied by depressive and suicidal thoughts, as opposed to negative syndrome, which is characterized by flat affect, not sadness, and a diminished range of interests rather than depressive ruminations. Cognitive syndrome can be identified by evaluating specific areas such as attention, verbal and visual learning and memory, working memory, cognitive flexibility, processing speed, judgment, reasoning, problem-solving, mathematical calculation, social intelligence, and language. Recent literature recommendations for addressing negative symptoms include physical exercise, team sports, activating behavioral tasks, antidepressants, the use of partial D2/D3 agonists, and, as emerging treatments, glutamate and digital prescriptions. For managing cognitive symptoms, second-generation antipsychotics are recommended as the first-line medication, along with lifestyle changes and the introduction of physical exercises. Emerging treatments include , partial D1 agonists, M1/M4 receptor agonists, NMDA preparations **Conclusions:** The identification and approach to negative and cognitive symptoms have become crucial in addressing severe mental illness, as they impact vocational and social functioning and the quality of life of individuals with severe mental illness.The second conclusion is that recommendations for addressing these aspects include, in addition to psychotropic medication, physical exercises, team sports, training in social and daily living skills, as well as cognitive stimulation and lifestyle changes.

**Keywords:** negative symptoms,, cognitive symptoms, approach, identification, functioning

# KEY METRICS AND BUDGETING IN MENTAL HEALTH CARE SYSTEM: A COST AND RESOURCE STUDY

Andrea Aureliana Muntean (Gergely)[1], Adriana Mihai[1], Ana Ioana Secelean[1]

[1]Department of Psychiatry, UMFST G.E. Palade Târgu Mureş

**Background:** The efficiency and cost optimization, as well as resource allocation in mental health services, are important aspects in developing plans and programs for psychiatric reform. With a focus on key indicators such as bed availability and medical staff distribution, this study aims to improve our understanding of resource utilization and budgetary implications. **Material and methods:** We conducted a comprehensive analysis of national psychiatric bed availability both in specialized psychiatric hospitals and in the psychiatric departments and units of general hospitals. We also evaluated the distribution of medical personnel within mental health services, examining regional disparities. Budget analysis of related expenditures was performed to assess financial resource allocation. **Results:** There are significant variations in psychiatric hospital capacity across regions, with notable disparities in the distribution of medical personnel. Budget allocations did not consistently align with resource needs, indicating potential inefficiencies. The study highlights areas requiring strategic focus to enhance service delivery. **Conclusions:** To optimize mental health care services, a reassessment of resource allocation and budgeting is necessary. By addressing regional inequalities andaligning financial resources with service demands, the efficiency and effectiveness of mental health services can be significantlyimproved.

**Keywords:** Mental Health, Resource Allocation, Inpatient Services, Budget Analysis, Health Care Efficiency

# PUBLIC HEALTH

## THE ROLE OF ADIPOSE TISSUE IN REGULATING SERUM LEVELS OF ADIPONECTIN, LEPTIN, AND THE ADIPONECTIN-TO-LEPTIN RATIO IN APPARENTLY HEALTHY YOUNG ADULTS

Irina Bianca Kosovski[1], Dana Ghiga[2], Cristina-Nicoleta Ciurea[2], Anca Bacârea[2]

[1]Department of Pathophysiology, UMFST G.E. Palade Târgu Mureş

[2], UMFST G.E. Palade Târgu Mureş

**Background:** Adiponectin and leptin are key adipokines involved in metabolic regulation, inflammation, and insulin sensitivity. Excess adipose tissue produces an imbalance in these markers, which plays a major role in cardiovascular and metabolic diseases. This study aims to evaluate the relationship between serum adiponectin, leptin, and the adiponectin-to-leptin-ratio (ALR) with various anthropometric indices in apparently healthy young adults aged 20-35 years. **Material and methods:** In this cross-sectional study, 128 subjects were enrolled and divided into two groups based on body mass index (BMI): normal weight (NW-37) and overweight/obese (OW/OB-91). Serum levels of adiponectin (µg/mL) and leptin (ng/mL) were analyzed, and the ALR was calculated. The following anthropometric indices were assessed: arm, waist, and hip circumference (AC, WC, HC), height (cm), waist-to-hip-ratio (WHR), waist-to-height-ratio (WHtR), total body fat mass (TBFM-kg), and visceral fat (VF). **Results:** In the OW/OB group, adiponectin levels were significantly lower (6.85 vs. 10.25), while leptin levels were significantly higher (5.21 vs. 2.12) compared to the NW group (pConclusions: In conclusion, in apparently healthy young adults, excessive adipose tissue leads to a significant imbalance in serum adipokine levels, promoting chronic subclinical inflammatory syndrome and subsequent cardiometabolic complications.This work was partially supported by the George Emil Palade University of Medicine, Pharmacy, Science, and Technology of Targu Mures, Research Grant No. 510/7/17.01.2022.

**Keywords:** adiponectin, leptin, anthropometric indices, obesity, apparently healthy young adults

# SURGERY

## AI-DRIVEN APPROACHES IN GASTRIC CANCER SURGERY: A COMPREHENSIVE LITERATURE ANALYSIS

Catalin Cosma[1], Marian Botoncea[1], Vlad Butiurca[1], Anca Molnar-Lilea[2], Calin Molnar[1]

[1]Department of Surgery I, UMFST G.E. Palade Târgu Mureș
[2]other, UMFST G.E. Palade Târgu Mureș

**Background:** Precise surgical interventions can influence treatment outcomes and, with the utilization of artificial intelligence (AI) have displayed the potential to enhance screening procedures and treatment choices by assisting surgeons in real-time during operations to make more precise surgical judgments and improving postoperative care. **Material and methods:** A review of studies was conducted that explored how AI is utilized in the treatment stages of gastric cancer care, with a particular emphasis on its involvement in surgical interventions. The research encompassed investigations into the use of AI technology in planning and predictive outcome models during surgeries. The articles were chosen from a span of five years, between 2019 and 2024. **Results:** AI systems have proven to be beneficial, in improving the precision of cancer surgeries. These systems utilize real-time guidance tools during the procedure to accurately pinpoint tumor boundaries and body structures, achieving 95% accuracy levels for both sensitivity and specificity. By employing convolution networks (CNNs), medical images from endoscopies and radiology scans have been analyzed with precision compared to traditional methods, resulting in quicker diagnosis times. Additionally, predictive models developed post-surgery that incorporate body measurements and dietary markers have proven to predict mortality risks over 90 percent of the time in validation groups. Together, these tools enhance the choice of patients for treatment and the creation of treatment plans to achieve the best surgical results possible. **Conclusions:** The adaptation of AI in gastric cancer surgery can be an innovation that ensures precise and personalized treatment for patients. Using AI to diagnose and predict real-time outcomes is beneficial and improves the overall performance of applied surgical procedures and surgeon decision-making. Maximization of AI usage is essential to expand the capabilities by appling data sets and analytical frameworks,

**Keywords:** Artificial Intelligence, Gastric Cancer Surgery, Intraoperative Guidance

# THE PREDICTIVE ROLE OF PROGNOSTIC NUTRITIONAL INDEX (PNI) IN LONG-TERM ALL-CAUSE MORTALITY IN PATIENTS WITH COLORECTAL CANCER

Ioana Iulia Cojocaru[1], Corina Florica Ionita[1], Emil-Marian Arbanasi[2], Bogdan Andrei Suciu[1]

[1]Department of Anatomy, UMFST G.E. Palade Târgu Mureș
[2]Department of Surgery I, UMFST G.E. Palade Târgu Mureș

**Background:** Many studies nowadays are focused on the role that inflammation and nutritional status play in the survival outcome for patients with colorectal cancer. The prognostic nutritional index has emerged as a valuable marker for assessing long-term mortality risk in these patients which integrates albumin levels and lymphocyte counts. **Material and methods:** We've conducted a retrospective study on 166 patients with colorectal cancer that were admitted in The Surgery Clinic 1 in The Emergency County Hospital Targu Mures between 2020 and 2023. **Results:** In the group of deceased patients during the post-operative follow-up period, we observed a higher incidence of tumors located on the rignt colon (12,5% vs 2,38%, p<0,001), of poorly differentiated Adenocarcinoma type tumor (32,5% vs. 0,8%, p<0,001), presence of hepatic metastases (42,5% vs 12,69%, p<0,001), lung metastases (10% vs. 2,38%, p<0,001), presence of peritoneal carcinomatosis (17,5% vs. 2,38%, p<0,001). Furthermore, in thesame group we noticed a lower incidence of patients who benefited who had mechanical anastomosis (35% vs. 67,46%, p<0,001). Additionally, patients who died during the follow-up period, had an increased incidence of ICU admission (10% vs. 1,58%, p=0,013) and also an increased rate of emergency cases (25% vs. 11,9%, p=0,041). Regarding the laboratory data, we observed a lower value of Hemoglobin level (10,51 vs. 12,04, p<0,001), Hematocrit (32,51 vs. 36,21, p<0,001), Albumin level (3,44 vs. 3,96, p<0,001) and PNI (34,47 vs. 39,7, p<0,001). At Kaplan Meier graphic we noticed a higher risk of long-term mortality for patients in the first tertile (T1) compared with second (T2) and third tertile (T3) (for all p<0,001). Moreover, at cox-regression analysis, we identify the higher value of PNI at baseline is associated with lower risk of lon-term mortality (HR: 0,51, p<0,001). **Conclusions:** Higher baseline value of PNI is associated with lower risk of long-term all-cause mortality during follow-up in colorectal cancer patients.

**Keywords:** PNI, Colorectal cancer, Overall survival, mortality, Risk

# REVASCULARIZATION OUTCOMES IN UNILATERAL AORTOILIAC OCCLUSIVEDISEASE: THE ROLE OF EXTRA-ANATOMICAL BYPASS

Constantin Claudiu Ciucanu[1], Alexandra Ioana Asztalos[2], Emil-Marian Arbanasi[2], Eliza-Mihaela Arbanasi[2], Reka Bartus[2], Eliza Russu[2], Adrian Vasile Muresan[2], Traian Vasile Chirila[2]

[1]Vascular Surgery, UMFST G.E. Palade Târgu Mureş

[2]other, UMFST G.E. Palade Târgu Mureş

**Background:** When endovascular revascularization is not viable for aortoiliac occlusive disease (AOD), aorto-femoral bypass (AoFB) is the gold standard for long-term patency rates. For those unsuitable for anatomical revascularization, alternatives include axillo-femoral (AxFB) and femoro-femoral bypass (FFB) procedures. This study presents experiences from a tertiary vascular center, comparing long-term patency rates of aorto-femoral, axillo-femoral, and femoro-femoral grafts. **Material and methods:** This retrospective observational study included 147 patients admitted to the Vascular Surgery Clinic between 2018-2023 with AOD for anatomical or extra-anatomical revascularization. Exclusion criteria comprised active tumoral status, autoimmune diseases, and arterial injury. The follow-up was evaluated through periodic checkups of the patients either by ultrasound control or by computed tomography angiography. **Results:** The anatomical group presented a higher incidence of Stage II Leriche-Fontaine ($p<0.001$) anda lower incidence of Stage IV ($p=0.019$ and $p<0.001$) in comparison to the extra-anatomical group. Additionally, there was a higher incidence of severe femoral artery stenosis among extra-anatomical patients (for all $p<0.05$). The Kaplan-Meier survival curve illustrated a significantly greater incidence of primary patency failure for extra-anatomical bypass relative to AoFB ($p<0.05$). Additionally, there was a significant increase in the incidence of major amputation for AxFB compared to AoFB ($p=0.007$). The Cox regression analysis indicated that AoFB is associated with a reduced risk of primary patency failure (HR:0.44, $p=0.007$) and a lower occurrence of major amputation (HR:0.43, $p=0.013$). This research was funded by George Emil Palade UMFST of Targu Mureş, Romania, grant number 170/2/09.01.2024. **Conclusions:** The anatomical AoFB is the better long-term revascularization option for patients with AOD, as it shows a reduced rate of primary patency failure and major amputations. While the FFB presents a greater risk of primary patency failure than AoFB, our study revealed no significant difference in the risk of major amputations. However, extra-anatomical bypasses exhibit satisfactory medium-term results in postoperative recovery.

**Keywords:** vascular surgery, extra-anatomical bypass, aortoiliac occlusive disease

# UROLOGY

## THE IMPORTANCE OF MAGNETIC RESONANCE IMAGING-TRANSRECTAL ULTRASOUND FUSION TARGETED AND SYSTEMATIC PROSTATE BIOPSY - CASE REPORT

Alexandru Laslo[1], Calin Chibelean[1], Daniel Porav-Hodade[1], Ciprian Todea-Moga[1], Veronica Ghirca[1], Arpad-Oliver Vida[1], Lorand-Tibor Reman[1], Raul Gherasim[1], Orsolya Martha[1]

[1]Department of Urology, UMFST G.E. Palade Târgu Mureș

**Background:** Prostate cancer is a common malignancy in men and a major contributor to elevated mortality rates among male populations worldwide. Multiparametric magnetic resonance imaging of the prostate has become a highly reliable technique for the detection of prostate cancer. The objective of this case report is to highlight the importance of using magnetic resonance imaging-transrectal ultrasound (MRI-TRUS) fusion targeted and systematic prostate biopsy. **Material and methods:** We report the case of a 52 years old male patient with previous systematic prostate biopsy for one lesion classified as PI-RADS 3 in the transition zone of the right prostatic lobe revealed on pelvis MRI scans and PSA level of 4,91 ng/ml with histopathological result of high-grade prostatic intraepithelial neoplasia. MRI-TRUS targeted and systematic prostate biopsy was performed **Results:** Prostate adenocarcinoma was found in histopathological findings, a lesion of 5mm Gleason score 3+4=7 (grade 4: 15%), grade group 2 from targeted biopsy and normal tissue in systematic ones. **Conclusions:** MRI-TRUS fusion provides a precise method for localizing and sampling suspected prostate cancer lesions. Biopsy outcomes using fusion technology demonstrate superior accuracy compared to those obtained with ultrasound-guided techniques alone.

**Keywords:** prostate cancer, multiparametric resonance imaging, targeted biopsy

## STONE-FREE -RATE AFTER EXTRACORPOREAL SHOCKWAVE LITHOTRIPSY (ESWL)

Orsolya Sorlea-Amota[1], Calin Chibelean[1], Daniel Porav-Hodade[1], Orsolya Martha[1]

[1]Department of Urology, UMFST G.E. Palade Târgu Mureș

**Background:** ESWL, introduced in the 1980's, is a noninvasive procedure, it is stiil the standard care for reno-ureteral stones between 1-2cm, functional kidney.SFR definition! The stone-free rate (SFR). Was defined as no stone or stone fragment for stones more than 2 mm in diameter. **Material and methods:** Our retrospective study, included 205 (100%) adults who undervent ESWL for kidney and ureteral stones. Data was collect in Urology Clinic Tg Mures 2023 ianuary-2023 december. **Results:** A total of 205 patients were included, 101(49,27%) were males and 104(50,73%) were females. Overal mean age was between 40-59 years (43years). In case of 50 pacients there was placed ureteric JJ stents before the procedure. The smollest stone diameter in kidney was 0,8 cm and the upper size limit of kidney stones has been lowered to 1,5cm. In ureter the smallest stone diameter was 1,3cm and the upper limit was 2cm. After the first session of ESWL, the stone-free rate (SFR) was 100% for 40% of patients . 44,39% of patients needed between 2-4 sessions of ESWLIn case of 32 patients were treated with other surgical procedures: Percutaneous Nephrolithotomy (PCNL) for 18 patients, Semi-rigid ureteroscopy for 23 patients and open surgery for one patient. **Conclusions:** The results of ESWL depends on the size, localization, composition and clinical context. Also there are limitations with the success rate. Our study proofed, that ESWSl is safe and effective, noninvasive procedure, in the most of cases were resolved with one session .

**Keywords:** ESWL, KIDNEY, URETER, STONE-FREE-RATE-, STONE

# RIGHT LAPAROSCOPIC HEMINEPHRECTOMY IN HORSESHOE KIDNEY – CASE REPORT

Lorand-Tibor Reman[1], Calin Chibelean[1], Daniel Porav-Hodade[1], Ciprian Todea-Moga[1], Arpad-Oliver Vida[1], Veronica Ghirca[1], Alexandru Laslo[1], Raul Gherasim[1]

[1]Department of Urology, UMFST G.E. Palade Târgu Mureş

**Background:** Minimally invasive surgery is used in various benign and malignant urologic pathologies. The laparoscopic approach in patients with horseshoe kidney is a challenge due to anatomic abnormalities, especially aberrant vessels and contralateral functional parenchyma. **Material and methods:** We report a case of right laparoscopic heminephrectomy for a nonfunctioning right moiety in horseshoe kidney. **Results:** A 60-year-old woman has presented with right lumbar pain. The abdominal computed tomography described right ureteropelvic junction obstruction and secondary grade IV hydronephrosis on horseshoe kidney. Four port right laparoscopic heminephrectomy was performed. The total operating time was 190 minutes with minimal loss of blood. The right lumbar drain was removed after 48 hours. She was discharged on postoperative day 7. **Conclusions:** In horseshoe kidney the laparoscopy is a safe and reliable surgical technique. For a successful outcome the anatomic variations neccesitate a special consideration.

**Keywords:** Horseshoe kidney, Heminephrectomy, Laparoscopy

# SCIENCE AND TECHNOLOGY

# BIOENGINEERING

## THE ROLE OF SPECIMEN DIMENSIONS IN BIAXIAL MECHANICAL CHARACTERIZATION OF OVERSTRETCHED PORCINE AORTA

Alexandru Petru Ion[1], Emil-Marian Arbănași[1], Eliza-Mihaela Arbănași[2], Constantin Claudiu Ciucanu[2], Réka Bartus[2], Eliza Russu[2], Toader Septimiu Voidăzan[3], Traian Vasile Chirilă[2], Adrian Vasile Mureșan[2]

[1]Doctoral School of Medicine and Pharmacy, UMFST G.E. Palade Târgu Mureș

[2]other, UMFST G.E. Palade Târgu Mureș

[3]Department of Epidemiology, UMFST G.E. Palade Târgu Mureș

**Background: Background:** Vascular disease affects the biomechanical remodeling of vascular tissue. Two major conditions impacting the aorta are aortic dissection and aneurysm. Recent studies have investigated the aorta's mechanical properties through uniaxial and biaxial testing to characterize its elasticity and rupture characteristics. This study aims to evaluate the influence of specimen dimensions on the mechanical behavior and properties of the porcine aortic wall under overstretching conditions. **Methods:** For the biaxial tests, the target peak force (F-target) for the porcine aortic wall samples was calculated using all the previously mentioned stress values (????-target), the tissue's initial effective edge length (????0), and its undeformed thickness (T0): F-target=????-target*????0*T0. Each specimen was initially sized to 13x13mm and analyzed with 11mm BioRakes, then sectioned at the BioRake attachment point to an 11x11mm specimen for analysis with 8.5mm BioRakes, followed by further sectioning and analysis with 6.5mm and 5mm BioRakes. Utilizing the data obtained from the last cycle, we have determined the biaxial stretch ratio, the anisotropy index, and both the low (Low-YM) and high (High-YM) Young's modulus. This research was funded by George Emil Palade UMFST of Targu Mureș, Romania, grant number 170/2/09.01.2024. **Results:** Concerning the stretch ratio for both axes and the anisotropy index, no differences were observed among the four dimensions of the sample, irrespective of the applied stress. Similarly, no significant statistical differences were recorded for Low-YM across the various mechanical testing settings. However, higher values of High-YM were observed in both axes for the 6.5x6.5mm specimens compared to the others (for all $p<0.05$). Furthermore, at lower stress levels, the presence of background noise was detected on the stress-stretch graphs, which may serve as a source of bias. **Conclusions:** The dimensions of the porcine aortic specimen do not influence the biaxial biomechanical properties assessed under physiological stress. Nevertheless, during overstretching, the smallest specimen exhibited a higher High-YM value than the others.

**Keywords:** Mechanical Characteristics, Bioengineering, Aortic Tissue, Specimen Dimensions, CellScale 5000 Biotester

# OPTIMIZING THE UVA-PHOTOCROSSLINKING PROTOCOL FOR THE IMPROVEMENTOF THE BIOMECHANICAL PROFILE OF TISSUE-ENGINEERED VASCULAR GRAFTS

Emil-Marian Arbănaşi[1], Alexandru Petru Ion[2], Eliza-Mihaela Arbănaşi[2], Constantin Claudiu Ciucanu[2], Réka Bartus[2],Adrian Vasile Mureşan[2], Eliza Russu[2], Toader Septimiu Voidăzan[3], Traian Vasile Chirilă[2]

[1]Vascular Surgery, UMFST G.E. Palade Târgu Mureş

[2]other, UMFST G.E. Palade Târgu Mureş

[3]Department of Epidemiology, UMFST G.E. Palade Târgu Mureş

**Background: Background:** Vascular grafts from porcine, sheep, or cadaver donors can be decellularized for use. However, decellularization can damage the extracellular matrix and reduce biomechanical properties. This study aims to evaluate and refinean effective UVA/R protocol to enhance the biomechanical properties of tissue-engineered vascular grafts (TEVG). **Methods:** Inthis ex vivo investigation, the optimal parameters for the UVA/R crosslinking protocol were determined by analyzing themechanical enhancement of the scaffold through a range of irradiation intensities (10/25/50 mW/cm²) and exposure durations(60/180/300 seconds). Accordingly, a total of 9 groups was established, each comprising 12 specimens measuring 10x10 mmderived from native scaffolds. Irradiation was performed using UV Curing System OmniCure-1500. For the uniaxial mechanicalproperties, we used the CellScale-5000 Biotester. Utilizing the data obtained from the last cycle, we have determined the Cauchystress and Young's modulus. This research was funded by George Emil Palade UMFST of Targu Mureş, Romania, grant number 171/2/09.01.2024. **Results:** We observed an increase in Cauchy stress for 10mW/cm2 intensity at 60 seconds exposure time ($p<0.05$) and 50mW/cm2 intensity at 180 seconds exposure time ($p<0.05$) when specimens were stretched to 25%. Regarding the 50% strain, the results were validated only for the 50mW/cm2-180 seconds settings. Regarding Young's modulus, we registered a higher value following the UVA/R treatment for all exposure times at 50mW/cm2 (for all $p<0.05$) and only at 180 and 300 seconds for 25mW/cm2 intensity (for all $p<0.05$). **Conclusions:** For arterial reconstruction or revascularization, the optimal UVA/R protocol for TEVG entails an intensity of 50 mW/cm² and an exposure duration of 180 seconds. However, to reduce the discrepancy between the native artery and TEVG in the context of arterio-venous fistula grafts for dialysis, it is essential to observe an increase in the strength of the graft while simultaneously ensuring the absence of its stiffening.

**Keywords:** TEVG, Tissue-engineered, UVA/R, Photocrosslinking, Biomechanical Characteristics

# CHEMISTRY ENGINEERING

## LITHIUM EXCESS IN DRINKING WATERS OF A MOUNTAINOUS VILLAGE (SĂCALU DE PĂDURE), A POTENTIAL DETERMINATION FACTOR FOR REMNANT THYROID PATHOLOGY

Maria Melinda Varga[1], Attila Csiszer[2], Reka Barabas[2], Imre Zoltan Kun[3]

[1]Chemistry Engineering , University Babeş Bolyai , Cluj Napoca

[2]other, other

[3]Department of Endocrinology, UMFST Tîrgu Mureş

**Background:** Background: Special attention must be paid to those settlements that do not have a central water supply system, and thus the inhabitants provide their water needs from their wells. Since increased lithium intake can inhibit the function of the thyroid gland, it may play a role in the persistence of goiter and hypothyroidism. **Material and methods:** Material and methods: The lithium concentrations in drinking waters (measured with an inductively coupled plasma mass spectrometer), as well as the urinary iodine excretion (using Sandell-Kolthoff method), were determined at the Regional Center of the National Institute of Public Health, Tg.-Mureş. Other micro- and macroelements were analyzed in the laboratory of the ICIA, Cluj-Napoca, using flame atomic absorption spectrometry. **Results:** Results: We found repeatedly significantly elevated Li concentrations in drinking water in the well waters of Săcalu de Pădure, a village that does not have a central water supply system. The urinary iodine excretion made for 22 inhabitants was between normal values (mean:208+/-67, median:190 ug/L) pleading for a good iodine supply. At the same time, the composition of waters may even be close to that of mineral waters, taking into account their high Li, Ca, and Mg content. This composition could be useful in certain psychiatric disorders, such as manic manifestations (in bipolar manic-depressive syndromes), in reducing the suicidal rate, in Alzheimer's disease, migraine, in other similar states of increased excitement, and even for longevity. **Conclusions:** Conclusions: The high lithium content of drinking waters may play a role in the formation of goiters and hypothyroidism. This may be an important factor responsible for the remnant thyroid pathology in conditions of universal salt iodization, introduced from 2002-2003. At the same time, these waters, even if they do not meet the criteria of lithiniferous mineral waters, can be effective in the treatment of mania, suicidal tendencies, possibly Alzheimer's disease, and migraine.

**Keywords:** lithium, remnant pathology after universal salt iodization, mineral waters, psychiatric use, iodine

# HISTORY

## THE USE OF HISTORY AS A TOOL IN THE INFORMATIONAL WAR OF THE RUSSIAN FEDERATION

Ilie Florin Ceusan[1]

[1]Department of History and Political Sciences, UMFST G.E. Palade Târgu Mureș

**Background:** The Use of History as a Tool in the Informational War of the Russian Federation The Russian Federation uses history as a strategic resource in its informational warfare, making it a central component of its propaganda and disinformation strategy. By manipulating and reconfiguring historical narratives, Russia seeks to consolidate its regime and promote its geopolitical interests. Using case study methodology, critical literature review, and discourse analysis, this paper examines how the Russian Federation instrumentalizes the past to influence public opinion, strengthen internal regime stability, and destabilize international relations. Key techniques include: the reinterpretation of events to bolster the regime's legitimacy; omission of negative historical episodes, such as the Molotov-Ribbentrop Pact; and the promotion of myths surrounding the "Great Victory" in World War II, invoked to glorify Russia's role as Europe's "liberator" and justify the annexation of Crimea through historical reinterpretations invoking "legitimate/historical rights." This strategy produces effects both domestically, where it aims to strengthen public loyalty to the regime by cultivating a mythologized national identity, and internationally, where it seeks to undermine the cohesion and unity of democratic states while influencing populations in former Soviet republics. The response to such propaganda and disinformation must include critical historical education to understand the historical dimensions of Russia's contemporary informational warfare, international cooperation to combat information manipulation, and support for independent media. Keywords: history, informational warfare, propaganda, Russia, disinformation, historical narratives, geopolitics.

**Keywords:** informational warfare, propaganda, disinformation, historical narratives, Russia

# NEW TRENDS IN HUMANITIES

## THE SITUATION OF ROMANIAN LEXICOGRAPHY IN THE SEVENTEENTH CENTURY

Lorena Kaizer-Porumb[1]

[1]Department of Philology, UMFST G.E. Palade Târgu Mureș

**Background:** Romanian lexicography from the beginning of the seventeenth century is characterized by the appearance of the first bilingual dictionaries, in an impressive number, of great extension, with the list of words ordered alphabetically (partially or totally). The lexicographical concerns of this century capture slight alternations between tradition and innovation, in terms of bilingual works, within the limits imposed by the existing knowledge of the time. During the last decades, substantial changes began to appear in the field of lexicography, marking the beginning of the development process with numerous advances. Notable in this regard are the diversity of lexicographic activities, visible through the appearance of bilingual dictionaries with the basic language Latin or another Romance language (Italian, as a rule), Hungarian or Greek, the intensification of the process of writing dictionaries and the increase, in intensity, of lexicographical concerns in the area of Muntenia compared to that of Transylvania (an area of the country that will give rise to remarkable dictionaries for two centuries). respectively of Moldova. The variety, from a linguistic point of view, of lexicographical interests will be accentuated in the following century, as a result of the amplification of linguistic and cultural contacts.

**Keywords:** lexicography, seventeenth century, Glossary, tradition, innovation

## THE ALLURE OF LITERARY CHARACTERS

Andreea - Maria Țițiu[1]

[1]Department of Philology, UMFST G.E. Palade Târgu Mureș

**Background:** Literary characters are often the most memorable aspects of literature. Readers feel compelled with fictional beings because they offer glimpses into human experiences and they serve a double purpose: mirrors and windows. They reflect personal realities, societal values and psychologycal archetypes, as well as provide insights into lives that may differ radically from the reader's own. The allure lies in the layered humanity of these characters, which readers find compelling, catharctic and intellectually stimulating.If hundreds of years ago, the purpose of a literary character was merely to serve a narrative function, nowadays, literary characters are known to play an affective role for readers, allowing them to experience various scenarios vicariously. The exploration of literary characters is pivotal to understanding the essence and impact of narratives, for the reason that characters serve as conduits through which themes, conflicts and resolutions are conveyed, embodying the human experience within the bounds of fiction.

**Keywords:** literary character, literature, readers, literary portrait

## POLYGAMY AS RESISTANCE IN POSTCOLONIAL LITERATURE

Cristian Dragnea[1]

[1]Department of Philology, UMFST G.E. Palade Târgu Mureș

**Background:** Precolonial intimacy in literature is not only an object of nostalgia or idealization, but also a form of resistanceagainst the colonial project of translation. By revaluing and reinterpreting these original forms of intimacy, postcolonial writersoffer us the opportunity to discover the capacity of indigenous communities to maintain, but also to adapt their traditions in theface of external actors who meddle in their marital affairs. It's a double-tracked cultural act, which doesn't necessarily invites totranslate their context, but is rather meant to preserve its duality and dialectical nature. Moreover, postcolonial narratologicalstrategies are a reaction to and a challenge to dominant colonial narratives that have attempted to redefine and modernizeindigenous cultures and writing practices. Writers use hybrid and innovative narrative forms to revalidate and reinterpret theircultural experiences and identities. Their writings are often characterized by the use of multiple perspectives, fragmentary structureand intertextual techniques that reflect peculiar experiences. In Things Fall Apart, for example, Achebe's dialogic tools facilitate an authentic flavor of the Igbo people before and after their fortuitous contact with European settlers. Achebe uses a narrative structure that combines elements of African oral tradition with Western narrative techniques, creating a rhetorical body which manages to express the social tensions and transformations. World literature is thus rather a broad and heterogeneous category of literary works from different cultures and historical periods that are read and could be appreciated globally, but that lack of an intrinsic global nature. It formally includes both canonical works of Western literature and works from non-Western literary traditions. World literature provides a platform for intercultural dialogue and exchange of ideas, but it can also perpetuate inequalities and cultural hierarchies if it does not recognize and respect the different ways in which translating into one-another is essentially impossible.

**Keywords:** polygamy, postcolonial narratology, world literature

## THE RELATIONSHIP MYTH-METAPHOR AND THE CONCEPTION ON POETRY IN BLAGA'S THEORY OF CULTURAL CREATION

Diana Ioana Feurdean[1]

[1]Department of Philology, UMFST G.E. Palade Târgu Mureș

**Background:** Lucian Blaga stands as a unique figure in Romanian culture, offering a singular phenomenon through his work. His writings represent an effort to harmonize literary and philosophical creation, achieving results and operating under circumstances that are almost unprecedented in the Romanian cultural space. The exceptional qualities of his creative personality have been widely acknowledged, establishing him both as a distinct lyrical voice of the 20th century and as a profound speculative thinker with a solid intellectual foundation. Blaga's contributions inaugurated a new era in Romanian thought, particularly in the philosophy of culture, where he opened expansive pathways for understanding the fundamental aspects of cultural creation. Blaga's work has inspired an impressive body of scholarly analysis over time, marked by the complementarity of conceptual perspectives, the diversity of research methods, and the depth of value judgments regarding his poetic and philosophical creations. These successive evaluations have sought to emphasize both the creative essence of his poetic-philosophical personality and the integrative, innovative perspective on his remarkable contributions to Romanian and European culture. Based on this foundation, we propose that reassessing the overarching concepts underpinning Blaga's theory of cultural creativity and his philosophical legacy is a necessary preliminary step in exploring the deeper meanings of his poetic work. Among the core concepts that define Blaga's theory of cultural creation and aesthetics — concepts central to his broader project of cultural anthropology—are mystery, metaphor, myth, poetic language, and others. This paper seeks to explore the intrinsic connections between these fundamental ideas in Blaga's philosophy and their expression in his poetry. Within the limited scope of this discussion, we will focus specifically on the relationship between metaphor and myth, as well as Blaga's conception of poetry in his theory of cultural creation, with a brief reference to the concept of mystery.

**Keywords:** myth, metaphor, mystery, poetic language, theory of cultural creation

# THE ITALIANIZATION OF GASTRONOMIC TERMINOLOGY DURING THE FASCIST ERA IN ITALY: LEXICAL CREATIVITY OR TERMINOLOGICAL MANIPULATION

Dana Claudia Ciultă[1]

[1]Department of Philology, UMFST G.E. Palade Târgu Mureș

**Background:** In the Italian culture and civilisation, the period extended between the First and the Second World War is known as the Fascist era, dominated by the personality of Benito Mussolini - well-known for his unique rhetoric and, alongside, the embodiment of a totalitarian regime. The present study aims to present the effects that the nationalist, purist language policy of a forced italianisation of the vocabulary during the Fascist era in Italy had upon neological borrowings, particularly focusing on the impact of linguistic legislation on terms within the specialised field of gastronomy. Furthermore, our purpose is to identify and analyse the gastronomic terminology that, under the pressure of Fascist laws on the Italian language - to invent or translate them - survived in the Italian common language or specialized vocabulary nowadays.

**Keywords:** specialised vocabulary, terminology, neologism, italianisation, language policy

# PHILOLOGY

## VALERIU ANANIA - THE FIRST STEPS OF THE LITERAY CREATION

Emanuel-Daniel Sărmășan[1]

[1]Department of Philology, UMFST G.E. Palade Târgu Mureș

**Background:** The present subchapter is also intended to continue some ideas converging on the Metropolitan step, one that may be not sufficiently explored or exposed in other cases, precisely because we are dealing with the record of a multicultural personality, who looked at the Romanian intellectual phenomenon from different perspectives and who also tried to cover it with that protective, often almost paternalistic coating. Some reviewers were bothered by the fact that Valeriu Anania was a perspicacious connoisseur of the Bible and had some insightful vibrations, being unfairly accused of trying to repudiate his past by this side of sanctity at the monastic level, but the Metropolitan himself revealed in an interview with the producer Eugenia Voda that he never managed to climb the ascetic ladder, but even fits typologically in the *renascentista homo universalis*.

**Keywords:** modernism, traditionalism, wisdom, profession, confession

## PARADIGMATIC RELATIONSHIPS IN BOTANY. SYNONYMY

Daniela Suciu (Fodor)[1]

[1]Facultatea de Științe și Litere Petru Maior Târgu Mureș, UMFST G.E. Palade Târgu Mureș

**Background:** The Romanian botanical vocabulary confirms manifestations of some paradigmatic relationships as a result of the richness and diversity of its constituent elements. Within the terminology, it is assumed that each notion is labelled by a singlemonosemantic, mono-referential term. Nevertheless, the botanical language registers relationships of synonymy, antonymy, hyperonymy, either between terms or between terms and terminological phrases. The causes of the occurrence of this phenomenon are multiple. Among these: the effort of the specialists to create more appropriate terms compared to the existing ones, the borrowings from other languages, the calculus, the tendency towards economy of expression, the fashion or the popularity of some terms. The general objective of this study is to trace the synonymy relationship in Botany. Referring to Botany, we ascertain that synonymy is quite well represented. By consulting specialized studies and dictionaries, we identified: synonymy between term and definition at the level of dictionaries; synonymy between equivalent terms from different languages; synonymy between the terms used at the level of different stylistic registers; synonymy with prefixoids; synonymy between equivalent neologic terms; phraseological synonymy. A necessary observation is that in the botanical language, synonymy is necessary to clarify some notions.We have noted that it is easier to operate with literary terms than with scientific ones; synonymous expressions are used to make definitions. (Viola tricolor=heartsease= three-spotted-brothers=wild pansy etc.) In common language, synonymy is a solution to avoid monotonyand to give communication expressiveness. In terminology, things are different. Theoretically, in terminology each concept must be expressed through a single term in order to avoid ambiguity. The first conclusion that stands out is that in many situations, there are denominations competing for a single notion, or the synonymy relationships have been established on different levels: in diachrony, depending on the language register, and in synchrony, depending on the speaker's desire.

**Keywords:** synonymy, botany, paradigmatic, external terminology, term

# TERMINOLOGICAL NEOLOGISMS IN THE FIELD OF EDUCATION

Veronica Sandor[1]

[1] Litere, Ştiinţe Umaniste şi Aplicate Filologie, UMFST G.E. Palade Târgu Mureş

**Background:** The discourse in the field of education is more than a mere transmission of information. It represents a complex interaction between sender and receiver, curriculum and its applicability, theory and what is now referred to as personal development. It serves as the vehicle through which identities are formed, competencies developed, and the values of the human community consolidated.Our research aims are —at a general level— to make a comprehensive overview of terminological neologisms, their semantic and conceptual typology, and their sources (French and English) within the terminological framework of the field under study. Among the derived objectives, the study seeks to analyze the contemporary linguistic mechanisms by which concepts and notions are designated, enabling the receiver to perceive the world, position themselves within it, and understand the dynamics of ideas and the shaping of their own education. In the context of academic evolution and mobility, diverse processes of lexical creation occur.The methods of analysis considered include descriptive-linguistic, analytical, and comparative methods, among others.The first conclusion drawn is that the current historical context requires the revision of traditional terms, taking into account the dynamics of the evolution of Educational Sciences.

**Keywords:** terminology, educational language, specialized communication, neology

# PHYLOLOGY

## DIALOGUES ON EATING DISORDERS: A TWITTER-BASED ANALYSIS OF SUPPORT, STIGMA, AND MISUNDERSTANDING

Réka Kutasi[1]

[1]Department of Philology, UMFST G.E. Palade Târgu Mureș

**Background:** Dialogues on Eating Disorders: A Twitter-Based Analysis of Support, Stigma, and Misunderstanding **Abstract** Eating disorders are known as mental illnesses that can have a negative effect on people's lives. Nowadays, the growth of different communities on social media has contributed to an increase in the prevalence of eating disorders. Despite efforts to raise awareness about the negative effects they may trigger, the number of discourses on these platforms has unfortunately increased. The present research aims to analyse dialogic interactions on Twitter (currently called X) to identify patterns of support, stigma, and misunderstanding related to eating disorders (anorexia, bulimia). By creating a corpus with the use of hashtags like #EDRecovery, #anorexia, #bulimia and #eating disorders, the study provides valuable insights into the multifaceted discourses surrounding eating disorders on Twitter.

**Keywords:** eating disorders, dialogic analysis, anorexia, bulimia, Twitter discourse

# PHILOLOGY

## THE WRITER'S CONDITION - RESILIENCE THROUGH STORYTELLING

Cristina-Daniela Lateș[1]

[1]Department of Philology, UMFST G.E. Palade Târgu Mureș

**Background:** The condition of the writer is that of an amphibious being, created to live in another world yet compelled to endure in this one. In Petru Cimpoeșu's vision, the writer's only way to survive the narrow space between the boundaries of these two worlds is through "resilience by storytelling." Falling in love proves to be the primary condition of writing, the lover's gaze, in this sense, arising from something much deeper than words. The writer is portrayed as a passionate creator for whom the act of writing is not merely a vocation but a mode of existence rooted in Eros (as per Roland Barthes). The passion for writing is seen as a fundamental condition for literary quality, and the reflection on the creative act highlights the complexity and responsibility of the writer. Through the power of narrative, stories become a means to preserve authenticity and to endow existence with meaning, saving humanity not as a species, but as an essence. Thus, the writer's role remains that of the voice of a people's conscience and its moral compass, as long as resistance through storytelling continues.

**Keywords:** storytelling, writer, creator, story, eros

---

## ORTHODOXY BETWEEN UNIVERSALITY AND ROMANIAN SPIRIT

Ionela-Delia Rădulescu (Delcă)[1]

[1]Școala Doctorală de Litere, Științe Umaniste și Aplicate - Filologie, UMFST G.E. Palade Târgu Mureș

**Background:** Relația dintre Ortodoxie, spiritul românesc și Universalitate este un subiect de profundă reflecție în gândirea românească, cu implicații semnificative pentru identitatea națională și culturală. Nichifor Crainic, Sandu Tudor și sfântul preot Dumitru Stăniloae oferă perspective valoroase asupra modului în care credința ortodoxă influențează și determină valorile, tradițiile și spiritualitatea românească, contribuind totodată la înțelegerea rolului lor în universalitate. Pentru Nichifor Crainic, Ortodoxia este un element fundamental de identitate, inseparabil de cultura și politica românească. De aici și necesitatea unui guvern în conformitate cu principiile ortodoxe, o etnocrație. Universalitatea devine un ideal secundar, condiționat de fidelitatea față de identitatea ortodoxă și națională. Sandu Tudor, în schimb, vede Ortodoxia ca pe o tradiție spirituală care transcende politica, universalitatea fiind un produs al specificului național. Sfântul preot Dumitru Stăniloae tinde spre o viziune etică și comunitară. Ortodoxia este, în viziunea sa, o forță integratoare, capabilă să fie deschisă la influențe exterioare fără a-și pierde esența, printr-o comuniune de tradiții.

**Keywords:** Orthodoxy, Romanian spirit, Universality, Nichifor Crainic, Sandu Tudor

# METAMORPHOSES OF MEMORY AND THE WORLD OF ROMANIAN COMMUNISM

Szilvia Gál[1]

[1]Department of Philology, UMFST G.E. Palade Târgu Mureș

**Background:** This research is based on the premise that people in the communist, totalitarian era suffered psychologically and physically regardless of their social, economic, ethnic, religious, etc. status. The main objective of the research is to create a picture that encompasses the relationships, differences, similarities between different memories, respectively to reveal ways of forgiveness, compensation. There are plenty of history books on the history of the communist system, books which, by providing accurate data, try to chain events in a logical sequence, but without providing or emphasizing the human condition in this system, i.e. without putting at the center of the events the man who lived through the communist terror. Why? Because providing a punctuated history removes subjectivity from history, and by removing subjectivity we end up suppressing the individual. Thus, this research has as a novelty the research of individual memoirs to find the subjective reality of communism because this tendency on the scientific level to provide a synthesis of information, experiences reveals only a "face" of the theme proposed for research, and the common points, which emerge from the comparative analysis of individual memoirs, do not provide a synthesis either, but rather the transformation of individual memory into a collective memory. Individual memory research is important in the literature because it emphasizes how memory sheds light on narrative structure, thematic depth, society, politics.

**Keywords:** Memoirs, Individual memory, Collective memory, Forgiveness, Compensation

# SCIENCE AND TECHNOLOGY

## HOW DO STUDENTS PERCEIVE AIR QUALITY IN TÂRGU MUREȘ METROPOLITAN AREA?

Cristina Veres[1], Mihaela Kardos[2]

[1]Department of Industrial Engineering and Management, UMFST G.E. Palade Târgu Mureș
[2]Department of Management and Economy, UMFST G.E. Palade Târgu Mureș

**Background: Background**: Air quality is a critical factor in urban health and well-being, yet perceptions of air quality and its influencers vary across demographics and geographical locations. This study aims to evaluate the perceptions of students, young residents and visitors concerning air quality in the metropolitan area of Târgu Mureș. By examining these perceptions, the research seeks to highlight the population's awareness and personal actions concerning air pollution, as well as the factors they believe contribute to air quality. **Material and Method**: The study uses a structured questionnaire targeting demographic information, perceived air quality levels, awareness of air pollution initiatives and personal actions to reduce pollution. The data collection focuses on students, both urban and suburban residents and includes foreign visitors, allowing for a comprehensive analysis of local and external perceptions. Responses are analyzed through descriptive statistics and non-parametric tests to evaluate the influence of demographic factors on air quality perceptions. **Results**: Initial findings suggest a diversity of perceptions tied closely to demographic factors such as age, location, and personal health experiences. Most respondents recognize traffic and industrial activities as primary contributors to poor air quality. Personal actions to mitigate air pollution are varied, with a notable engagement in sustainable practices among younger demographics. **Conclusions**: The survey underscores a significant interest in air quality improvement, with residents identifying actionable steps and advocating for more public initiatives. Insights gathered highlight the need for strengthened environmental policies and community engagement strategies to foster collective action for air quality enhancement in Târgu Mureș. **Acknowledgment**: This work was supported by the George Emil Palade University of Medicine, Pharmacy, Science, and Technology of Târgu Mureș, Research Grant number 4175/25.04.2024.

**Keywords:** air quality perception, environmental awareness, sustainable practices, urban health, public engagement

## CIRCULAR ECONOMY AND OVERTOURISM: THE ROLE OF ERASMUS+ MOBILITY IN ROMANIAN TOURISM

Ioan-Bogdan Bacos[1], Flavia Dana Oltean[1], Manuela-Rozalia Gabor[1]

[1]Department of Management and Economy, UMFST G.E. Palade Târgu Mureș

**Background:** The rise of sustainable tourism, guided by circular economy principles, is essential for managing destinations facing overtourism pressures. Within this context, the Erasmus+ program, which promotes educational mobility and cultural exchange, offers both opportunities and challenges, as Erasmus+ students contribute economically while also potentially intensifying tourism demand in popular locations. This study examines how Erasmus+ mobility in Romania can align with circular economy goals to reduce resource strain and encourage sustainable tourism practices. Using mixed methods, data from over 200 Erasmus+ students in Romania was collected through an online survey, covering their travel behaviors, spending habits, and sustainability awareness. Analysis with Microsoft Power BI revealed that while Erasmus+ students often visit well-known urban and cultural sites, many also expressed interest in rural and natural areas, suggesting potential for dispersing visitor traffic. Their spending largely supports local businesses, which aligns with circular economy practices, and their preference for eco-friendly accommodation and transport options indicates that Erasmus+ mobility can help foster sustainable tourism, distributing economic benefits more equitably while mitigating environmental impacts in densely visited areas

**Keywords:** Erasmus+ mobility, Circular tourism, Circular economy, Sustainable tourism, Overtourism

## PAUL ZARIFOPOL. CRITICAL RECEPTION

Anca Rusu[1]

[1]Department of Philology, UMFST G.E. Palade Târgu Mureș

**Background:** Paul Zarifopol, one of the most paradoxical figures of his time, has been intensely discussed among literary critics. Recognized as an extraordinary, strange and premature appearance, his writings have both captivated and irritated. A multifaceted personality of Romanian literary criticism and essayism, enveloped within multiple hypostases and perceived by literary critics through the lenses of opposition, Paul Zarifopol embodied not only the effervescent spirit of his time, fully committed to his works, but he also epitomized a rare example of a life spent outside the spotlight, with many trials and challenges, who has stood up through his inner strength, inspiring a model of courage and confidence. Even if he was both appreciated and criticized, he devoted his life entirely to writing and he left behind a body of works that resonate with the energy and passion he infused into every line, vibrating according to his rhythm. The longevity of his texts owes much to his unrestrained iconoclast spirit, his impressive erudition and the genuine originality of his ideas, often projected in polemic exchanges that stirred intense literary dialogues and lively debates.

**Keywords:** Paul Zarifopol, controversial notoriety, ambivalent perceptions, literary criticism, injustice

## CIRCULAR ECONOMY APPLICATION IN DEMOLITION WASTE: A SUSTAINABLE OPPORTUNITY FOR CONSTRUCTION INDUSTRY.

Argeime López[1], Manuela-Rozalia Gabor[1]

[1]Department of Management and Economy, UMFST G.E. Palade Târgu Mureș

**Background:** Abstract: Waste resulting from demolition on construction sites will reach 400-500 million tonnes in Europe by 2023. This figure is very worrying, considering that the European population is growing and therefore consumption will continue to increase. The generation of this waste is not reused and this is a huge problem in terms of environmental aspects and the application of the principles of the circular economy. In order to implement a circular model that allows the reuse of these materials, it will be necessary to present technologies and mechanisms that provide solutions to reduce not only the generation of these wastes, but also to avoid their discharge into the environment. Alternative solutions would be selective demolition, where, depending on the physico-chemical nature and applications, a sorted form can be chosen. All waste, such as concrete, EPS board, filler materials, bricks, etc. Most of these materials can be reused in the thermal insulation system, ETICS-EIFS and can be sorted and reused to meet sustainable environmental requirements such as CO2 footprint reduction and reused through a circular model.

**Keywords:** ETICS-EIFS, Sistainability, Circular economy, Carbon footprint, EPS

## FUNCTIONALLY GRADED MATERIALS: FROM CHARACTERIZATION TO INNOVATIVE APPLICATIONS

Maria Bogdan[1], Ildiko Peter[1]

[1]Department of Industrial Engineering and Management, UMFST G.E. Palade Târgu Mureș

**Background:** In the context of the continuous need for technological progress, especially in engineering field, the correlation between material development and innovation speed is evident. In applications requiring complementary attributes such as high mechanical strength with flexibility, stiffness with low density and thermal stability with variable conductivity, the choice of materials often leads to compromises that can reduce the efficiency or lifespan of the system. To address these challenges, the classof Functionally Graded Materials (FGMs) was developed, enabling the integration of multiple properties within a singlecomponent through smooth transitions that minimize the structural failure risks commonly found at sharp interfaces inconventional composites. This study aims to characterize FGMs and explore key application areas through a review of recentliterature to provide a state-of-the-art perspective and highlight emerging trends. Initially developed in Japan to preventdelamination in thermal barrier coatings for aircraft components, FGMs have since expanded into diverse fields includingautomotive engines, systems for efficient energy conversion, medicine for enhanced biocompatible implants and targeted drug delivery systems, ballistic defense and civil engineering for adaptive structures. FGMs support these applications through gradual transitions in structure, porosity or chemical composition, achieved with single materials or combinations of metals, ceramics and polymers. These sophisticated graded structures, described by mathematical models, exhibit complex internal behaviors under operational loads, requiring computational simulations to optimize their performance prior to fabrication. Manufacturing techniques such as casting, powder metallurgy and additive manufacturing are the most employed methods to create prototypes and final products. The review highlights that FGMs have been a prominent area of research for over four decades, achieving significant success across various applications. Despite challenges in modeling and predicting all phenomena involved in FGMs' operation, ongoing research focuses on addressing these issues and developing advanced intelligent and nano-structured materials based on functional grading principles.

**Keywords:** functionally graded materials (FGMs), composite, property gradation, multifunctional applications, finite element analysis

## UN REPREZENTANT AL ELITEI NĂSĂUDENE ÎN VIAȚA POLITICĂ A IMPERIULUI AUSTRO-UNGAR: IOACHIM MUREŞANU

Margareta-Tabita Moldovan (Stir)[1]

[1]Department of History and Political Sciences, UMFST G.E. Palade Târgu Mureș

**Background:** A proeminent representative of the Năsăud elite in the political life of the Austro-Hungarian Empire, who was actively involved in defending the rights of the border guards, was Ioachim Mureşanu. His contribution in obtaining and protecting the property and rights of the border guards was indisputable, demonstrating his skills as a distinguished lawyer, characterized by integrity and devotion. His solid professional training allowed him to achieve success in most of the cases that involved the interests of the border guards, and his active contribution was essential for the stability and development of the border guards' funds from Năsăud, which he helped with remarkable perseverance, always feeling indebted to the community from which he came. Ioachim Mureşanu was also an important figure in the establishment of the Romanian district of Năsăud and in promoting the political and cultural rights of the romanians from Transylvania, actively engaging in the national movement. Thus, his figure remains a symbol of commitment to the local community and to the national ideals of the romanians of that time.

**Keywords:** elite, Ioachim Mureşanu, boarder guard, lawyer, Năsăud

## STUDY ON THE GENERAL FRAMEWORK FOR THE DEVELOPMENT OF ECOTOURISM IN ROMANIA AND THE EU

Petru Alexandru Curta[1], Flavia Dana Oltean[1]

[1]Department of Management and Economy, UMFST G.E. Palade Târgu Mureș

**Background:** Ecotourism is a form of sustainable tourism that focuses on the exploration and conservation of the natural environment, while also promoting the economic development of local communities. The development of ecotourism takes place within a complex framework influenced by economic, political, social, and ecological factors, both at the national and international levels. In the global context, ecotourism is seen as an opportunity to reduce the negative impact of traditional tourism on the environment, contributing to biodiversity protection and educating visitors about the importance of conserving natural resources. This paper provides an extensive analysis of Romania's tourism potential, taking into account both natural and anthropic resources available for tourism development, as well as the current state of the technical and material infrastructure necessary to support this industry. Within this analysis, aspects related to tourism activities at the national level are explored, with a focus on identifying the main emerging trends in tourism and ecotourism—fields that are in continuous global expansion. This analysis will be carried out through a quantitative analysis based on a questionnaire. Additionally, the paper includes a detailed evaluation of the main relevant statistical indicators, both at the national and international levels, that pertain to competitiveness in ecotourism, such as the number of arrivals and overnight stays in ecotourism destinations, along with other indicators that reflect the overall performance of tourism. The analysis focuses on how these indicators can contribute to understanding trends in ecotourism and identifying destinations with the greatest potential for attracting tourists. Ecotourism is an increasingly important component of the global tourism industry, with a significant rise in both demand and economic impact. Tourists around the world are increasingly interested in vacations that adhere to sustainability principles, and destinations that invest in environmental protection and the development of responsible tourism can benefit from this trend.

**Keywords:** Ecotourism, Local communities, tourism potential, Trends in ecotourism

## THE WORK OF ALEXANDRU MACEDONSKI. PERENNIAL FORMS AND INNOVATIVE TRANSFORMATIONS OF DISCURSE REGISTER

Laurențiu Băcan[1]

[1]Școala Doctorală de Litere, Științe Umaniste și Aplicate, UMFST G.E. Palade Târgu Mureș

**Background: The sarcastic spirit in Macedonski's lyrics - summary** The subchapter analyzes the sarcastic dimension in Alexandru Macedonski's poetic work, emphasizing the complexity of his critical attitude towards society, destiny, and even towards himself. Used as a literary device, it is seen as a mark of the poet's personality and as a reflection of the historical and cultural context of his era. *Defining sarcasm in a literary context* The subchapter begins by providing a clear definition of sarcasm, presented as a form of bitter expression that emphasizes disdain or distrust of the reality depicted. In Macedonski's case, sarcasm becomes both an aesthetic and an ideological tool.*The social dimension of sarcasm* Macedonski's lyrics frequently attack the hypocrisy and mediocrity of society. The poet assumes the role of a ruthless observer, who exposes social shortcomings through a bitter tone. *Self-reflexivity and sarcasm* Macedonski does not hesitate to direct his sarcasm towards himself as well, creating a self-reflexive poem in which he oscillates between pride and self-irony. This dimension emphasizes the acute awareness of one's own condition as a modern poet and of inner contradictions. Thus, with a personality consisting mainly of contrasts that prove a split consciousness between — ***ideal vs. real, ecstasy vs. transfiguration, life vs. death, will vs. fatality, God vs. Satan, genius vs. poet and tenacity vs. struggle***, Macedonski demonstrates a fascinating psychological complexity, finely observed and analyzed here. In the end, it is emphasized how sarcasm becomes an aesthetic mechanism that contributes to the originality of Macedonian lyrics, through the use of sharp language, full of strong and suggestive images. As conclusions, it is considered that the sarcasm in Macedonski's lyrics is both an expression of the poet's lack of adaptation to his world and a tool of artistic sublimation.

**Keywords:** sarcasm, tool, bitter, hypocrisy, expression

## IMPACT OF PARAMETER TUNING ON HEALTHCARE PREDICTION ACCURACY

Zsuzsa Simo[1]

[1]Department of Informatics, UMFST G.E. Palade Târgu Mureș

**Background:** Accurate healthcare prediction is crucial in effective diagnosis. Machine Learning (ML) models provide different approaches to improve predictive accuracy with complex patterns in medical data. This study explores the impact of tuning algorithm-specific parameters on prediction outcomes using popular medical datasets. Each dataset is preprocessed with normalization, handling of missing values, and class balancing methods. Focusing on a general ML algorithm, we analyzed performance across various parameter settings rather than relying on metrics such as accuracy. Other metrics like precision, recall, F1-score, and the confusion matrix can provide additional insights into model performance. It is also examined the relationship between parameter tuning and model behavior, presenting issues with overfitting and class imbalance problems. This research highlights the significance of parameter optimization in ML, while considering factors such as class imbalance and overfitting to achieve a reliable healthcare predictions.

**Keywords:** Healthcare Prediction, Dataset Preprocessing, Parameter Tuning

## CONTRIBUTIONS REGARDING THE DEVELOPMENT OF A GROUP OF PHOTOVOLTAIC PANELS FOR THE ELECTRICITY SUPPLY OF A HALL

Ioan Laurentiu Marginean[1], Liviu Moldovan[2]

[1], UMFST G.E. Palade Târgu Mureș

[2]other, UMFST G.E. Palade Târgu Mureș

**Background:** Global energy consumption is represented by approximately 80% of conventional energy sources. The energy from thermoelectric plants, heating plants or nuclear plants are usually used in the production of energy and intended for consumption on a large scale. Therefore, the use of renewable energy becomes the best alternative for implementation on a smaller consumption scale. On a national level, Romania has seen a rapid expansion of the solar sector, stimulated by government initiatives such as the Green Certificate scheme and feed-in tariffs. These measures have facilitated the installation of considerable solar generation capacity, rising from 1.39 GW in 2020 to over 2.9 GW by the end of 2023. This article presents the design model of a solar panel system regarding the electricity supply of an annex of an industrial hall in Transylvania. The objective of this work is the design of the solar system on the roof of the building and the construction of an installation for the production and use of the energy produced by it for self-consumption. All over the world, non-conventional energy sources have an increasingly high contribution to the production of electricity. Following some preliminary energy analyzes of the possibilities of local energy production from renewable sources, it was noted that there is a great potential to use solar energy, thus the installation of a small group of solar panels with a capacity of 200 kW was proposed.

**Keywords:** Solar energy, Photovoltaic panels, Solar systems, Solar energy sources, Industrial construction

## RESILIENCE AND COMPETITIVENESS IN TOURISM: IMPLICATIONS OF INNOVATIVE STRATEGIES AT GLOBAL AND NATIONAL LEVELS

Beata Tatar[1], Flavia Dana Oltean[2]

[1], UMFST G.E. Palade Târgu Mureş
[2]other, UMFST G.E. Palade Târgu Mureş

**Background:** Tourism is one of the most dynamic economic sectors, and resilience has become essential for sustaining competitiveness amidst global uncertainties.Introduction: The study aims to understand how digital transformation and cultural strategy innovations impact resilience and competitiveness, particularly in Romania, compared to other EU countries Methodology: This research employs a comparative approach, analyzing Romania's tourism strategy alongside those of leading EU countries, with data on tourist flow, economic impact, and digital investments. Key indicators of competitiveness, such as tourism infrastructure, cultural heritage promotion, and digital readiness, are assessed. Results: Findings indicate that while Romania boasts significant cultural assets, its lower level of digital adoption limits its appeal to modern tourists. In contrast, countries like Estonia and Spain have successfully integrated digital tools to enhance visitor experiences and drive tourism growth. Conclusion: By adopting digital platforms, enhancing cultural tourism offerings, and investing in sustainable practices, Romania could strengthen its resilience and position itself as a competitive player in the European tourism market.

**Keywords:** tourism, resilience, competitiveness, digitalization, sustainable development

## UNLOCKING THE FUTURE: NANOPARTICLE INTEGRATION IN TI-BASED METAL ALLOYS FOR ADVANCED BIOMEDICAL APPLICATIONS

Alex Barna Kacsó[1]

[1]Department of Industrial Engineering and Management, UMFST G.E. Palade Târgu Mureş

**Background:** Titanium-based alloys have long been a cornerstone in biomedical applications due to their exceptional mechanical properties and biocompatibility. However, the quest for smarter, more efficient biomedical implants continues. This research aims to break new ground by integrating nanoparticles into Ti-Nb-Zr-Fe alloys, with the ultimate objective of creating a material capable of storing and releasing specific drugs, thereby enhancing the healing process following implantation. An extensive review of current literature was conducted to pinpoint the most promising nanoparticles for drug storage. The methodology involves the synthesis of Ti-Nb-Zr-Fe alloys integrated with these nanoparticles, followed by a thorough characterization of their properties. The main focus is on assessing the drug release kinetics and the biocompatibility of these nanoparticle-infused alloys through in vitro experiments. Based on preliminary assessments, it is anticipated that the selected nanoparticles will significantly enhance the drug storage capacity of the Ti-Nb-Zr-Fe alloys. These modified alloys are expected to provide controlled and sustained drug release, all while retaining their excellent mechanical strength and biocompatibility. Although these results have yet to be confirmed experimentally, there is optimism about the potential benefits. The integration of nanoparticles into titanium-based alloys represents a promising frontier in the development of smart biomedical implants. By refining the nanoparticle compositions, this research aims to lay the groundwork for future clinical applications, potentially revolutionizing patient care with advanced drug delivery systems. Further research and experimental validation will be crucial in realizing these innovative solutions.

**Keywords:** Nanoparticles, Ti-based alloys, Drug delivery, Biomedical applications, Ti-Nb-Zr-Fe

## ARTIFICIAL INTELLIGENCE-DRIVEN PREDICTION OF ADVERSE DRUG REACTIONS: EXPLORING THE ROLE OF CHEMICAL FINGERPRINTS AND MOLECULARDESCRIPTORS

Ana-Maria Cucos[1]

[1]Department of Informatics, UMFST G.E. Palade Târgu Mureș

**Background:** Adverse drug reactions (ADRs) can have profound and devastating effects on public health, underscoring the critical need for advanced predictive tools that can mitigate these outcomes. Artificial intelligence-based decision support systems hold immense potential in identifying and preventing ADRs, thereby making a significant positive impact on population health. This study investigates the role of chemical compound features in predicting ADRs, focusing on chemical fingerprints and molecular descriptors. A chemical fingerprint refers to a unique pattern that signifies the presence of specific molecular characteristics, while a molecular descriptor is a mathematical representation of a molecule's properties, capturing its chemical and structural information. The research involved an extensive evaluation of state-of-the-art AI algorithms, including Random Forest (RF), Gradient Boosted Trees (GBT), Feedforward Neural Network (FNN), and Convolutional Neural Network (CNN). These algorithms were chosen for their ability to model complex relationships within the data. Prediction models were developed using different feature combinations: individual chemical fingerprints, molecular descriptors, and a combination of both. The experimental phase began by identifying four effective fingerprints: Pattern, Torsion, Atom Pair, and Morgan. Machine learning models were created using each fingerprint type as input features. Next, two molecular descriptors, molecular weight and number of valence electrons, were selected. These descriptors were combined for an additional feature set, which was used to train machine learning models. Finally, the study explored the combined use of fingerprints and molecular descriptors as input features, creating and evaluating models to determine if this approach could enhance prediction accuracy. The experimental results revealed that RF and GBT outperformed FNN and CNN, achieving up to 20% higher accuracy in specific scenarios, such as using molecular descriptors to predict Hepatobiliary disorders. Chemical fingerprints were the most influential feature in improving model performance. The combined use of fingerprints and molecular descriptors further enhanced the models results.

**Keywords:** adverse drug reactions, chemical fingerprints, molecular descriptors, artificial intelligence, machine learning

## BUSINESS PROTOCOL- A SUCCESFULL STEP TO THE SUCCESFULL BUSINESS

Iringo Reichenberger[1], Manuela-Rozalia Gabor[1]

[1]Department of Management and Economy, UMFST G.E. Palade Târgu Mureș

**Background:** Business Protocol- a succesfull step to the succesfull business The concept of protocol dates back to ancient civilizations. In the 20th century, several branches were added: e.g. the business protocol; due to the fact that multinational companies grew and spread, in order to build their successful business relations, the negotiators needed to know their partner's protocol rules. Feya Stark's quote: "Manners are like zero in arithmetic. They may not be much in themselves, but they are capable of adding a great deal of value to everything else." , proves that knowledge of protocol rules greatly influences the successful outcome of a negotiation. In the doctoral research we introduce, analyse and identify the particularities of the norms of behaviour described in the rules, and with main aim to adress to Romanian companies to build their relationships more succesful on an international level, focusing on the cultural and behavioural characteristics of their negotiators. Taking into consideration the thought of the French businessman M. Pradier-Fodéré, who defined the protocol as "the code of international politeness", we realize how important it is to know somewhat simple gestures, for example, because acting correctly from beginning of a negotiation, it can avoid embarrassing and unpleasant moments, guaranteeing a good step of a smooth negotiation. Throughout the doctoral research we will emphasize practicality, the compliance with the rules of behavioural culture and protocol in Romanian companies, as well by comparing with international ones, and therefore contributing to increasing the effectiveness of the given company.

**Keywords:** protocol, business, succes

## EXPLORING LARGE LANGUAGE MODELS AND GRAPHRAG METHOD FORKNOWLEDGE GRAPH CREATION

Madalina-Maria Muraru[1]

[1]Department of Informatics, UMFST G.E. Palade Târgu Mureș

**Background:** Large Language Models, commonly known as LLMs, are deep learning models, trained on large amounts of data, designed to process and generate natural language. LLMs have proven to be a helpful tool in natural language processing, demonstrating capabilities in problem solving, instructions following, document understanding, decision-making, and answering questions. This study focuses on testing locally multiple LLMs through Ollama, a powerful framework for running large language models on-premises in low-performance environments. For the experimental evaluation, it was used Llama with 3 and 1 billion parameters, as well as Qwen2.5, Phi, Mistral-Nemo and Deepseek-coder-v2. The first experiment evaluates the models' comprehension capabilities by answering questions based on a given text, while the second experiment tests their capacity to solve logical problems. To evaluate performance, there were used accuracy, recall, and precision, along with metrics automated calculated in verbose mode such as total duration or prompt evaluation count. The models that performed best in our experiments will be integrated into GraphRAG to handle private information about some specific internal procedures. Their performance will be evaluated to determine if the new model is capable of giving high-quality responses based on this new private information. Llama3, with 3B parameters, and Mistral-Nemo stand out as the best performing models in the first experiment, suggesting that these models have an ability to understand text accurately. Deepseek-coder-v2 showed performance in the second experiment, especially as this model has been optimized more for programming tasks. For future research and integration with GraphRAG, were selected the Mistral-Nemo and Llama3 models to proceed with.

**Keywords:** Large Language Models, Ollama, GraphRAG, Knowledge Graph

## HISTORY AND EVOLUTION OF VOLLEYBALL WORLDWIDE AND ROMANIA

Laurentiu Marius Magdas[1]

[1]Department of History and Political Sciences, UMFST G.E. Palade Târgu Mureș

**Background:** Volleyball is one of the most popular and widespread sports globally, holding an important place in both social and competitive contexts. Initially created as a recreational activity, volleyball quickly transformed into an international sport that has shaped cultural and social connections worldwide. With its origins dating back to 1895, the sport has evolved in terms of rules and styles, leading to the development of variations like beach volleyball and, more recently, snow volleyball, aimed at expanding the sport's reach into both summer and winter Olympic events. The sport's historical growth was marked by efforts to establish uniform rules and competitions, leading to its inclusion in the Olympics and other international championships. Volleyball's presence in diplomatic contexts reflects its influence in fostering international relations, projecting national images, and serving as a means of cultural exchange. The rules, player techniques, and global tournaments have continuously adapted, contributing to the development and appreciation of the sport across different generations and continents.

**Keywords:** volleyball, history, evolution, Morgan, rules

## LIMITATIONS AND CHALLENGES OF COMMON ANOMALY DETECTION AND EXPLANATION METHODS

Sorin-Claudiu Moldovan[1], László Barna Iantovics[1]

[1]Department of Informatics, UMFST G.E. Palade Târgu Mureș

**Background:** Anomaly detection (AD) encompasses methods ranging from statistical techniques and proximity-based models to advanced machine learning and deep learning approaches. Despite progress, these methods face challenges, particularly in balancing detection accuracy and explainability. Explainability is the ability of a model to explain how it produced its results. It is essentialbut still lacking in many AD frameworks. Visualization methods like Boxplots, models like Gaussian distributions exhibitlimitations with multimodal data and sensitivity to noise. Proximity-based approaches such as Local Outlier Factor and Density-Based Spatial Clustering of Applications with Noise struggle with detecting outliers in dense regions or datasets with varying densities. Model-based techniques, including Isolation Forests, Autoencoders, and One-Class Support Vector Machine, face issues with thresholding, scalability, and robustness to noise and dimensionality. Graph Neural Network embeds graphs into euclidean or hyperbolic spaces which do not capture the full geometry and structure of the graph, outliers are detected using statistical methods to determine the deviation from normal behaviors. Energy Based Models are sensitive to threshold setting, the energy score returns better performance results than reconstruction error. Contextual AD methods combine local and global behaviors but require precise neighbor definitions, impacting scalability and consistency. For example, Self Supervised Learning for Graph Anomaly Detection shows promise for high-dimensional data but is hindered by sensitivity to sampling methods and parameter tuning. Explainable anomaly detection (XAD) is underexplored, especially for biomedical data like medical imaging and text records. Post-hoc explanation techniques often fail to explore the internal mechanisms of AD models. Intrinsically interpretable models are needed to ensure consistency and trustworthiness. Future research must address these gaps by improving robustness, explainability, and domain-specific applicability. For biomedical contexts, XAD should prioritize clinical relevance, transparency, and user confidence in AI systems. Enhancing interpretability while maintaining detection accuracy will drive advancements in anomaly detection across diverse domains.

**Keywords:** anomaly detection, anomaly explanation, anomaly detection gaps and limitations, anomaly detection challenges, anomaly explanation challenges

## WHY WE SHOULD THINK ABOUT GENDER-BASED VIOLENCE AS ENTREPRENEURS, TEACHERS, STUDENTS OR COMMUNITY MEMBERS

Ionela Horga[1], Manuela-Rozalia Gabor[1]

[1]Department of Management and Economy, UMFST G.E. Palade Târgu Mureș

**Background:** Gender-based violence (GBV) has multiple consequences, depending of the type of violence perpetrated, the age, capacity and protection mechanism of the survivor. The individual support a survivors needs could also be different and accessibility and availability of services are influencing the outcome of a case. The GBV impact varies from physicial injuries, mental health problems, low performance, absenteism, to alcohol or drug abuse. Any not-for-profit institution or company can develop a strategy to comprehensively tackle GBV, including sexual harrasement. The strategy should include five pilars: - Prevent violence by identifying the potential risks- Commit to gender equality across the workplace- Protect employees with supportive policies and procedures - Collaborate and campaign beyond the immediate workplace - Be accountable and monitor the actions

**Keywords:** gender-based violence, prevention, strategy

# ENHANCING DRUG-DRUG INTERACTION PREDICTION USING BIOACTIVITY SCORES, MOLECULAR DESCRIPTORS, AND ADVANCED NEURAL ARCHITECTURES

Flaviu Ioan Gheorghita[1]

[1]Department of Informatics, UMFST G.E. Palade Târgu Mureș

**Background:** In situations involving polypharmacy, the simultaneous use of multiple medications by a patient, predicting drug-drug interactions (DDIs) is essential to enhancing patient safety and reducing adverse drug reactions. To improve predictive accuracy, this study incorporates advanced bioactivity measures, molecular descriptors, and hybrid neural architectures, building on previous research that used Graph Neural Networks (GNNs) for DDI prediction. One of the main innovations is the use of KIBA scores, which are unified bioactivity metrics based on IC50, Ki, and Kd values. This allows for a more accurate evaluation of kinase-target interactions. Furthermore, physicochemical characteristics that have a substantial impact on drug interaction mechanisms, such as solubility, partitioning tendencies, and electron transfer behaviors, are captured by LUMO, HOMO, mLOGS, and mLOGD descriptors. A hybrid Convolutional Neural Network (CNN) and GNN architecture is used in the suggested method. While GNN layers model relational dependencies within molecular graphs, capturing both local and global molecular interactions, CNN layers extract spatial dependencies from molecular fingerprints. In order to improve representation, feature engineering goes beyond conventional descriptors and includes rotatable bonds, hydrogen bonding capacities, molecular weight, TPSA, and pKa values. The effectiveness of this architecture is demonstrated by experimental validation on datasets like LigandBox and Twosides, which show up to 85% accuracy in binary DDI classification. Furthermore, nuanced modeling of competitive and synergistic drug effects is made possible by the combination of Tanimoto similarity metrics and pairwise feature transformations. Through experiments on publicly accessible datasets in the Google Colab and Kaggle environments, this study also investigates the scalability of these methodologies. In order to create more thorough and comprehensible DDI prediction models, this study combines computational drug discovery techniques with actual bioactivity data. To guarantee greater applicability and dependability in therapeutic decision-making, future directions include the integration of temporal data, semi-supervised learning, and clinical validation.

**Keywords:** Drug-Drug Interactions (DDIs), Bioactivity Scores, Graph Neural Networks (GNNs), Molecular Descriptors, KIBA Score

## MULTIPLE ETYMOLOGY IN ROMANIAN LINGUISTICS: ORIGINS AND EVOLUTION

Emilia Cioloca (Ababei)[1]

[1]Department of Philology, UMFST G.E. Palade Târgu Mureș

**Background:** Multiple etymology is a fundamental concept in Romanian linguistics, analyzing how words derive from several linguistic sources. Traditionally, etymology has evolved from simply identifying the origins of words to exploring their historical context, structural relationships, and semantic invariances. This framework is particularly relevant in studying neologisms and borrowed terms within Romanian. Romanian linguists have extensively discussed multiple etymology as a solution to the complex origins of Romanian words. Al. Graur's pioneering work in 1950, followed by Th. Hristea's detailed exploration in 1968, provided foundational theories. They examined words which could trace roots to Latin, French, Italian, German or Russian. This analysis highlighted the intricate interplay of external and internal influences in Romanian vocabulary. Modern theories classify multiple etymology into three types: internal, external, and mixed. Internal etymology deals with derivatives originating within the same lexical family, often involving contamination or lexical shifts. External etymology addresses borrowings from other languages, the most common type in Romanian due to its exposure to diverse cultural and linguistic influences. Mixed etymology involves dual origins, combining both internal and external sources. The field's evolution underscores a paradigm shift: from viewing multiple etymology as an analytical challenge to recognizing it as a linguistic reality. The tendency now is to go beyond simple formal and semantic correspondences, incorporating historical attestations and detailed word biographies to trace their lexicalization. Ultimately, multiple etymology offers a robust methodological principle, moving past uncertainty to enrich understanding of Romanian lexical history. It reveals not only the structural richness of the Romanian language but also its intricate connections with various historical and cultural contexts.

**Keywords:** multiple etymology, Romanian linguistics, lexical borrowings, language history, semantic evolution

## THE POETICS OF TRAUMA AND MEMORY IN MARTA PETREU`S WORKS

Mihaela Alexandra Raica[1]

[1]Department of Philology, UMFST G.E. Palade Târgu Mureș

**Background:** Marta Petreu is one of the most representative figures of the romanian postmodernism through how her poetry employs trauma as a central thematic element, exploring its psychological and emotional impact on the individual and society. Through the lens of trauma, Marta Petreu's poetry challenges traditional notions of identity, memory, and history. Marta Petreu's work utilizes trauma as a catalyst for poetic innovation, exploring new forms of expression and challenging conventional poetic norms. By examining the themes of loss, displacement, and alienation in Marta Petreu's poetry, we can understand how trauma shapes the poet's subjective experience and worldview, this being represented both in her poetry works and her novels. The questions that are vital to be answered focus on what are the specific poetic techniques that Petreu employs to convey the intensity and complexity of trauma, how does trauma passed down through generations shape the experiences and identities of Petreu's characters and how(if) does gender intersect with trauma in Petreu's work?

**Keywords:** Postmodernism, Trauma, Memory, Intergenerational trauma, Romanian poetry

## CONCEPTUAL METAPHOR IN PSYCHOLOGY

Cristina Rusu-Marian[1]

[1]Department of Philology, UMFST G.E. Palade Târgu Mureș

**Background:** The paper examines the role and importance of conceptual metaphors in understanding psychological processes. In the introduction, it is emphasized that metaphors are fundamental tools that influence the way we perceive and interpret human experiences. The theoretical framework is built on the concepts of Lakoff and Johnson, who define conceptual metaphors as mechanisms that structure thinking and communication. In the section dedicated to metaphors in psychology, concrete examples and their effects on perceptions and behaviors are discussed, illustrating their profound impact on mental health. The practical implications are explored through the use of metaphors in therapy, highlighting how they can facilitate the healing and educational processes. The paper also addresses critiques and limitations associated with the use of metaphors, acknowledging potential risks and the cultural complexities involved. In conclusion, the value of metaphors in psychology is reiterated, and future research directions are suggested, emphasizing the need for a deep understanding of their role in communication and psychological intervention.

**Keywords:** Metaphor, Conceptual, Psychology, Perception, Therapeutic

## SILENCE BY DESIGN: PNR - PASSIVE NOISE REDUCTION AS A SUSTAINABLE SOLUTION IN AUTOMOTIVE ENGINEERING

Bianca-Mihaela Cășeriu[1], Bogdan Bucur [1], Petruta Blaga[1]

[1]Department of Industrial Engineering and Management, UMFST G.E. Palade Târgu Mureș

**Background: Background:** Noise pollution is a critical challenge in the automotive industry, affecting both passenger comfort and environmental quality. Traditional noise reduction techniques, such as active noise control systems, often require significant energy input, conflicting with sustainability goals.This study explores innovative combinations of materials and designs to advance passive noise reduction as a sustainable solution in modern automotive engineering. **Material and Methods:** Experimental tests were conducted using a blend of 60% base materials and 40% composite materials to evaluate passive noise reduction performance. The data obtained from these tests were systematically recorded in a structured database. The analysis employed a range of qualitative statistical techniques, including Mann−Whitney U tests for pairwise comparisons, Kruskal−Wallis analysis with Dunn's post hoc multiple comparisons to explore group differences, and multilinear regression to establish relationships between variables. Furthermore, decision tree modeling with the chi-square automatic interaction detector (CHAID) growing method was used to identify significant interactions and decision-making patterns within the dataset.**Results:** The study revealed that material combinations could be optimized to target specific frequency bands for noise reduction. For instance, bio-based acoustic materials reduced sound transmission by up to 30%, particularly in higher frequency ranges, while aligning with sustainability goals by minimizing the use of synthetic polymers. Composite materials provided notable attenuation in low-frequency noise, and their performance improved further when combined with certain structural design elements.**Conclusions:** The study demonstrates that passive noise reduction techniques are not only effective in attenuating vehicle noise across various frequency bands but also contribute significantly to sustainability goals. By utilizing tailored combinations of bio-based and composite materials, automotive engineers can achieve a balance between acoustic performance and environmental responsibility. Acknowledgement **"This work was supported by the University of Medicine, Pharmacy, Science and Technology "George Emil Palade" of Târgu Mureș Research Grant number 163/1/10.01.2023."**

**Keywords:** low-frequency noise, material applications, sustainability goals, high standards of acoustic performance, automotive industry

# SOCIAL SCIENCES

## RUSSIAN FEDERATION-TURKEY MILITARY COOPERATION. THE POTENTIAL OF THE S-400 TRIUMPH AFFAIR TO DERAIL THE EURO-ATLANTIC PATH OF TURKEY

Aurel Lazăr[1]

[1]Științe și Litere 1, UMFST G.E. Palade Târgu Mureș

**Background:** The lack of involvement of Brussels and Washington in supporting the Turkish Government during the 2016 coup attempt has led to a cooling of the Turkish state's relations with Western partners. Instead, the Russian Federation exploited the context and offered support to President Erdogan, which later facilitated the intensification of Russian-Turkish bilateral relations. The evolution of events culminated in 2017 with the decision of the Turkish state to acquire the S-400 Triumph air defense system from the Russian Federation. In this study, I intend to emphasize the limits of cooperation between the Russian Federation and Turkey in the military field and to highlight the impact of the S-400 deal on Russia-Turkey Relations, as well as on the ties between Ankara and Euro-Atlantic partners. I will pay special attention to how NATO perceived Turkey's decision to buy the Russian S-400 Triumph system and the direction in which the Ankara-NATO relationship could evolve if the military cooperation with the Russian Federation - the main threat to NATO - will record new positive developments. To have a clearer picture of Russian-Turkish relations in the military field, in the first section of the article, I will present the history of military relations between the two sides. In the second section of the article, I will highlight the actions initiated by the Turkish Government to ensure the air defense of the air territory and the context that favored military cooperation with the Russian Federation. The third section of the article will be dedicated exclusively to the S-400 deal, and in the last part of the paper I will present the potential implications that the Turkish state's decision could have on the relationship with Euro-Atlantic partners.

**Keywords:** Russian Federation, Turkey, cooperation, defense, S-400 Triumph.

## ETHICS IN NEUROMARKETING- A LITERATURE REVIEW

Laszlo Alexandru Gyori[1], Manuela-Rozalia Gabor[1]

[1]Department of Management and Economy, UMFST G.E. Palade Târgu Mureș

**Background:** Neuromarketing (the intersection of neuroscience and marketing) is a concept gaining increasing attention from both companies and researchers, due to its potential to provide insights into the decision-making process during purchases by analyzing brain responses. In this context, the study aims to analyze the concept of ethics in neuromarketing, identifying the key factors that shape this concept and exploring relevant solutions. This research reviews the existing literature on neuromarketing and ethics, identifying core themes to deepen in the search for solutions. Four ethical dilemmas are highlighted: consumer privacy, consumer consent, manipulation, and corporate integrity and transparency. Through this analysis, the study identifies the main actions researchers and marketers must undertake to ensure their work aligns with ethical principles. This paper contributes to the relatively limited research on ethics in neuromarketing and may serve as a reference for researchers interested in conducting studies with neuromarketing-specific techniques

**Keywords:** neuromarketing, ethics, transparency, ethical dilemmas

## KARATE AND YOGA – FORBIDDEN SPORTS IN COMMUNIST ROMANIA

Sebastian Delast Voinea Popovici[1], Giordano Altarozzi[1]

[1]Department of History and Political Sciences, UMFST G.E. Palade Târgu Mureș

**Background:** Karate-dō is a Japanese martial art brought from Okinawa to Japan in 1922 and later spread globally. Its name translates as "the way of the empty hand" and includes various striking and defense techniques. Its origins come from Chinese martial arts such as kung-fu, popularized by Gichin Funakoshi, the founder of the Shotokan style. Karate was promotedthroughout the world, including the USA and Europe, and in 1965 the European Karate Union was established, followed by the World Karate Federation in 1970. In Romania, the first contacts with martial arts took place in the 1920s-1930s, and elements of karate were integrated into judo training in the 1960s. The practice of karate was popularized through TV shows, books and articles, and the pioneers of the sport from Romania founded the first karate clubs and associations. However, in 1982, the authorities banned the practice of karate, considering it to include harmful practices such as yoga. Despite the ban, karate continued to be practiced in secret until restrictions were lifted after 1989.

**Keywords:** karate, Romania, Sport, security, communism

## MIGRATION AND THE BRAIN-DRAIN PHENOMENON

Zinica Maria Bejan[1]

[1]Department of Philology, UMFST G.E. Palade Târgu Mureș

**Background:** Migration is a subject whose effects are manifested on multiple levels: social, economic, linguistic, demographic and cultural.The proposed paper briefly presents some general considerations regarding the migration process, migration theories, its stages, and types. Whether it is driven by economic motivation or a socio-cultural impulse, migration has become an omnipresent phenomenon, addressed from multiple perspectives in the specialized literature. The second part of the paper highlights the phenomenon of brain drain. It provides an overview of the causes that have triggered this phenomenon, as well as a series of effects it has generated in the country of origin and the host country. The final part examines the brain drain phenomenon in the case of Romania. Migration is a phenomenon whose effects are not only felt by the individual migrant; the entire society is impacted by the magnitude this phenomenon has reached.

**Keywords:** migration, brain - drain, migrant

## CHALLENGES OF ETHICS AND INTEGRITY IN ROMANIAN PUBLIC ADMINISTRATION

Alina Aurora Aldea[1], Mihaela Kardos[2]

[1]IOSUD, UMFST G.E. Palade Târgu Mureș
[2]other, UMFST G.E. Palade Târgu Mureș

**Background:** In the most recent Transparency International Report, Romania is ranked the eighth most corrupted country in Europe as the Corruption Perception Index is concerned. Romania became the first European country to establish an institutional mechanism, The National Integrity Agency, in charge to control officials' and public servants' wealth, to investigate conflicts of interest and incompatibilities. Nevertheless, the perception of corruptions phenomenon is unchanged for the last two years. Appointing an ethics advisor (1) and a whistleblower (2) seem insignificant measures to be taken by public administration, in order to fight corruption. Moreover, adopting an ethical code (3), though compulsory and recommended, is a difficult measureable approach. The present research aims to analyse the issue of ethics and integrity in the public sector, as an indicator of a performance management, highlighting both achievements and shortcomings. The topic of ethics is considered in correlation to good governance, human capital and the corruption phenomenon. The methodology was a mixed one, using both qualitative and quantitative methods. Ethical instruments bear an utmost importance to enforce public sector credibility, to create a better image and to promote transparency and openness in the public service delivery. However, an important question is they are really implemented and if yes, to what extent. The analysis of the results after implementing the three ethical instruments within public administration in Romania confirms our hypothesis that there is lack of interest and involvement in the topic. As both ethics and corruption are closely related to employees' conduct, the results fill a gap in the ethics - corruption dichotomy, which requests further approaches with complementary methodology in the human resource field.

**Keywords:** ethics, integrity, public administration, corruption

## AI TRENDS IN ROMANIA FOR COMPETITIVENESS

Mihai Rareș Bircea[1], Mihaela Kardos[1]

[1], UMFST G.E. Palade Târgu Mureș

**Background:** Generative artificial intelligence and related breakthroughs have the potential to dramatically increase the efficiency of various markets. It brings drastic changes in the way entities conduct their operations. Artificial Intelligence represents a strategic opportunity for Romania, having the potential of improving the competitiveness and innovation in the national economy. The aim of this paper is to examine the potential of artificial intelligence technology within diferent entities (organizations, institutions), with a particular focus on how the integration of AI increases the organizational competitiveness, through a nuanced understanding of AI's historical achievements, current trends, and future potential. Publicly accessible datasets, including Eurostat, WorldBank, B-on platform, Google Academic, were used as primary data sources. The data were analyzed using statistical analysis to emphasize the multifaceted impacts of these trends. In Romania, the development, and integration of AI technologies, remains in the early stages, characterized by modest investments in research and development compared to the European Union Average. Beyond these modest investments, the country also faces significant challenges related to inadequate infrastructure, wich hinders the adoption and integration of advanced technologies like artificial intelligence.

**Keywords:** Artificial Intelligence, Inovation, Competitiveness

## PERSECUTION OF RELIGIOUS CULTS DURING THE GROZA GOVERNMENT (1945-1952)

Andrei Guțu[1]

[1]Department of History and Political Sciences, UMFST G.E. Palade Târgu Mureș

**Background:** After the end of the second world war, Romania fell under Soviet influence, which unhesitatingly imposed the rules established by Stalin in Romanian politics. This inevitably led to the formation of the Government Petru Groza, considered thefirst communist executive in Bucharest. Among the measures adopted by this government, the church was one of the mostpersecuted institutions in the country, in a shameful and undemocratic way. The persecution of the church was a fundamental objective for Stalinists, aiming to facilitate the sovietization of Romania. This involved a number of severe measures, including: 1) the seizure of church property; 2) the prohibition of the Greek Catholic Church; 3) the coercion of clergy and faithful from various denominations; 4) restricting religious activities; 5) conducting propaganda against religion; 6) exercising constant control over the Romanian Orthodox Church. The first anti-religious measure was the seizure of church property, implemented by a decree signed on August 3, 1948, which stipulated that all schools, hospitals and orphanages under the aegis of churches, regardless of confession, they were transferred to state administration. Thus, religious institutions were no longer able to promote educational and spiritual values, especially those related to social assistance, essential for the community. Another anti-liberal measure devoid of any social norm was implemented in 1948, when the Greek Catholic Church in Romania was banned, and the Catholic faithful were forced to convert to orthodoxy. All the assets of the Greek Catholic Church were confiscated and transferred to the Orthodox churches that were collaborating with the regime. Other inhuman measures were adopted, targeting church leaders, monks and ordinary believers, who were obliged to collaborate or conform to Stalinist policies; otherwise, they were arrested and subjected to torture in prisons, and some were exiled on charges of being spies of the West.

**Keywords:** Persecution, communism, church

## INFORMATION ON GEMS FROM THE NEW WORLD: CODICE FIORENTINO

Ana-Monica Crăciuneanu[1]

[1]Doctoral School of Letters, Humanities and Applied Sciences, UMFST G.E. Palade Târgu Mureș

**Background:** The following paper aims to portray the manner in which friar Bernardino de Sahagún's treatise, the Florentine Codex (Codice fiorentino), contributed to the information regarding the gems which he observed from the New World, in the sixteenth century. In order to establish the degree of novelty this text brought forth, it will be observed in contrast with the works on the subject of gems offered by authors such as Georgius Agricola and Camillo Leonardi, two other authors who published their works in the same period. This endeavour will occur in the context of observing how the aforementioned treatise came to light, for whom it was commissioned and why, the relevant events and phenomena which led to the name it bears (considering the fact that the aforementioned friar who belonged to the Franciscan order originated from Spain), as well as the effects it had on the Florentine upper class, through the example of the Medici family - known for their interest not only in collecting gems and objects made from them, but books as well. As such, the study at hand aims to highlight the importance of Sahagún's book, in the socio-political context as well as the effects it had in terms of the knowledge it shared regarding the matter of gems, and the economic consequences it had as a result.

**Keywords:** occurence, gems, Spain, Florence, Medici

# SUSTAINABLE GASTRONOMY AND TOURISM DEVELOPMENT

## COMPETITIVE AND SUSTAINABLE STRATEGIES IN THE LUXURY GASTRONOMY INDUSTRY: A CASE STUDY ON GREEN MICHELIN STAR STANDARDS

Noemi Pal (Tordai) [1], Flavia Dana Oltean[1]

[1]Department of Management and Economy, UMFST G.E. Palade Târgu Mureș

**Background:** The global luxury gastronomy industry is increasingly prioritizing sustainability, authenticity, and social impact in response to consumer demand and environmental challenges. This paper examines the role of sustainable practices in enhancing the competitiveness of fine dining establishments, focusing on their potential to contribute to economic growth, community development, and environmental preservation. It highlights key strategies, such as the use of local and seasonal ingredients, waste reduction techniques, and renewable energy solutions, as essential pillars of sustainable gastronomy.Through the analysis of international examples, including Green Michelin Star-awarded restaurants, the research identifies best practices and explores their applicability to the Romanian context. The paper also evaluates indicators of competitiveness, such as food waste reduction, local supply chain integration, and customer satisfaction, offering insights into how sustainable approaches can redefine excellence in gastronomy.The findings emphasize that adopting sustainability not only aligns with global trends but also positions fine dining establishments to achieve long-term success. Recommendations include the development of supportive policy frameworks, education programs for industry professionals, and enhanced collaboration between restaurants and local producers. This study offers a pathway for Romania's fine dining sector to align with international standards while capitalizing on its unique culinary traditions and natural resources.

**Keywords:** Sustainable gastronomy, Hospitality industry, Green Michelin Star, Competitiveness, Environmental impact

# INDEX OF AUTHORS

# INDEX OF AUTHORS

# INDEX OF AUTHORS