BOOK OF ABSTRACTS

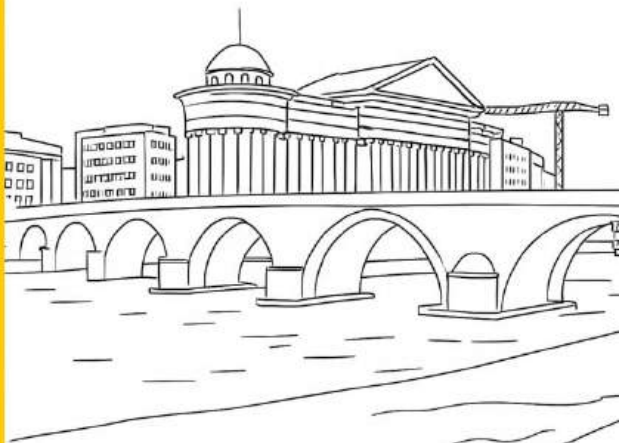
XXI Congress of the Doctors of the Republic of North Macedonia

With International Participation

Macedonian Medical Association

Македонско Лекарско Друштво

Holiday Inn Skopje
September 11-14, 2025



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МАКЕДОНСКИ МЕДИЦИНСКИ ПРЕГЛЕД –СПИСАНИЕ НА МАКЕДОНСКОТО ЛЕКАРСКО ДРУШТВО

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Welcome Speech

It is my great honor to welcome you to the XXI Congress of Doctors of Macedonia, organized by the Macedonian Medical Association. This abstract book represents the scientific core of our congress, gathering the contributions of colleagues from different fields of medicine, united by their dedication to knowledge, research, and clinical excellence.

This year holds a special meaning for all of us. We proudly mark **80 years since the foundation of the Macedonian Medical Association** — eight decades of commitment to the medical profession, continuous education, and the advancement of healthcare in our country. Throughout these years, our Association has been a pillar of support for generations of doctors, fostering collaboration and encouraging the highest standards in medical practice.

The abstracts collected here are not only scientific works but also a reflection of the energy, enthusiasm, and projgress within our medical community. They stand as testimony to the importance of research, exchange of experiences, and the role of science in improving patient care.

On behalf of the Macedonian Medical Association, I extend my gratitude to all participants, lecturers, and contributors who have enriched this congress with their work. May these pages serve as inspiration, motivation, and a foundation for future achievements in Macedonian and international medicine.

With respect,

Prof. Dr. Goran Dimitrov
President of the Macedonian Medical Association

Note from organizing committee

Dear colleagues,

It is my distinct pleasure, as President of the Organizing Committee, to welcome you to the XXI Congress of Doctors of Macedonia. This congress brings together physicians, researchers, and experts from across our country and abroad, creating a unique space for sharing knowledge, building collaborations, and inspiring progress in medicine.

The preparation of this event has been a journey of dedication, teamwork, and vision. Our goal was to design a program that balances tradition and innovation — reflecting the rich history of Macedonian medicine while also embracing the challenges and opportunities of modern healthcare.

The abstract book you hold is a symbol of this effort. It presents the scientific contributions of our colleagues, with topics that span across disciplines, generations, and perspectives. Each contribution adds value to our professional community and reaffirms the importance of lifelong learning and scientific exchange.

I would like to sincerely thank all members of the Organizing and Scientific Committees, our collaborators, and partners whose tireless work made this congress possible. Above all, I thank you — the participants — for your presence and contributions, which are the true heart of this event.

Let this congress be not only a scientific meeting but also a celebration of unity, dialogue, and the future of medicine in Macedonia and beyond.

With warm regards,

Dr. Onur Dika
President of the Organizing Committee

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BLOCK 1 – MACEDONIAN ASSOCIATION OF ANATOMY

STUDENT COUNSELING IN CONTEMPORARY HIGHER MEDICAL EDUCATION

Sanja MANCHEVSKA

Student Counseling Service, Institute of ME Physiology with Anthropology, Faculty of Medicine, Skopje, "Ss. Cyril and Methodius" University, R.North Macedonia

Abstract:

The aim of the paper is to review the factors related to academic performance and mental health of students in higher education, especially in medical and dental studies and to report the approaches for prevention and promotion of mental health and wellbeing of students in our country.

Some essential features and challenges of modern higher education including long, rigid and complicated curricula, lack of easily available diverse sources of knowledge and insufficient administrative and infrastructure opportunities can be strong stressors for students and can negatively affect their academic achievement and mental health and well-being. The most common problems (with learning and with high anxiety and depression) that students face, caused by the complex interaction between academic, personal and environmental factors, are addressed.

Counseling is professional assistance in resolving individual problems and emotional cconflicts and in obtaining personal and professional growth and development in clients. Faculty employees (teachers and other employes) as well as trained student peers can play an important role in this process. In our country, this approach has been successfully applied for more than ten years.

Conclusion: Student counseling services are a form of interdisciplinary approach to mental health of university students which has successfully been implemented in our country. Through this system of counseling, students in need can be monitored and can receive guidance throughout the whole study course in a safe environment. Strategies for the prevention of mental health in university students can be planed and implemented.

Key words: student counseling, academic performance, mental health

DNA FRAGMENTATION IN SPERMATOZOA: SIGNIFICANCE AND APPLICATION IN THE TREATMENT OF MARITAL INFERTILITY

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Abstract:

Worldwide, approximately 180 million cases of marital infertility occur annually, with the male partner contributing to nearly 50% of infertility cases. According to recent research, even after eliminating and treating the known factors contributing to the complexity of male infertility, many attempts at assisted reproduction still result in failure to achieve pregnancy. In recent years, beyond the standard semen analysis (spermiogram)—which provides data on sperm count, motility, and morphology—as well as endocrine and anatomical evaluations of the male reproductive system, attention has increasingly shifted toward assessing the genetic material (DNA) within spermatozoa. In this context, the degree of DNA fragmentation in sperm cells is analyzed, most commonly using the chromatin dispersion test (CDT) method. The application of the sperm DNA fragmentation test offers insight into the genetic material (chromatin) carried by the spermatozoon, enabling an assessment of the likelihood of success and expected outcomes of assisted fertilization in infertile couples. As a method that is significantly more affordable and less invasive for patients compared to in vitro fertilization, its use is becoming increasingly essential in the diagnosis and treatment of marital infertility.

PARAMETERS FOR EVALUATING THE FERTILE CAPACITY OF EJACULATE IN CANDIDATES FOR IN VITRO FERTILIZATION

Ljubica TASHEVA[1]

[1]Institute of Medical Histology and Embryology, Faculty of Medicine, Skopje, University "Ss. Cyril and Methodius," Republic of North Macedonia

Abstract:

According to the definition of the World Health Organization (WHO), infertility is the inability to conceive after one year of regular sexual intercourse in a sexually active couple without contraceptive protection. Nearly 15% of couples fail to achieve conception within a one-year period.

When initiating infertility treatment, the first laboratory evaluation to be performed is normally the analysis of the ejaculate, in order to determine the presence or absence of a male-related cause of infertility.

In this regard, the aim is to discuss semen analysis, which is of great importance in the evaluation of a couple's fertility, in all its aspects, taking into consideration the latest criteria provided by the World Health Organization.

The presence of normal semen parameters often allows the exclusion of a significant male factor in infertility, provided there is no suspicion of sexual dysfunction. Conversely, the detection of abnormal parameters in semen analysis requires further endocrinological, urological, and genetic investigations.

KEY ANATOMICAL CHARACTERISTICS AND VARIATIONS OF THE NOSE AND PARANASAL SINUSES

Stefan JOVIĆ - *Otorhinolaryngology Military Medical Academy, Belgrade, Republic of Serbia*

The nasal cavity and the paranasal sinuses are complex structures, made up of an intricate jigsaw of bones. The advent of endoscopic sinus surgery led to a resurgence of interest in the detailed anatomy of the internal nose and paranasal sinuses.

The anatomy of the nasal cavities and paranasal sinuses is one of the most varied in the human body. Most common anatomical variations include agger nasi cells, nasal septum deviation and concha bullosa. Other variations seen in this region are uncinate process variations, paradoxical middle turbinate, Haller, Onodi and supraorbital ethmoid cells, accessory ostia of maxillary sinus. Less common variations include any sinus aplasia, crista galli pneumatization and dehiscence of the optic or maxillary nerve, internal carotid artery and lamina papyracea.. It is essential for the sinus surgeon to have a broad spectrum of knowledge not only of "the typical" anatomy but also all the possible anatomical variations. For patients who are planning to undergo functional endoscopic or other skull base surgery, however, it is important to be aware of certain anatomic variants, such as sphenoethmoidal (Onodi) cells, pneumatization of anterior clinoid processes, supraorbital cells, infraorbital ethmoidal (Haller) cells, pneumatization of the dorsum sella, and dehiscence of the lamina papyracea. Failure to recognize these variants is associated with a higher rate of surgical complications. Some of the anatomic variants have been reported to be associated with chronic rhinosinusitis, possibly leading to inflammation by obstructing drainage pathways from the sinuses and nasal cavity Specifically, large ethmoidal bullae correlated with maxillary sinusitis. A significant association has been found between the presence of sinus mucosal disease and nasal septal deviation, bilateral concha bullosa, Haller cells, hypertrophic ethmoidal bullae, and Agger nasi cells.

Key words: anatomy, nose, paranasal sinuses, anatomical variant

FROM ANATOMY TO SURGERY: UNDERSTANDING THE INGUINAL CANAL AND ITS CLINICAL SIGNIFICANCE

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Abstract:
The inguinal canal is a short passage in the lower anterior abdominal wall, extending from the deep inguinal ring laterally to the superficial inguinal ring medially. It measures approximately 4 cm in length.
The canal's boundaries are formed anteriorly by the aponeurosis of the external oblique (reinforced laterally by the internal oblique), posteriorly by the transversalis fascia (reinforced medially by the conjoint tendon), superiorly (roof) by arching fibers of the internal oblique and transversus abdominis muscles and inferiorly (floor) by the inguinal and lacunar ligaments.
The inguinal canal transmits the spermatic cord in males, the round ligament of the uterus in females and the genital branch of the genitofemoral nerve in both sexes.
The canal is a natural area of weakness in the abdominal wall and is clinically significant as the most common site of herniation, particularly inguinal hernias. These are classified anatomically as indirect (passes through the deep inguinal ring, inguinal canal and superficial inguinal ring, lateral to the inferior epigastric vessels) or direct (occurs directly through a weakened area of the posterior wall of the canal, medial to inferior epigastric vessels).
Detailed knowledge of the canal's anatomy is essential for accurate diagnosis and surgical planning, making it a key focus in both anatomical education and clinical practice.

ANATOMY OF THE UTERUS: A KEY TO UNDERSTANDING UTERINE PATHOLOGIES

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Abstract:
The uterus is a dynamic and central organ of the female reproductive system, whose complex functioning is crucial for the menstrual cycle, fertilization, and the development of new life. A thorough understanding of its anatomy – including its structural layers, vascularization, innervation, and relation to neighboring organs is essential for clinicians in the accurate diagnosis and treatment of uterine pathologies. The uterus is composed of three layers: perimetrium, myometrium, and endometrium, each of which has specific clinical significance in diseases such as cancers, fibroids, endometrial hyperplasia, or conditions like adenomyosis.
Anatomical variations and deviations can also contribute to infertility, dysmenorrhea or difficult childbirth. The proximity of the uterus to the bladder, rectum, and pelvic blood vessels means that pathologies can have multisystemic consequences and must be assessed with a deep anatomical understanding. Moreover, the interpretation of imaging techniques and surgical interventions involving the uterus largely depends on anatomical precision to avoid complications.
Therefore, a detailed understanding of the anatomy of the uterus is not only theoretical but directly impacts the accuracy of diagnoses, the effectiveness of treatments, and the quality of healthcare for patients in gynecology and reproductive medicine

ANATOMICAL VARIATIONS OF ETHMOID SINUS CELLS ON CT OF PARANASAL SINUSES

Biljana BOJADZIEVA STOJANOSKA, Niki MATVEEVA, Biljana ZAFIROVA, Julija ZHIVADINOVIK, Biljana TRPKOVSKA, Ace DODEVSKI, Elizabeta CHADIKOVSKA, Anamarija PAUNKOVSKA, Jovana KORDOVSKA
Institute of Anatomy, Medical Faculty, Skopje, R. Macedonia

Abstract

Objective. The purpose of this study was to determine the incidence of anatomical variations of ethmoid sinus cells on CT of paranasal sinuses.

Material and methods. A retrospective evaluation of variations of ethmoid sinus cells on coronal CT scans of 120 examinees at the age of 17 to 70 was conducted. CT was performed on CT scanner Somatom, Volume Zoom, Siemens, multislice 4, at the Institute of Radiology, Medical Faculty, Skopje. The prevalence of anterior ethmoid cells (agger nasi cell, Haller cell and large bulla ethmoidalis) was evaluated on CT scans as being present separately as unilateral or bilateral.

Results. The most present anterior ethmoid cells were agger nasi present in 84% of patients bilaterally. Haller cells were found in 22% of patients on the left side and in only 17% on right side of nasal cavity. Bulla ethmoidalis left and right was present with 12% and 18%, respectively the difference in percentages of the presence of agger nasi cells, Haller cells and bulla ethmoidalis, according to sex, was statistically insignificant for $p>0.05$.

Conclusion. Preoperative radiological-anatomic evaluation of anterior ethmoid sinus cells is important because of their location near to very important structures like nasolacrimal duct and ethmoid infundibulum. Their identification on CT of paranasal sinuses is important to avoid complications while performing functional endoscopic sinus surgery (FESS) and to make association with obstruction of drainage ostia.

***Key words**:* paranasal sinuses, anatomical variations, ostiomeatal region, computed tomography

ASSESSEMENT OF ATHROPOMETRIC PARAMETERS OF GROWTH IN PRESCHOOL CHILDREN WITH QUALITATIVE EXAMINATION

TRPKOVSKA Biljana, ZAFIROVA Biljana, ZIVADINOVIK Julija, MATVEEVA Niki, CHADIKOVSKA Elizabeta, BOJADZIEVA Biljana, DODEVSKI Ace, PAUNKOSKA Anamarija, KORDOVSKA Jovana

Institute of Anatomy, Faculty of Medicine, Ss. Cyril and Methodius University in Skopje, R. North of Macedonia

Abstract:

Evaluation of sex-specific differences of anthropometric parameters of growth and nutritional status in preschool children from Macedonian nationality with qualitative examination.

The study included a total of 200 healthy 5 years-old preschool children from Macedonian nationality. Ten anthropometric parameters were measured, defining longitudinal, circular and transversal dimensionality of the skeleton using standard technique and instruments for measurement. The following indices were selected and calculated: weight-for –age; height-for-age and BMI. Skin –folds (triceps and scapula) were also measured. Qualitative examinations were with self -organizing maps.

Sex-specific differences for almost all anthropometric parameters were detected, but they were not significant. Boys showed higher values than girls regarding height, weight but for BMI were not significant. Values at the 50^{th} percentile in boys were 20 kg for BW, 113.2 cm for BH and 15.94 kg/m². The values of these parameters in girls were 20 kg for BW, 115.4 cm for BH and 15.64 for kg/m² for BMI. The values for skin fold for triceps were higher in boys (10.6. ± 3.9) instead of girls (9.7 ± 3.3).

The results obtained can be used for criteria for assessment and detecting deviations in growth and nutritional status in preschool children.

Key words: anthropometry, growth, nutritional status, qualitative examination, preschool children.

NEOSTIGMINE IN THE TREATMENT OF PSEUDO-ILEUS: ADMINISTRATION ROUTE, EFFICACY AND SAFETY

ORANSKA G. , LIKA G.
PHI University Clinic for Surgical Diseases "St. Naum Ohridski" – Skopje

Abstract:
Introduction: Intestinal pseudo-obstruction is characterized by the dilation of bowel in the absence of an anatomical obstruction. Acute colonic pseudo-obstruction (ACPO) is initially treated with conservative therapy. If no improvement is seen after 48-72 hours, neostigmine may be administered.
Methods: The comparison and efficiency in the administration of subcutaneous versus intravenous neostigmine in the treatment of patients with ACPO.

Results: Neostigmine can be administered either intravenously or subcutaneously. Neostigmine is an acetylcholinesterase inhibitor that exhibits a parasympathomimetic effect by increasing the amount of available acetylcholine and indirectly stimulating muscarinic and nicotinic receptors. Subcutaneous administration results in slower absorption compared to intravenous administration. The rapid onset of action of intravenous neostigmine, associated with rapid symptom resolution, usually within minutes to hours. The subcutaneous administration of neostigmine works by creating a depot, leading to a slower absorption rate and a more gradual increase in acetylcholine levels. Patients receiving intravenous neostigmine require close cardiopulmonary monitoring that allows for immediate support and treatment in the event of bronchospasm or bradycardia. On the other hand, subcutaneous administration of neostigmine results in a slower increase in acetylcholine levels. This slower pharmacokinetic profile reduces the risk of sudden, severe cardiovascular effects, making continuous cardiac monitoring less critical.

Discussion: In patients with acute colonic pseudo-obstruction who have not had a response to conservative therapy, treatment with neostigmine rapidly decompresses the colon. Subcutaneous injection of neostigmine has a lower adverse event rate but a longer response time in patients with ACPO, whereas intravenous injection has a higher adverse event rate but a shorter response time.
Conclusion: Both routes can be reasonable and safe options for patients with ACPO, depending on the clinical urgency and available resources within the facility.
Keywords: Pseudo-Ileus; ACPO; Neostigmine

COMPLICATIONS DURING EXTRACTION OF FETUS MORTUS – CASE REPORT

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Abstract:
Intruduction: Fetal death in utero is the term used when the death of a fetus occurs after the 20th week of pregnancy.
Case report: 39 years old patient was transferred to the ICU after a deceased fetus was extracted via cesarean section. During the same procedure, multiple coagula were observed in the abdominal cavity. Given these findings, an exploratory laparotomy was performed, which confirmed the presence of multiple coagula in the abdominal cavity, without signs of injury to parenchymal organs or lesions of any hollow organ of the digestive tract. A transabdominal hysterectomy was performed, after which the peritoneal cavity was re-inspected, an intra-abdominal drain was placed, and laparotomy closure was completed with accompanying hemostasis.

Upon admission to the ICU, the patient was intubated and sedated, immediately placed on non-invasive monitoring and mechanical ventilation, with continuous analgesia and sedation via perfusor, on inotropic support, stable, and slightly tachycardic. Intensive therapy was administered according to laboratory and acid-base status. Intraoperatively, the patient received 7 units of erythrocyte concentrate, 2 units of fresh frozen plasma, 15 units of cryoprecipitate, 60 ml of bicarbonate, 10 ml of calcium gluconate, 2g of tranexamic acid, 1.5g of Octaplex, and 6 units of platelet concentrate. On the following days the patient was extubated and placed on an oxygen mask, with satisfactory urine output, hemodynamically and rhythmically stabilized, afebrile and stable blood counts. A follow-up abdominal ultrasound was performed, after which the intra-abdominal drain was removed. In consultation with the gynecologist and with no further need for intensive care treatment in our facility, the patient was transferred for continued hospital care.
Conclusion: After extraction of fetus mortus, the most common complications are incomplete passage of product of conception requiring medical or surgical management, infection, hemorrhage, disseminated intravascular coagulation, a uterine injury requiring surgical repair, or hysterectomy.
Keywords: fetus mortus, hemorrhage

BLOCK 2 – ASSOCIATION OF EPIDEMIOLOGISTS IN MACEDONIA & ASSOCIATION OF DOCTORS SPECIALISTS IN HYGIENE AND ENVIRONMENTAL HEALTH

BURDEN OF FOODBORNE INFECTIONS IN NORTH MACEDONIA

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Foodborne diseases (FBD) still cause a significant public health, economic and social burden worldwide. The World Health Organization (WHO) estimated that, in 2010, 22 foodborne enteric pathogens caused two billion illnesses, over one million deaths and 78.7 million DALYs. The aim of the paper is to determine the burden of diseases associated with microbial hazards in food at the national level and to determine the public health and economic impact. Material and methods: Data from the national database of infectious diseases for 2019 were used, incidence, YLL, YLD, DALY and economic losses were determined. Results: The analysis included 7682 people suffering from infections related to unsafe food. Of the total number, 3755 or 48.9% patients were male and 3927 or 51.1% patients were female. The largest number of diseases occurred in month VIII with 1212 cases. The most common age group was people aged 6-15 (211 patients). The highest number of cases was registered in Skopje with 312 cases (32.8%). Total DALYs was 1417.328 or 68.25 DALYs per 100,000 population. Bacterial foodborne infections and intoxications caused a burden of 58 DALYs; Brucellosis caused 1.404 DALYs; Viral Hepatitis A caused 23.54 DALYs; Enterocolitis caused 1266.18 DALYs; Echinococcosis caused 4.032 DALYs; Escherichia coli caused 11.03 DALYs; Campylobacteriosis caused 2.12 DALYs; Listeriosis caused 29.51 DALYs; Salmonellosis caused 19.9 DALYs; Toxoplasmosis caused 0.11 DALYs; Giardiasis caused 0.592 DALYs; Shigellosis caused 0.91 DALYs. The economic burden was 472,751,172 denars or 7,687,011 €. Conclusion: This is the first national study of the burden of diseases associated with unsafe food and should serve as an important resource for focusing actions that will reduce this burden.

Keywords: burden, microbiological hazards, unsafe food, YLD, DALY

UNDERSTANDING VACCINE HESITANCY: PARENTAL BELIEFS AND BEHAVIORS IN SKOPJE

Jansun BUKOVETZ [1], Aneta Kostova[1], Gordana Ristovska[1,2], Katerina Stavrikj[3], Milica Stanoevska[4], Iskra Shojleska[5]

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Vaccine hesitancy remains a public health concern globally, and understanding the underlying beliefs and behaviors of parents is crucial for improving immunization coverage. The aim of the paper is to evaluate attitudes and beliefs among parents related to children's vaccination. This cross-sectional study was conducted at the Health Centre Skopje, the primary provider of immunization services in Skopje, between April and September 2022. A total of 398 parents participated voluntarily by completing a structured questionnaire designed by the research team, which explored sociodemographic data, knowledge, attitudes, and satisfaction with vaccination services. The questionnaire was administered by healthcare providers using mobile devices via Google Forms. Descriptive and inferential statistical analyses were conducted using SPSS version 16.0, with statistical significance set at $p < 0.05$. While many parents reported vaccinating their children according to the recommended schedule, discrepancies were identified between self-reported and actual vaccination status. Factors influencing irregular vaccination included concerns about illness, chronic health conditions, and fears related to vaccine safety. Variations in reasons for vaccine hesitancy were observed across different vaccination centers and among parents with different educational backgrounds. Social influences and trust in healthcare professionals also played a role in vaccination decisions. Despite the majority of parents consulting pediatricians or family doctors, a notable portion still relied on informal sources of information. These findings suggest that while immunization is generally accepted, specific misconceptions and contextual barriers contribute to delays in vaccination. Addressing vaccine hesitancy will require tailored communication strategies, enhanced provider–parent dialogue, and trust-building interventions that reflect the community's specific needs and concerns.

Keywords: vaccine hesitancy, parental beliefs, immunization, health communication, Skopje, North Macedonia

IMPLEMENTATION OF MANDATORY IMMUNIZATION IN THE REPUBLIC OF NORTH MACEDONIA IN 2024: ACHIEVEMENTS AND CHALLENGES

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Institute of Public Health of the Republic of North Macedonia

In 2024, the Republic of North Macedonia continued implementing the national mandatory immunization program in accordance with the established immunization calendar and legal framework. While there was progress in vaccination coverage for certain vaccines, overall coverage remained below the recommended threshold of 95%. Primary vaccination with three doses against hepatitis B (91.3%) and Haemophilus influenzae type B (90.8%) exceeded 90%, surpassing pre-pandemic levels. Coverage with the DTP-IPV vaccine increased, partly driven by a pertussis outbreak that prompted intensified efforts to identify and vaccinate unvaccinated or undervaccinated children. These efforts contributed to a rise in the number of administered doses and improved coverage rates. Despite this, measles-mumps-rubella (MMR) vaccine coverage remains concerningly low, with first-dose coverage at 72.7% and second-dose at 79.1%. HPV vaccination coverage among girls remains the lowest (50.2%), while in 2024 the program was expanded to include boys for the first time. Vaccination rates for rotavirus and pneumococcal vaccines have continued to show gradual improvement since their introduction in 2019. However, significant regional disparities persist; several public health centers such as Skopje, Bitola, Strumica and particularly Kumanovo recorded the lowest coverage rates for multiple vaccines. The accumulation of susceptible individuals due to persistently low coverage increases the risk of outbreaks of vaccine-preventable diseases. To address these gaps, intensified outreach, targeted catch-up campaigns, extended vaccination hours, school-based immunization, and continuous training of vaccination teams are essential. Emphasis on timely electronic recordkeeping through the national electronic health system and strengthening public awareness are essential for achieving and maintaining sustainable immunization coverage.

EPIDEMIOLOGICAL SURVEILLANCE AND RISK OF HEMORRHAGIC HEVERS IN NORTH MACEDONIA: CURRENT SITUATION AND CHALLENGES

Dragan KOCHINSKI
Institute of Public Health, North Macedonia

Viral hemorrhagic fevers represent a serious public health challenge due to their high lethality, potential for epidemic spread, and limited options for specific treatment and prevention. In North Macedonia, Crimean-Congo hemorrhagic fever (CCHF) and hemorrhagic fever with renal syndrome (HFRS) are the most significant representatives of this group of diseases. CCHF is endemic in the region, transmitted mainly through tick bites or contact with infected blood, with a mortality rate of up to 40%. HFRS, caused by hantaviruses (mainly the Dobrava-Belgrade serotype), is transmitted from rodents through inhalation or contact with contaminated excreta, with a lethality of up to 15%.

Epidemiological data indicate the re-emergence of CCHF in 2023 after 13 years without registered cases, with three confirmed cases and one death. For HFRS, between 2010 and 2023, 31 cases and 3 deaths were recorded, with two significant clusters in 2017. For both diseases, the most frequently affected are men aged 27–47 years with occupational exposure (farmers, livestock breeders, healthcare workers).

Challenges in surveillance include low awareness among the population and healthcare workers, insufficient laboratory equipment, and the need for better intersectoral coordination. Recommended measures include strengthening surveillance based on the “One Health” approach, educating at-risk groups, improving hygiene conditions, controlling vectors and rodents, and enhancing laboratory capacities.

The re-emergence and persistence of these infections in North Macedonia highlight the necessity for sustainable preventive strategies and continuous epidemiological surveillance to reduce the risk of future epidemics.

ROLE OF PERTUSSIS VACCINE IN DEVELOPING A SEVERE OUTCOME DURING AN OUTBREAK IN NORTH MACEDONIA IN 2024-2025

Enkela POLLOZHANI, Dragan Kochinski, Kristina Stavridis, Marija Gochevska, Dugagjin Osmani

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Pertussis cases in North Macedonia in the last ten years have been registered sporadically. During 2018-2023, pertussis vaccination coverage of the target population with five doses varied between 68.9% and 88.5%. A pertussis outbreak was declared during the period January 2024 - April 2025. The investigation aimed to estimate patients' vaccination status and its role in the development of severe cases. A cross-sectional study was conducted including all cases reported during the outbreak. The data were extracted from the national surveillance system. Cases, having received all doses of pertussis vaccine for their age, were defined as fully vaccinated, while others with ≥1 doses as partially vaccinated. We used descriptive analysis for demographic data and logistic regression to estimate an association between vaccination status and the development of severe cases. Totally 1,186 pertussis cases with a median age of 6 years (age range 10 days – 82 years) were reported. Less than 40% (n=437) were fully vaccinated, 22% (n=258) partially vaccinated, while 28% (n=334) were unvaccinated (including 102 infants ≤2 months, who did not receive the first dose, scheduled at 2 months) and 13% (n=159) had unknown vaccination status. Totally 196 cases were hospitalized, with higher odds for hospitalization among infants ≤6 vs cases >6 months old (OR=22.7; 95%CI: 15.6-33.4), in unvaccinated vs fully vaccinated (OR=3.3; 2.2-4.9) and in vaccinated with >10 vs ≤10 years passed from last dose (OR=1.83; 95%CI: 1.32-2.59). In the final model of multivariate analysis, the unvaccinated, adjusted by age, were still more likely to be hospitalized. Fully vaccinated individuals could become infected with pertussis, and infants have a high probability to develop severe disease, highlighting the insufficient protection of the current vaccination schedule. Our results support the need for the administration of maternal vaccination to protect newborns and further investigations to develop new immunization strategies for better pertussis control.

BLOCK 3 – MACEDONIAN SOCIETY FOR FORENSIC MEDICINE

AUTOPSY AND IDENTIFICATION OF THE VICTIMS OF THE MASS DISASTER CAUSED BY FIRE IN KOCHANI

Aleksandar STANKOV[1]; Verica POPOVSKA[1]; Zlatko JAKJOVSKI[1]; Renata JANKOVA[1]; Goran PAVLOVSKI[1]; Natasha BITOLJANU[1]; Viktorija BELAKAPOSKA SRPANOVA[1]; Ljupco CHAKAR[1]; Ana IVCHEVA[1]; Natasha DAVCHEVA[1]; Ariton RAKIPI[2]; Zoran MITREVSKI[2]; Kristijan KOTEVSKI[3]

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Department for forensic medicine, Clinical hospital Bitola[3]

Abstract:

Fire-related deaths in discotheques and nightclubs represent a serious public safety issue, most often resulting from a combination of infrastructural deficiencies, insufficient fire protection measures, and human factors. Key elements that contribute to such tragedies include flammable interior materials, locked or blocked exits, overcrowding, and poor emergency preparedness. Nightclubs present unique risks due to high occupancy, low lighting, and the high potential for panic. A critical aspect following such tragedies is the forensic identification of the victims, which can be extremely challenging due to the extent of thermal injuries and decomposition of the bodies. Visual identification is often impossible, requiring the application of scientific methods such as dental record analysis, DNA profiling, and fingerprint comparison. Forensic pathologists, anthropologists, and odontologists play a vital role in the identification process. An interdisciplinary approach is essential for successful victim identification and to support institutional and legal procedures. On March 16, 2025, at approximately 2:30 a.m. local time, one of the most tragic events in the history of North Macedonia occurred in the Pulse nightclub in Kochani. The nightclub was located in a repurposed warehouse and operated without a valid license. At the time of the fire, twice as many people as permitted were present in the club. During the use of pyrotechnic effects, the ceiling material ignited, and the fire spread rapidly, releasing thick, toxic smoke that filled the venue within minutes. As a result of the fire, 62 people lost their lives, and over 155 were injured. For identification purposes, two forensic methods were applied: DNA analysis and fingerprinting. The identification process involved the Institute of Forensic Medicine and members of the Forensic Examinations Department of the Ministry of Interior. Thanks to efficient coordination, autopsies and victim identification were completed within 60 hours. This tragic case reveals the deadly combination of overcrowding, flammable interiors, neglect of safety measures, and institutional failure, and serves as a powerful call for systemic reforms in public safety, urban planning, and crisis preparedness.

WOUND AGE ESTIMATION

Natasha BITOLJANU, Viktorija BELAKAPOSKA SRPANOVA, Goran PAVLOVSKI, Ana IVCHEVA, Ljupco CHAKAR, Rosica SIAMKOURI, Aleksandar STANKOV, Zlatko JAKOVSKI
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Abstract:
In forensic medicine practice one of the most important tasks of forensic specialists is the determination of wound age. Wound age describes the time interval between the infliction of an injury and the time of death. It can be considered as the survival time of the individual following an injury. This helps in providing answers to questions associated with the investigation of criminal-legal cases. By wound age determination some issues are resolved including the time of infliction of an injury, the survival time post-injury, evaluation of the causal relationship between wound and time of injury and death. The wound is defined as an impaired morphological and functional skin integrity. Wound healing is a vital process as a response to injured tissue and it involves and interacts with different immunological and biological systems. The process of wound healing has not been completely elucidated and understood and hence, it is a challenge for scientists to investigate its underlying mechanism. From a historical point of view, wound age has been a subject of analysis in forensic medicine practice, but depending on the possibilities and development of current technologies, different methods have been applied (macroscopic observational, histological, immunohistochemical, etc.). Over the last two decades, with advances in molecular biology technology a new method has been applied for determination of wound age by analyzing the expression of mRNA. The aim of this study was to develop a more accurate method for wound age determination. The principal aim was to determine the changes in mRNA expression in the wound healing process and to apply them in estimating wound age. This investigation was based on a previous scientific knowledge about the wound healing process, i.e., time-dependent events in the process controlled by the changes in gene expression at a precisely determined time intervals.

NOVEL GENETIC MARKERS IN THE DIAGNOSIS AND PREVENTION OF SUDDEN CARDIAC DEATH (SCD)

Viktorija BELAKAPOSKA SRPANOVA[1], Zlatko JAKJOVSKI[1], Natasha BITOLJANU[1], Sasho RISTESKI[1], Goran PAVLOVSKI[1], Ana IVCHEVA[1], Ljupcho CHAKAR[1], Aleksandar STANKOV[1],

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Abstract:
Sudden cardiac death (SCD) remains a major global cause of mortality, frequently occurring without prior symptoms or known cardiovascular disease. Traditional diagnostics focus on structural or ischemic causes; however, advances in genomics have revealed that inherited mutations in genes related to arrhythmias and cardiomyopathies play a critical role in predisposing individuals to SCD. This study investigates the utility of novel genetic markers in the diagnosis, risk assessment, and prevention of SCD, with a focus on forensic and clinical applications. A combined retrospective and prospective analysis was conducted on cases of unexplained sudden cardiac death and, where possible, surviving family members. Next-generation sequencing (NGS) was used to identify variants in genes associated with primary electrical disorders (e.g., long QT syndrome, Brugada syndrome, catecholaminergic polymorphic ventricular tachycardia), cardiomyopathies, and ion channelopathies. Particular emphasis was placed on emerging markers such as *RYR2*, *CALM1–3*, *ANK2*, and *SCN10A*, which are not yet widely included in standard SCD panels. The addition of these genes increased the diagnostic yield in post-mortem cases where traditional autopsy findings were inconclusive (sudden arrhythmic death syndrome – SADS). Cascade genetic testing of relatives identified asymptomatic carriers, enabling early clinical monitoring and interventions such as lifestyle changes or implantable cardioverter defibrillators (ICDs). This approach bridges forensic pathology with preventive cardiology and offers the potential to reduce the incidence of SCD, particularly among younger populations. Despite the promise of forensic genomics, challenges remain—including ethical concerns, variant interpretation, and the lack of population-specific genetic databases. Nonetheless, integrating novel genetic markers into forensic practice can transform unexplained deaths into actionable insights, improving both public health and family outcomes.
Key words: Sudden cardiac death, Novel genetic markers, Cascade genetic testing

THE FINANCIAL IMPACT OF EARLY DIAGNOSIS: WEIGHING COSTS AGAINST BENEFITS IN PREVENTING SUDDEN CARDIAC DEATH (SCD)

Zlatko JAKJOVSKI, Viktorija BELAKAPOSKA SRPANOVA, Natasha BITOLJANU, Goran PAVLOVSKI, Ljupcho CAKAR, Ana IVCHEVA, Renata JANKOVA, Sasho RISTESKI, Hilda JOVANOVIC, Ksenija NIKOLOVA, Marija BUJAROSKA PERKOVIC, Zorica BOZINOSKA, Aleksandar STANKOV

Institute for forensic medicine, criminalistics and medical deontology, Medical Faculty Skopje, University of "Ss. Cyril and Methodious"

Abstract:

Sudden cardiac death (SCD) is a major public health concern, accounting for a significant proportion of cardiovascular-related mortality, often in individuals with no prior warning signs. This paper explores the financial impact of early diagnostic interventions for SCD, including genetic screening, electrocardiogram (ECG) monitoring, and family history assessments. It also considers the complementary roles of post-mortem autopsy and public and professional education in both prevention and cost containment. Autopsy, particularly molecular autopsy in young victims, provides critical information for identifying inherited cardiac conditions that may place surviving relatives at risk, facilitating targeted screening and reducing future healthcare costs. Additionally, education of healthcare providers and the public about early warning signs and risk factors improves early detection and intervention outcomes. By weighing the initial investment in these strategies against the long-term savings from avoided emergency care, hospitalizations, and lost productivity, the analysis supports early diagnosis and education as cost-effective tools in reducing SCD incidence. The findings highlight the importance of an integrated approach combining early diagnostics, post-mortem investigation, and widespread education to maximize both clinical outcomes and economic efficiency.

Key words: Sudden Cardiac Death, Diagnosis, Prevention, Education, Financial benefit

CHILD ABUSE SYNDROME-CLINICAL AND FORENSIC ASPECTS

Pavel TIMONOV, Ivan TSRANCHEV, Kristina HADZHIEVA, Plamena DINEVA, Teodora GUDELAVA, Mirena SOTIROVA, Stela YANCHEVA, Fares EZELDIN, Antoaneta FASOVA

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Abstract:
Child abuse syndrome includes physical, sexual and emotional abuse over children and it is a huge problem which has significant consequences for public health. The problem of child abuse and human rights violations is one of the most critical matters on the international human rights agenda nowadays. Child abuse is an interdisciplinary problem requiring a collaborative team of professionals from fields such as medicine with different specialties, nursing, social work, mental health, law enforcement, and legal expertise to provide effective identification and intervention. Physical consequences range from minor injuries to severe trauma and death. Shaken baby syndrome (SBS) is one of the most common causes of death or serious neurological injury resulting from child abuse. It is characterized by acute encephalopathy with subdural and retinal hemorrhages. We present some case of Abusive head trauma that does not show the typical clinical triad, but they are typical examples of the physical child abuse. Thus, forensic pathologists must analyze all findings from the crime scene to the autopsy theatre to determine correctly SBS/AHT.

Key words: Child abuse syndrome, Shaken baby syndrome, Abusive head trauma

BLOCK 4 – MACEDONIAN ASSOCIATION FOR DIGITAL HEALTH

Macedonia: Exporting Digital Health to the World

Prof. Dr. Orce SIMOV

Macedonia punches far above its weight in the sphere of healthtech innovation. From the unprecedented system-wide health record integration provided by Moj Termin, to the astonishing global success of Alkaloid, to the remarkable innovation of technologists like Dr. Marjan Gjusev - private companies from Macedonia do big things around the world. And in research - Macedonia provides remarkable fuel for global research projects, whether it is the use of data from systems here to provide valuable information for projects, or the skilled and dynamic cadre. Macedonia is an unexpected powerhouse of global digital health innovation!

Partnership, Not Policing: A New Approach to Patient Compliance

Prof. Dr. Ivica SMOKOVSKI

Digital innovation in healthcare will be most effective when it affects the core consumer of healthcare: the patient. Behavioural change and patient-driven interactions have enormous potential to provide clinical benefits, especially for chronic and non-communicable diseases. We explore how the right kind of digital health tools turn the patient from a consumer into a direct and engaged participant in their care; ultimately driving better outcomes, enabling advanced prevention methods, and saving the clinician time.

Generative AI in Healthcare

Prof. Dr. Petre LAMESKI

GenAI is still in its infancy - some have compared it to the advent of electricity. Exciting, but it will take time to permeate industry! Nowhere is this more evident than healthcare: the need for clinical safety and careful practice means solutions must meet a high bar to be successful. We will explore the theme of what it takes to bring value from GenAI to healthcare; and discuss exciting research happening in FINKI such as the Chatmed project.

A decade and more of Moj Termin

M.Sc. Zhaklina CHAGOROSKA

We explore the impact of nearly 13 years of system-wide integration of data, processes, and ongoing growth such as the advent of disease registers. We will discuss all the features that exist in Moj Termin, where they bring value to the sector and to everyday workflow, and underutilized and underappreciated abilities of the system to help deliver better care and save you time.

Fireside Chat

Minister of Health, Prof. Dr. Azir ALIU and Sorsix's CEO Dalibor FRUTNIK

BLOCK 5 – MACEDONIAN MICROBIOLOGICAL SOCIETY

RAPID AND ACCURATE DETECTION AS A ONE OF THE REQUIREMENT FOR TACKLING THE RISE OF VECTOR-BORNE DISEASES IN MACEDONIA

Golubinka BOSHEVSKA [1,2], Elizabeta Jancheska [1], Teodora Buzharova Karovska [1], Senada Karishik [1], Ardian Preshova [1], Enkela Polozhani [1], Dragan Kochinski [1], Kristina Stavridis [1]

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Abstract

Vector-borne diseases (VBDs) are increasingly emerging as significant public health threats in Macedonia due to climate change, urbanization, increased travel, and ecological shifts. Arthropod-borne viruses (arboviruses) transmitted by ticks such as Crimean–Congo hemorrhagic fever (CCHF) and arboviruses transmitted by mosquitoes like West Nile virus (WNV) have a rising incidence and are expanding. The aim is to highlight the critical role of rapid and accurate detection methods - serological and molecular, as a key requirement for tackling the growing threat of VBDs in Macedonia. Results: First WNV cases are registered in 2011. A total of 52 laboratory-confirmed cases has been registered in the period 2011-2024 using ELISA tests for detection of IgM and IgG and real time PCR for RNA detection in different samples. 5 deaths are associated with this disease. The first described CCHF outbreak in Macedonia dates from 1970 when 13 people from the same family. After long period in 2023 were detected the first 3 cases by ELISA and PCR and 4 cases were detected in 2024. The sequencing of the S, M, and L segments is performed to the first 2 cases and CCHFV genotype V (Europe 1) is confirmed. Laboratory for virology at the Institute of Public Health perform serological and/or molecular tests for Tick born encephalitis (TBE), ZIKA, Dengue, Chikungunya, and Japanese encephalitis virus. In 2023 and 2024 were detected imported cases of Dengue. Conclusion: Rapid and accurate detection through serological and molecular methods is essential for tackling the rise of VBD. Enhancing laboratory capacity, training healthcare workers, and expanding the awareness among heath care staff and population will enable earlier diagnosis, more effective treatment, and targeted vector control. Investing in these tools and systems is not only medically necessary but also a strategic priority for the country.

serological (e.g. ELISA, IgM/IgG detection) and molecular (e.g. RT-PCR) methods improve surveillance.

NAMES THAT MATTER: A JOURNEY FROM LABORATORY BENCH TO BEDSIDE IN CLINICAL MICROBIOLOGY

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Microbial nomenclature, once the preserve of taxonomic experts, now plays a critical role in everyday clinical practice. The names we assign to microorganisms are far more than abstract labels; they facilitate essential communication across laboratory diagnostics, clinical decision-making, and epidemiological surveillance. At every stage, from initial organism identification to bedside interpretation, accurate and current taxonomy underpins antimicrobial stewardship, infection control, and ultimately, patient safety.

Advancements in molecular phylogenetics have accelerated taxonomic revisions, creating new challenges for clinical alignment. When laboratory reports or diagnostic systems reference outdated or inconsistent nomenclature, clinicians may encounter confusion or delays, which can adversely affect care. Based on contemporary case studies, the clinical implications of changing microbial names come into sharp focus, illustrating why harmonization across diagnostic platforms and more cohesive communication between laboratories, clinicians, and public health experts are essential. To address these challenges, we recommend the integration of updated, curated nomenclature databases directly within laboratory information systems. Such an approach enables seamless translation of scientific discovery into clinical action, ensuring both accuracy and efficiency. Ongoing, interdisciplinary collaboration among taxonomists, microbiologists, and clinicians is vital for maintaining consistent standards and adapting to taxonomic evolution. Continuous professional education further supports the integration of new knowledge and best practices into daily clinical routines.

In the age of precision medicine, microbial names are fundamental determinants of patient outcomes—not mere technical details. Maintaining accuracy, coherence, and accessibility of taxonomic information within both laboratory and clinical domains is essential to optimize diagnostics, therapeutic decisions, and public health responses in modern healthcare.

Challenges in Managing Genital Biofilms: The Emerging Roles of Nanoparticle Therapeutics and Vaginal Microbiome Transplantation in Future Treatment Strategies

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Vaginal biofilms represent a significant barrier in the effective treatment of persistent genital infections due to their complex microbial architecture and protective capabilities against conventional antimicrobials.

To address this challenge, recent therapeutic approaches are exploring the use of Live Biotherapeutic Products (LBPs)—defined as live microorganisms with demonstrated therapeutic potential, delivered in standardized, regulated formulations. Unlike traditional probiotics, LBPs are developed under strict clinical and regulatory frameworks and are specifically designed to modulate the host microbiome. In the context of vaginal health, LBPs aim to promote colonization with protective lactobacilli, disrupt pathogenic biofilms, and restore eubiosis in conditions such as bacterial vaginosis and vulvovaginal candidiasis.

Vaginal Microbiota Transplantation (VMT) represents a specialized form of LBP, involving the direct transfer of vaginal fluid from healthy donors to patients with dysbiosis. As a donor-derived, community-level LBP, VMT offers a broader ecological intervention, restoring the full microbial ecosystem rather than delivering isolated strains. Early clinical studies demonstrate that VMT can achieve sustained remission in recurrent bacterial vaginosis cases resistant to standard treatments, with minimal adverse effects.

Recent advances in nanomedicine offer complementary strategies to enhance drug delivery and penetration into vaginal biofilms by employing tailored nanoparticles that enable targeted, controlled release of antimicrobial agents. These systems are designed to overcome biological barriers such as the mucus layer and fluctuating vaginal microenvironment, thereby improving therapeutic efficacy and residence time at the infection site.

This presentation explores the challenges of managing genital biofilms and highlights the synergistic potential of combining advanced nanoparticle-based therapies with microbiome modulation through VMT, positioning this integrated approach as a future cornerstone in the management of complex vaginal infections.

Keywords: vaginal biofilms, bacterial vaginosis, antimicrobial resistance, live biothrapeutic products

CAESAR NETWORK AND ANTIMICROBIAL RESISTANCE SURVEILLANCE IN REPUBLIC OF NORTH MACEDONIA

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Antimicrobial resistance is one of the three biggest problems of modern medicine. It is estimated that by 2050, AMR will claim 10 million lives per year, surpassing cancer and cardiovascular diseases as the leading cause of death. AMR surveillance is of utmost importance for the public health authorities and stakeholders in Republic of North Macedonia (RNM), as well as for the wider medical scientific community.

The CAESAR Network is established in 2013 and Macedonia has been part of this network since the beginning. An overview on the current and future activities in the field of AMR are presented along with the newest CAESAR results for the past 5 years.

We are dedicated to promote new and enhance already existing methods for AMR detection as well as surveillance software like WHONET.

Close collaboration with National Health Insurance Fund is established and resulted in lowering the usage of antimicrobials and only by prescription. Continuous education among medical students, GPs and relevant specialties will play a crucial role in the future activities.

AMR must not be seen as an isolated issue. Dedicated and focused work in AMR surveillance is more than needed for the Balkan region. The government of RNM, the National Data Manager and the WHO office in Skopje will continue their activities with unprecedented intensity dedicated to establishing good collaboration between countries.

PAST, PRESENT, AND FUTURE OF LABORATORY DIAGNOSIS OF TUBERCULOSIS AND NON-TUBERCULOSIS INFECTIONS

Biljana SHURBEVSKA BONEVA
Institute for lung diseases and tuberculosis

Tuberculosis (TB) remains a major global health challenge. Diagnosis was once based solely on symptoms like coughing up blood, night sweats, and fever. These symptoms overlap with other lung diseases, making it difficult to accurately identify TB using symptoms only. Throughout the 20th century, classical microbiological techniques, such as the Ziehl–Neelsen staining method and culturing bacteria on Löwenstein–Jensen media became the gold standards for diagnosis. Their downsides: the requirement of specialized staff, take weeks to results, and missed cases when bacterial numbers are low. Fluorescent microscopy and automated systems improve diagnostic speed and efficiency. In recent decades molecular diagnostics have revolutionized TB detection. The GeneXpert MTB/RIF quickly and accurately identifies both the presence of TB bacteria and resistance to rifampicin, has high sensitivity and specificity and is easy to use. Whole-genome sequencing and nanotechnology provide even more precise and rapid diagnostic tools. Artificial intelligence started to play a role in automated detection and analysis, aiming to make TB diagnosis faster and more accurate. Nontuberculous mycobacteria (NTM) are a diverse group of mycobacteria which do not cause tuberculosis or leprosy. They mainly cause disease in people with weakened immune systems or underlying lung conditions. NTM infections most commonly affect the lungs but can also involve the skin, lymph nodes, or other organs. The most common NTM species causing lung disease include *M. avium complex (MAC), M. kansasii*, and *M. abscessus.* Diagnosis of NTM infections is complex, integrating multiple types of data to ensure accurate identification and to guide proper treatment. NTM diagnosis involves a combination of clinical evaluation, radiographic imaging, and microbiological testing including culturing NTM, acid-fast bacilli (AFB) staining, molecular methods and MALDI-TOF.

DIAGNOSTIC PROCEDURES IN STAGING AND FOLLOW-UP IN MELANOMA PATIENTS

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The great majority of melanomas are diagnosed as primary tumors without any evidence of metastasis. The most important histological prognostic factors for primary melanoma without metastases are: Breslow's thickness, presence of ulceration, mitotic rate and microsatellites (1).
The extent of investigation in primary staging and the frequency and extent of follow-up examinations in melanoma patient depends on the primary tumor characteristics. In low-risk melanomas (stage IA), only physical examination with special attention to other suspicious pigmented lesions is necessary. In higher tumor stages, from stage IB, imaging is recommended in order to allow proper staging (2). Locoregional lymph node sonography and S100B shall be performed in patients with the primary diagnosis of melanoma of tumor stage IB or higher. Chest x-ray, abdominal ultrasound, whole-body, cranial MRI, CT, PET and skeletal scintigraphy shall not be performed as standard in asymptomatic patients (up to stage IIB) with the primary diagnosis of melanoma. Patients in stage IIC have a higher risk of recurrence that is comparable with patients in stage IIIA. Therefore, patients in stage IIC request the same diagnostic approach as well as patients in stage III.
Follow-up procedures, intervals and duration are variable across Europe, but almost all guidelines and follow-up recommendations share the same goals: identifying tumor recurrence or disease progression at the earliest stage, early diagnosis of additional primary melanomas, offering psychosocial support, providing education on prevention, for the patient and his first degree relatives, education of the patient and his family on self examination to promote the early detection of melanoma, administering and monitoring adjuvant therapy, where appropriate (1). Physical examination (particularly inspection of the entire skin surface and visible mucous membranes) shall be performed in all melanoma patients. Serum S100B and locoregional lymph node sonography should be performed in asymptomatic patients in stage IB or higher during follow-up period. Chest x-ray and abdominal ultrasound should not be performed routinely in asymptomatic patients during follow-up.

BLOCK 5A – MACEDONIAN ASSOCIATION OF OPHTALMOLOGY

GLAUCOMA- THE SILENT THIEF OF SIGHT

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Abstract:
Glaucoma is the world's number one cause of irreversible blindness. Worldwide, there are over 65 million people diagnosed with various types of glaucoma. According to the latest definitions, it is a neuropathic progressive disease of the optic nerve with pathological changes in retinal nerve fiber layer and the appearance of scotomas in visual field. Increase of intraocular pressure (IOP) is a major risk factor, although glaucoma can occur with normal IOP levels known as normotensive glaucoma. The main types of glaucoma are: Primary, which can be open-angle or closed angle and secondary glaucoma.

The first signs of glaucoma are almost invisible, so early diagnosis is difficult therefore the pathological changes are also advanced and irreversible. Screening of eye pressure measurement, examination of the optic nerve head and visual field enable early diagnosis and eventual necessary treatment.

Glaucoma treatment can be conservative with drops or tablets, laser using various lasers and surgical if the first two do not work.

The purpose of this study is to demonstrate the importance of early detection of glaucoma to prevent changes from this disease that often lead to irreversible blindness.

Key words: Glaucoma, intraocular pressure, visual field.

NEURODEGENERATION AND NEUROINFLAMMATION IN DIABETIC RETINOPATHY: PATHOPHYSIOLOGY AND EMERGING THERAPEUTIC STRATEGIES

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Abstract:

Diabetic retinopathy (DR), a microvascular complication of diabetes, is one of the leading causes of visual impairment worldwide. Recently, increasing evidence has indicated the important role of neurodegeneration and neuroinflammation processes in the pathogenesis and progression of this retinopathy. Neurodegeneration in DR involves processes of disruption of the neurovascular unit (NVU), a functional entity consisting of neurons, glial cells, and vascular components. Damage to this unit leads to compromised integrity of the blood-retinal barrier, followed by retinal microangiopathy, glial activation, and subsequent neuronal apoptosis. Autophagic dysregulation further contributes to cellular stress and damage to neurosensory retinal tissue. In parallel with the process of neurodegeneration, a process of neuroinflammation occurs, driven by the release of a large number of proinflammatory cytokines (e.g., IL-1β, TNF-α), increased oxidative stress, and mitochondrial dysfunction. Recently, it has been shown that the vitreous humor also plays an active role in the pathophysiological mechanism of DR.

These two processes in patients with DR can be monitored with multiple imaging biomarkers on optical coherence tomography and optical coherence tomography with angiography. Thus, these two mechanisms are not just epiphenomena but are an integral part of the disease progression and visual impairment in patients with DR. Understanding this opens up new strategies for treating patients. New approaches include neuroprotective agents targeting glutamate excitotoxicity, autophagy modulators, glial activation inhibitors, and anti-inflammatory treatments to stabilize mitochondrial function and reduce cytokine activity. Combined techniques aimed at preserving the integrity of the NVU, suppressing inflammation, and stabilizing the vitreoretinal interface are under development.

Therefore, understanding neurodegeneration and neuroinflammation in the pathophysiological process of DR is essential for the development of early, effective treatments aimed at morpho-functional preservation of retinal tissue.

Keywords: diabetic retinopathy, neurodegeneration, neuroinflmation, retina, oxidative stress.

USING ABSORBABLE P(LA/CL) THREADS FOR LOWER EYELID REJUVENATION AS AN ALTERNATIVE TO SURGERY IN SELECTED CASES CONCERNING AGE AND LONG-TERM RESULTS

[1] Jasmina GJORGIEVSKA PAVLOVSKA, [1] Gjorgji STAVRIKJ, [1]Dafi SHEMOV, [1] Lazar RISTOV

Abstract:

Lower eyelid aging is characterized by skin laxity, fine wrinkles, and loss of support, often leading patients to consider surgical options such as blepharoplasty. However, not all patients are optimal candidates for surgery due to age, health status, downtime limitations, or preference for minimally invasive procedures. Absorbable poly(L-lactide-co-ε-caprolactone) [P(LA/CL)] threads offer a non-surgical alternative for selected cases, providing immediate mechanical lift and progressive collagen stimulation.

This observational case series included patients aged 38–62 years presenting with early to moderate lower eyelid laxity without severe dermatochalasis or significant fat prolapse. All underwent lower eyelid rejuvenation using P(LA/CL) threads via minimally invasive cannula technique, under local anesthesia. Parameters assessed included patient satisfaction, degree of improvement, downtime, and longevity of results, evaluated over a 12-month follow-up.

All patients demonstrated visible improvement in lower eyelid contour, skin firmness, and reduction in fine lines immediately post-procedure. Minimal edema and ecchymosis resolved within 3–5 days. At 6 months, results were sustained, with 82% of patients rating their outcome as “very satisfactory” and 18% as “satisfactory.” At 12 months, improvement remained noticeable in 74% of cases, with a gradual but natural regression. No major complications were observed.

In selected patients, absorbable P(LA/CL) threads present a safe, effective, and well-tolerated alternative to surgical lower eyelid rejuvenation. The combination of mechanical lift and biostimulatory effects offers both immediate and progressive improvements, making this technique particularly suited for individuals seeking age-appropriate, natural-looking, and low-downtime results. While not a replacement for blepharoplasty in advanced cases, regular thread applications may serve as a long-term maintenance strategy to delay surgical intervention.

SURGICAL CORRECTION OF LOWER EYELID MALPOSITIONS

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Abstract:

Malpositions of the lower eyelid, most commonly entropion and ectropion, represent a significant group of pathological conditions that lead to both functional and aesthetic impairment of the eyelid, as well as to serious secondary damage to the ocular surface. The aim of this study is to identify the etiopathogenetic factors leading to these conditions, present the clinical evaluation of patients, and analyze the algorithm for appropriate selection of various surgical techniques for their correction.

The study included 197 patients with different forms of unilateral or bilateral lower eyelid malpositions, operated at the University Eye Clinic – Skopje, Eye Clinic Oftalmos – Skopje, and European Eye Hospital – Sante, Skopje, by a single ophthalmic surgeon, in the period 2002–2024. The surgical techniques were selected according to the clinical form and pathogenetic mechanism. For entropion, methods such as horizontal shortening or tightening of the eyelid, retractor repair, and vertical reduction of the anterior lamella were applied. For ectropion, techniques included the “lazy T” procedure, tightening with lateral tarsal strip (LTS), plication of the medial canthal ligament, as well as reconstructive procedures with skin grafts in cicatricial forms. Eight representative clinical cases are presented.

During the follow-up period of 5 to 62 months, no recurrences were observed. In all patients, highly satisfactory results were achieved both anatomically and functionally, with complete resolution of preoperative ocular exposure problems. Additionally, the interventions resulted in significant improvement of eyelid aesthetics. All surgeries were performed on an outpatient basis under local anesthesia, without major complications.

Surgical correction of lower eyelid malpositions, when based on precise diagnosis and appropriate selection of operative technique, ensures lasting and reliable results. This leads to significant improvement in eyelid function and appearance, as well as prevention of secondary ocular damage.

BLOCK 6 – MACEDONIAN ASSOCIATION OF RADIOTHERAPY AND ONCOLOGY (MARO)

MALIGNANT MELANOMA 2025: CLINICAL UPDATE

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Malignant melanoma is a rare skin malignancy responsible for approximately 90% of death due to skin cancer worldwide. Until very recently, metastatic malignant melanoma was considered a uniformly fatal diseasewith virtually no hope of long-term remission. However, with the introduction of immune checkpoint inhibitor therapy and BRAF-V600E targeted treatments, patients today have a 30% chance of cure even in the widely metastatic setting. In the last several years, the treatment armamentarium for melanoma has expanded to include new forms of radiation therapy, perfusion treatments, as well as genetically engineered viruses. Additionally, systemic drug therapy is increasingly finding application in earlier stages of melanoma (clinical stage IIB, III) using innovative administration schedules before (neoadjuvant) or after (adjuvant) definitive surgery. Thus, modern therapy of advanced melanoma requires coordination of multiple modes of treatment applied to the unique clinical setting of every patient. In the current review, I will focus on some of the newer therapeutic modalities for melanoma and discuss their application in clinical scenarios.

MODERN BRACHYTHERAPY IN THE TREATMENT OF LOCALLY ADVANCED CERVICAL CANCER

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Cervical cancer continues to represent a significant public health and clinical challenge in developing countries. According to data from the Serbian National Cancer Registry, there are over 1,000 new cases and more than 450 deaths annually, with an incidence rate of 29.2 and a mortality rate of 10.7 per 100,000 per year. Notably, over 70% of patients are diagnosed at advanced stages of the disease. Given the high prevalence of inoperable disease at presentation, definitive chemoradiotherapy remains the standard of care for this patient population. Concomitant administration of cisplatin-based chemotherapy with external beam radiotherapy (EBRT), followed by image-guided brachytherapy (IGBT), has become the treatment modality of choice. In line with GEC-ESTRO guidelines, achieving adequate local control requires the delivery of a cumulative equivalent dose (EQD2) of 90–95 Gy to the high-risk clinical target volume (HR-CTV). Brachytherapy, particularly intracavitary and interstitial approaches, plays a significant role in achieving this dose escalation by delivering highly conformal high-dose radiation directly to the tumor volume. However, due to the steep dose gradients inherent to brachytherapy, adjacent organs at risk (OARs), such as the bladder and rectum, are susceptible to radiation-induced toxicity. As such, brachytherapy is also a major contributor to high-grade late treatment-related complications. To improve both efficacy and safety, the implementation of image-guided 3D brachytherapy has become essential. The use of high-resolution imaging, particularly magnetic resonance imaging (MRI), provides superior soft tissue contrast and accurate delineation of the tumor and OARs. MRI-guided brachytherapy enables individualized treatment planning and optimized dose distribution, significantly improving local control rates while minimizing treatment toxicity.

Keywords: cervical cancer, brachytherapy, MRI

ADVANCES IN GASTROINTESTINAL CANCER TREATMENT – BREAKTHROUGHS AND FUTURE PERSPECTIVES

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Gastrointestinal (GI) cancers represent at least 10 distinct diseases and more than a quarter of all cancers annually. The biology ot these tumors is distinct, as evidenced by emerging data on molecular signatures as well as variable response to treatments, particulary targeted therapies. For some GI cancers, great strides have occurred in the last 10 to 15 years in terms of understanding biology as well as expanding treatment options and improving prognosis (e.g., median survival for metastatic disease like colorectal cancer has lenghtened significantly in the last 30 years). After decades of clinical trials of cytotoxic therapies that targeted rapidly dividing cells, in the early 2000s, the era of so-called biologic or targeted therapy entered the GI cancer arena. The blockbuster development of imatinib for GI-stromal tumors (GISTs) was and remains the seminal event in targeted therapies. Focus was directed also to 2 other pathways: angiogenesis via the vascular endothelial growth factor (VEGF) and the epidermal growth factor receptor (EGFR). Recent advances in GI cancer treatment include new targeted therapies, immunotherapies and improved surgical techniques, alongside innovations in chemotherapy and modifications of the protocols. Immunotherapy is based on new biomarkes biomarkers such as PD-1 (programmed death-1) and PD-L1 (programmed death-ligand 1), which are important for contribution of immunotherapy to new standard of treatment (like pembrolizumab, nivolumab, tislelizumab etc). Current progress is based on genetic profiling of tumors by next-generation sequence method, discovering more personalized pathways of treatment. The future include artificial intelligence and microbiota analysis as new very important tools in improving our knowledge of GI-oncology.

CURRENT CHALLENGES AND FUTURE TREATMENT PERSPECTIVES IN CERVICAL CANCER

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Despite the well-developed screening program for early detection of cervical cancer, as well as HPV vaccination for early prevention, cervical cancer is still a significant health problem. Approximately 70% of all cases occur in developing countries, usually as advanced disease. In North Macedonia, the majority of cervical cancer cases involve locally advanced, persistent, recurrent, or metastatic disease. In that patient population, treatment rarely involves surgery, the mainstay is definitive treatment consisting of: chemotherapy and/or radiotherapy, with external beam radiation therapy and brachytherapy as key components. Concurrent chemoradiotherapy (consisting of platinum-based chemotherapy simultaneously with external beam radiation therapy followed by brachytherapy) is regarded as standard-of-care treatment for locally advanced uterine cervical cancer, including stage Ib2-IVa disease [International Federation of Gynecology and Obstetrics (FIGO) staging]. The effectiveness of chemoradiotherapy has been enhanced by the development of radiotherapy techniques (intensity modulated and adaptive three-dimensional image-guided brachytherapy), and on the other hand, they have reduced injury to adjacent organs. Adjuvant chemoradiotherapy is dependent on several prognostic factors, such as lympho-vascular invasion, resection margins, histopathological type, tumor size more than >2 cm, depth of invasion. Immunotherapy represents a significant advance in clinical oncology practice. Several clinical studies have confirmed the successful implementation of immunotherapy. First, the efficacy was proven by adding anti-angiogenesis therapy to previously treated disease, then immune checkpoint inhibitor in combination with it, and the latest studies confirm the efficacy of immunotherapy in the initial treatment.

Keywords: Concurrent chemoradiotherapy, cervical cancer, immunotherapy.

PERSONALIZED THERAPY IN METASTATIC NSCLC

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Lung cancer is the deadliest cancer worldwide, exhibiting the highest incidence rate among all cancer types. Poor outcomes often characterize this cancer as it is commonly diagnosed in advanced stages due to its unspecific symptoms. After diagnosis, the therapeutic choice is a crucial stage that profoundly affects patients' survival. Treatment choices for lung cancer must be made carefully, acknowledging the histological type and genetic characteristics of the tumor. Non-small cell lung cancer, the most common and complex type, has a high mutational burden, making next-generation sequencing (NGS) essential for identifying specific mutations and guiding treatment. With several approved targeted therapies already available, this approach highlights the critical role of personalized medicine in lung cancer care. Despite the current therapeutic pipeline, research trying to develop new tailored drugs considering individual patient characteristics has evolved over the years. This article aims to outline the current therapeutic approach for each type of lung cancer and present the latest insights into emerging therapies, highlighting the role of personalized medicine in enhancing treatment outcomes and improving patients' quality of life.

Keywords: lung cancer; genetic alterations; targeted therapy; personalized medicine; survival

CURRENT TREATMENT STRATEGIES IN HIGH-GRADE GLIOMA

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High-grade gliomas (HGG), particularly glioblastoma, remain among the most aggressive and treatment-resistant primary brain tumors. Current standard-of-care includes maximal safe surgical resection followed by radiotherapy with concomitant and adjuvant temozolomide chemotherapy. Despite this multimodal approach, prognosis remains poor, with a median survival of 14–18 months. Tumor-treating fields (TTFields) have emerged as a non-invasive adjuvant therapy, showing improved progression-free and overall survival. Molecular profiling has enabled targeted therapies in select subgroups, such as IDH-mutant or BRAF-mutant gliomas.
Immunotherapy, including immune checkpoint inhibitors and vaccines, has shown limited success in glioblastoma due to the immunosuppressive tumor microenvironment but remains an active area of investigation. Advances in drug delivery systems, including convection-enhanced delivery and nanoparticles, aim to overcome the blood–brain barrier. Ongoing clinical trials are exploring combinations of radiotherapy, immunotherapy, and novel agents to improve outcomes. Personalized, molecularly guided treatment strategies represent the future direction in HGG management.

BLOCK 6A – PREVENTION OF ENVIRONMENTAL AND OCCUPATIONAL RISK FACTORS FOR BETTER PUBLIC HEALTH

ACTION PLAN FOR PREVENTION OF HEALTH EFFECTS RELATED TO HEATWAVES IN NORTH MACEDONIA

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Climate change heightens the frequency and severity of heatwaves, posing escalating risks to public health in North Macedonia. In response, the Government has endorsed the Heat Waves Action Plan 2025–2030 (Plan). The updated Plan in North Macedonia establishes a structured, multisectoral framework to reduce health risks from extreme heat events. The Plan is organized into four distinct phases, triggered by meteorological heat alerts, enabling timely and graduated responses from preparedness to active intervention. This phased approach enhances efficient resource allocation, inter-institutional coordination, and targeted protection measures. Responsibilities are clearly defined across sectors including health, social protection, education, labor, and local governance, ensuring accountability at national and municipal levels. Key advantages include integration of early warning systems with rapid communication channels, focused outreach to vulnerable groups (such as elderly people, children, pregnant women, and individuals with chronic illnesses), and adaptation of workplaces and educational settings to minimize heat exposure. The Plan promotes operational protocols in healthcare and social care institutions, establishment of cooling centers, and community awareness campaigns. It also supports flexible work schedules and limits outdoor activities during peak heat periods. By providing a clear and actionable roadmap with multisectoral collaboration, the Plan strengthens North Macedonia's health system resilience, reduces heat-related illnesses and deaths, and advances national climate adaptation objectives. This comprehensive, phased, and participatory approach represents a critical step toward safeguarding public health amid increasing climate challenges, serving as a model for effective heat-health preparedness.

Keywords: heatwaves, action plan, public health preparedness, climate adaptation, North Macedonia

EMERGING THREATS: THE INTERSECTION OF CLIMATE CHANGE AND FOOD SAFETY

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Climate change is a global problem that affects all countries with negative impacts on people, plants, animals, and ecosystems, with the potential to increase the frequency and severity of certain foodborne diseases. Major consequences of climate change include the emergence of new hazards as well as increased human vulnerability to existing and known hazards. Two climatic factors that will have the greatest influence on the occurrence of foodborne diseases are temperature and precipitation. In recent decades, outbreaks of alimentary infections have increasingly been reported, linked to the consumption of fresh vegetables, fruits or salads. Investigations have shown that contaminated vegetables and fruit have served as the source of infection with *Salmonella spp.* and *Escherichia coli* O157:H7. Infections with *Salmonella* have been found to be directly proportional to temperature. In several European countries, salmonellosis was found to increase by 5–10% for every 1°C rise in weekly temperature when it exceeds 5°C. With climate change and climate variability, a 3% increase in the incidence of campylobacteriosis, including vector-borne cases, is projected in the coming decades. The relationship between climate change and food contamination with mycotoxins is significant and complex, since climatic conditions directly affect the growth of fungi that produce mycotoxins. Aflatoxin B1 is among the most potent known natural carcinogens (particularly for the liver). Mycotoxins are thermostable, meaning they are not destroyed by cooking or baking. Chronic exposure leads to immunosuppression, impaired organ function, an increased risk of cancer, and stunted growth in children. There is a growing need for increased pesticide use, which leads to greater contamination of food and the environment (soil, water, air) with pesticides, pesticide residues in food, and risks of tumors, neurotoxicity, and reproductive disorders. Increased animal infections cause more frequent use of antibiotics in livestock farming, agriculture, and aquaculture, which in turn leads to the rise of resistant bacterial strains. Reduced nutrient content in plant-based products is another consequence. Research shows that cereals (such as wheat and rice) grown under high levels of CO_2 have lower contents of proteins (by 6–15%), iron and zinc. This leads to an increased risk of nutritional deficiencies, especially in countries where these crops are the main food source. As a result, there may be reduced vitamin content (e.g., vitamin C in tomatoes), lower sugar and flavor levels in fruits and vegetables, and increased accumulation of anti-nutritional substances (such as nitrates). Multisectoral action is required to combat these consequences, and One Health is the best approach for this problem.

Key words: climate change, food safety, zoonoses, pathogens, antimicrobial resistance

DOCTORS ON THE FRONTLINE OF A WARMING WORLD: CLIMATE CHANGE AWARENESS AMONG GENERAL PRACTITIONERS

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Climate change poses significant challenges to global health, with general practitioners (GPs) playing a key role in recognizing and managing climate-sensitive conditions. However, their awareness and preparedness regarding these challenges remain underexplored, particularly in North Macedonia. The aim of the study was to evaluate awareness for climate change among general practitioners. This cross-sectional survey was conducted among 137 general practitioners in the Republic of North Macedonia between September 2024 and March 2025. Participation was voluntary. Data were collected using a structured, researcher-designed questionnaire in the Macedonian language, focusing on climate change awareness, clinical experiences, and workplace conditions. Descriptive statistics and chi-squared tests were performed using SPSS version 16.0, with significance set at $p < 0.05$. Most participants practiced in urban areas and held qualifications in general or family medicine. The majority demonstrated a moderate level of awareness regarding climate change and its implications for health, while smaller proportions showed limited or comprehensive knowledge. Variations in awareness were observed across demographic and professional characteristics, though not all associations were statistically significant. Participants expressed differing levels of familiarity with climate-sensitive diseases and health risks, as well as varied perceptions of institutional preparedness and the availability of relevant information. This study highlights that, although general practitioners in North Macedonia exhibit a moderate level of awareness about climate change and its health impacts, notable gaps in knowledge and preparedness persist. The findings underscore the need for further education, training, and policy development to better equip GPs to respond effectively to climate-related health challenges.

Keywords: climate change, general practitioners, awareness, health systems, primary care, North Macedonia

NUTRITIONAL QUALITY OF FOOD IN STUDENT DORMITORIES IN NORTH MACEDONIA: 10-YEAR REVIEW

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Objective: Proper nutrition is essential for students, as it directly influences concentration , memory, cognitive development, physical growth, disease prevention ana emotional well-being. The aim of this study was to evaluate the nutritional quality of the meals provided in the student dormitories in North Macedonia between 2014 and 2024.

Methods: As part of the National Annual Public Health Program, monthly assessments were conducted by three Centers for Public Health (Skopje, Shtip ana Ohrid). Meals were analyzed over three consecutive days each mount using standardized digital tools. The Institute for Public Health collected and analyzed the overall national data to determine energy and nutrient composition.

Results: Results showed an averaged daily energy intake of 2367 kcal, slightly (by 2.91%) exceeding the WHO recommendation of 2300 kcal for adults (18+). Energy intake ranged from 2107 to 2390 kcal. Average, proteins contributed 17% (96g/day), fats 30% (86g/day) and carbohydrates 52% (301g/day). Saturated fat intake was 26 g/day (13%), in the upper limit according to the WHO recommendation.

Conclusion: While the macronutrient distribution largely aligned with WHO and FAO guidelines, the elevated saturated fat intake may reflect health concerns. These findings highlight the need for continued monitoring and improvement of the meals in the student dormitories to promote student health ana academic success.

Key words: macronutrients, nutritional quality, nutritional monitoring, nutritional requirement

DIGITALIZATION: EFFECTS ON SAFETY AND HEALTH AT WORK

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In today's digital era, the integration of advanced technologies such as artificial intelligence, robotics, and information and communication systems has transformed the workplace. While digitalization brings clear benefits—automation of hazardous tasks, improved monitoring, increased flexibility, and opportunities for vulnerable groups to access the labor market—it also poses emerging risks for occupational health and safety (OSH), particularly in the domain of mental health.

The increased use of digital tools has reshaped work organization, often blurring the boundaries between professional and private life, intensifying workloads, and contributing to psychosocial risks including stress, isolation, and "technostress." Research highlights that remote work, accelerated by the COVID-19 pandemic, can improve work–life balance but also fosters sedentary behavior, social isolation, and constant connectivity, which are linked to burnout, anxiety, and depression.

From an occupational health perspective, digitalization must be addressed through a dual approach: maximizing opportunities for safer, more inclusive, and flexible work while mitigating negative psychosocial consequences. Employers, policymakers, and occupational health professionals must adapt legal frameworks, ensure adequate training, foster transparency, and promote worker participation in the design and implementation of digital technologies.

In conclusion, digitalization is both a challenge and an opportunity. A balanced, evidence-based, and human-centered approach is essential to safeguard mental health and well-being in the digital workplace, ensuring that technology contributes to healthier, safer, and more sustainable work environments.

Keywords: digitalization, occupational health, mental health, technostress, remote work, OSH

THE IMPACT OF WORKPLACE AERO-POLLUTANTS ON THE OCCURRENCE OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE IN PROFESSIONAL DRIVERS

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Chronic obstructive pulmonary disease (COPD) is a common, preventable, and treatable disorder characterized by persistent respiratory symptoms such as dyspnea, cough, and/or sputum production, in combination with irreversible or partially reversible airflow limitation. These functional impairments are the result of structural abnormalities of the airways and/or alveoli caused by long-term exposure to harmful particles and gases. COPD is recognized as one of the leading global public health problems, with a reported prevalence of approximately 4% in the general population and nearly 10% among individuals older than 40 years.

The pathogenesis of COPD is complex and multifactorial, involving interactions between endogenous and exogenous determinants. Key endogenous risk factors include genetic predisposition, sex, age, recurrent respiratory infections in childhood, and chronic bronchitis. Exogenous risk factors comprise exposure to hazardous particles and gases, dietary habits, and socioeconomic conditions. Among these, exposure to tobacco smoke and occupational air pollutants are considered to play a particularly critical role in both the initiation and progression of the disease.

Airborne occupational exposures and environmental pollutants—especially indoor pollutants generated by the combustion of biomass fuels—are well-established contributors to COPD risk. Professional drivers represent a vulnerable occupational group, given their continuous exposure to vehicular exhaust emissions, which contain a mixture of hazardous gases and fine particulate matter released during the combustion of gasoline and diesel fuels. Several studies have consistently demonstrated an elevated prevalence of respiratory symptoms and a significant decline in spirometric parameters in this population compared with non-exposed controls.

Considering the increasing burden of COPD and the occupational hazards associated with professional driving, it is of substantial public health importance to further investigate the impact of work-related air pollutant exposure on respiratory health.

BETTER PUBLIC HEALTH IN FLOODS FROM IPH NIŠ ACTIVITIES

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IPH Niš is an authorized preventive health institution which actively participates in disaster risk reduction and emergency management on the territory of 11 LGUs of Nišava and Toplica administrative districts. The aim of this paper is to present the activities of IPH Niš from 2014 to 2024 in emergency situations, regardless of their cause, but especially for ensuring safe water supply during floods. According to operating procedures and methodological instructions, interventions are necessary in order to reduce risks to the health of the population from contaminated drinking water. The publication of the Standing Conference of Cities and Municipalities (SKGO) gave a ten-year overview of the situation since the May floods in 2014, not taking into account the floods in the South Morava basin that happened in April. During April 2014 and June 2023 many municipalities from Nišava and Toplica districts declared a state of emergency because of floods. Comparing 2014 to 2023, the number of drinking water samples is lower due to better risk assessment and flood response mapping. After the floods of 2014 and 2023, according to WHO methodology and with the coordination of the Ministry of Health of Serbia, IPH Niš held a course "The response of the local community to emergency/crisis situations" (2015) and applied the STAR-Strategic Tool for Risk Analysis (2024) for assessment of public health risks. Priority local action for floods is to involve representatives from IPH Niš in the LGU Health Council as well as in the LGU Emergency Situations Headquarters. On national level, Team for emergency situations from IPH Serbia, should maintain a register of emergency events, report emergency events with practical solutions and develop good practice protocols for different hazards.

BLOCK 6A – PREVENTION OF ENVIRONMENTAL AND OCCUPATIONAL RISK FACTORS FOR BETTER PUBLIC HEALTH
POSTER SESSION

ANALYSIS OF THE NETWORK OF HEALTH INSTITUTIONS IN THE SKOPJE REGION IN THE PERIOD FROM 2022 TO 2024

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Introduction: The network of health institutions determines the maximum number of health institutions, teams or services at the level of municipalities, regions or the entire country. The basic demographic standards for the network are defined according to the number of inhabitants in relation to the number of doctors, specialists or subspecialists at the primary, secondary or tertiary level. The network of health institutions through which health care is provided to the population in the municipalities of the Skopje region consists of various types of health institutions. **The aim** of the paper is to provide an overview and assessment of the development of the health network in the Skopje region from 2022 to 2024 through the number of health institutions and the organization of health services in them**. A standard report** on the staff and organizational structure of health institutions (Form No. 3-00-60) was used as working material, in accordance with the Law on Records in the Field of Health. **A descriptive-informative method** of work was used. An analysis and presentation of the indicators of structure and intensity were made. **The results show** that in 2024, a total of 753 health institutions were recorded on the territory of the Skopje region. It follows that the number of them increased by 3.6% compared to the previous year, and compared to 2022 it increased by 1.9%. The total number of employed staff decreased by 3.8% compared to 2023, and 2.9% compared to 2022. **The conclusion** is that the distribution of health institutions according to the network on the territory of the Skopje region shows an inadequate distribution of institutions in urban versus rural areas, with the highest concentration in the municipality of Center.

Keywords: network of health institutions, Skopje region, demographic standards

MODIFIABLE RISK FACTORS AND MORTALITY FROM NON-COMMUNICABLE DISEASES: EVIDENCE FROM NORTH MACEDONIA

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Introduction: Non-communicable diseases (NCDs) are the leading cause of mortality and morbidity worldwide, especially in low- and middle-income countries, including the Republic of North Macedonia. Cardiovascular diseases, malignant neoplasms, diabetes, and chronic respiratory diseases are the most prevalent and significantly

contribute to premature mortality and reduced quality of life. The main risk factors increasing the burden of these diseases include smoking, unhealthy diet, physical inactivity, and air pollution.
This analysis is a **retrospective study** using secondary data from relevant national and international sources such as the Institute of Public Health of North Macedonia, the World Health Organization (WHO), and the Institute for Health Metrics and Evaluation (IHME). The study covers indicators including Disability-Adjusted Life Years (DALYs), mortality, prevalence of risk factors, and comparison with international benchmarks.
Results: Global risk factor analysis shows that many deaths are caused by preventable and modifiable lifestyle and environmental factors. High blood pressure (18%), tobacco use (14.5%), and unhealthy diet (13%) are the leading risks influencing cardiovascular diseases, stroke, and other chronic NCDs. Air pollution, the fourth largest risk, has a significant impact on respiratory diseases, especially in urban and industrial areas.
In North Macedonia, analysis of leading risk factors contributing to mortality reveals smoking (21.8%), high blood pressure (17.0%), overweight (BMI) (14.7%), high cholesterol (11.8%), ambient air pollution (6.3%), unhealthy diet with low fruit intake (4.4%), high blood sugar (diabetes) (5.0%), physical inactivity (1.9%), alcohol use (2.8%), and unsafe water/sexually transmitted infections (1.6%) as key contributors.
Circulatory system diseases are the leading cause of mortality, accounting for 43.8% of all deaths, followed by malignant neoplasms at 18.6%. The average age at death is rising, with females showing higher values than males. These findings highlight the need for continuous prevention efforts and multisectoral approaches to reduce the burden of NCDs in the country.
Keywords: non-communicable diseases, risk factors, mortality, smoking, high blood pressure, Global Burden of Disease.

TRENDS IN DIABETES PREVALENCE AND OPPORTUNITIES FOR IMPROVING CARE THROUGH ARTIFICIAL INTELLIGENCE IN NORTH MACEDONIA

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Introduction:
Diabetes mellitus is an increasing public health issue globally, with rising prevalence leading to significant healthcare burdens. In North Macedonia, diabetes rates have shown a steady increase over recent years. As of 2024, approximately 6.4% of the total population in the Republic of North Macedonia (RSM) is diagnosed with diabetes, with the age comparative prevalence (for individuals aged 20-79) at 6.5%. The prevalence of undiagnosed diabetes remains a concerning issue, with an estimated 39.6% of people affected being unaware of their condition. This study

examines trends in diabetes prevalence from 2018 to 2024, evaluates gender disparities, and explores the role of artificial intelligence (AI) in improving diabetes care.

Objectives: The aim of this study is to analyze the increasing prevalence of diabetes in North Macedonia, assess the economic burden on the healthcare system, and explore the integration of AI technologies in diabetes management. A secondary objective is to investigate gender differences in diabetes prevalence.

Methods and Materials: This study utilized data from the National Diabetes Registry, World Health Organization (WHO), Institute for Health and Metric Evaluation (IHME), PubMed, and Cochrane. Prevalence data for 2018 and 2024 were analyzed, focusing on the number of diabetes cases per 100,000 population. Gender differences in diabetes rates were also assessed. The study further reviewed the integration of AI technologies, such as machine learning algorithms for predictive analytics and real-time glucose monitoring. This research is **a retrospective epidemiological study**, using **observational** data from existing health records. The analysis of this data follows a descriptive approach to identify patterns in diabetes prevalence over the past years and examines how AI can be integrated into healthcare systems to optimize diabetes management.

Results: The prevalence of diabetes in North Macedonia rose from 5,554.4 per 100,000 population in 2018 to 7,781 per 100,000 in 2023, reflecting a 30% increase. Gender analysis showed that women were affected approximately 10% more than men. The application of AI technologies showed promise in early detection and personalized treatment, with AI tools enabling better glucose monitoring and improving patient outcomes through predictive analytics.

Conclusion: This study highlights the growing diabetes epidemic in North Macedonia, with a 30% increase in prevalence over five years. The integration of AI technologies in diabetes care has significant potential for early detection, treatment optimization, and prevention of complications. Policymakers should prioritize AI-driven strategies to improve diabetes management and ensure equitable access to care, addressing gender disparities in the process.

Key words: Diabetes Prevalence, Artificial **Intelligence in Healthcare, AI in Diabetes Management, Glucose Monitoring, Predictive Analytics**

SPINAL DEFORMITIES IN PRIMARY SCHOOL STUDENTS IN THE PRILEP REGION IN THE PERIOD FROM 2022 TO 2024

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Introduction: Spinal deformities are the serious problem among students caused by new lifestyle trends. They affect the physical appearance, overall health and quality of life of students.

The main objective is to present the prevalence of spinal deformities among primary school students in the period 2022-2024 by analyzing of systematic examinations in the 1st, 3rd, 5th and 7th grade.

Method and materials: A retrospective analysis was conducted with analytical-descriptive method of work. The data were used from the Report on Systematic Examinations of School Children which are submitted to the CPH Prilep.

Results: From 2022-2024, 7735 primary school students were examined, 1117 (14.4%) had spinal deformities, 0.1% lordosis, 0.3% kyphosis and 14.1% scoliosis. Deformities were determined in 14.8% of girls and 14.1% of boys. 4.4% of students in the 1st grade, 12.7% of the 3rd, 17.2% of the 5th and 25% of the 7th grade had scoliosis. 0.1% of students in the 1st, 0.3% of students in the 3rd and 7th grade and 0.4% of the 5th grade had kyphosis. Lordosis was found in 0.1% of 5th and 7th grade students.

Conclusion: The prevalence of spinal deformities in students increases with age and is most common in students in 7th grade. Deformities are slightly more common in girls than boys. The most common deformity in all students off all grades is scoliosis. Early detection off deformities is the key to preventing possible complications.

Key words: deformities, primary school students, systematic examinations, scoliosis, kyphosis, lordosis

MORBIDITY FROM THYROID GLAND DISEASES IN THE POPULATION OF THE OHRID REGION FROM 2020 TO 2024

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Introduction: Thyroid gland diseases, which affect the largest endocrine gland responsible for regulating the metabolism of every cell in the human body, have shown an increasing trend in recent years.

The aim of this study is to present the morbidity rates of thyroid gland diseases registered in outpatient care services in the Ohrid region and to highlight the importance of timely prevention and monitoring. **A retrospective descriptive analysis** was conducted using data from **standardized summary reports** collected from general medicine, pediatric care, and school-age and adolescent outpatient services. The data covered the period from 2020 to 2024 and reflect morbidity rates and demographic characteristics of the affected population.

The results show that in general medicine, the lowest recorded morbidity rate from thyroid diseases was in 2020, with 31,7 per 1000 inhabitants, and the highest in 2023, with 65,6 per 1000. Among school-age and adolescent services, rates increased from 2,5 per 1000 in 2020 to 5,8 per 1000 in 2024. Thyrotoxicosis was the most frequently diagnosed condition in general medicine (95%), while Other thyroid gland diseases dominated among the youth (85%). Females were significantly more affected: 87,8% of cases in general medicine and 79,4% in school-age and adolescent services. The most commonly affected age group in general medicine was 55–64 years (25,7%), while in school-age and adolescent care it was 20–24 years (50%).

The conclusion is that the Thyroid gland disease morbidity increased in the Ohrid region over the observed period. The trend was more prominent among females, with thyrotoxicosis prevailing in adults and Other thyroid disorders more common among the youth. These findings point to the need for targeted prevention, especially in high-risk groups.

Key words: prevalence, thyroid diseases, Ohrid region.

ANALYSIS OF NATURAL POPULATION GROWTH IN THE EASTERN REGION OF THE REPUBLIC OF NORTH MACEDONIA FOR THE PERIOD 2020–2024

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Introduction: Demographic events serve as a foundation for studying changes in the size and structure of the population. The interaction between health and population dynamics, through the study of demography, highlights the need to adapt public health practices.

Objective: An analytical overview of the natural population growth in the Eastern Region of the Republic of North Macedonia for the period 2020–2024.

Materials and Methods: Data from the MakStat database of the State Statistical Office and birth registration form no. 3-21-63 were used. A descriptive method with retrospective data analysis was applied.

Results and Discussion: In 2024, the number of live births decreased by 19.7%, showing a downward trend with a continuous decline in birth rates. The number of deaths plays a role in reflecting changes in the demographic structure. Specifically, in 2021, it increased by 12.3%, while in 2024, it showed a decreasing trend of 17.5%. In the Eastern Region of the Republic of North Macedonia, there are more deaths than live births. This is a direct indicator that the population is facing decline and negative natural growth. During the analyzed period, there is a fluctuating trend of low natural growth, with the deepest negative value in 2021 at -10.1‰, and a rate of -7.1‰ recorded in 2024.

Conclusion: The analysis indicates a serious demographic crisis, and based on this, it can be concluded that depopulation is occurring in the population of the Eastern Region of the Republic of North Macedonia.

Keywords: negative natural growth, demographic crisis, population decline

DISEASES OF THE CIRCULATORY SYSTEM REGISTERED IN OUTPATIENT-POLYCLINIC ACTIVITY IN THE AREA COVERED BY THE KOCHANI PUBLIC HEALTH CENTER FOR THE PERIOD 2020-2024

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Objective: The aim of this paper is to present the status of circulatory system diseases in the area of the Kochani Public Health Center from 2020 to 2024. The etiology of these diseases includes a complex interaction of socio-economic, genetic, ecological, and behavioral factors. Material and methods: The materials used for this paper consist of data from aggregated reports for determining morbidity in outpatient-polyclinic activities submitted to the Kochani Public Health Center, publications and documents from the World Health Organization, The Ministry of Health and the Institute of Public Health, as well as data from the State Statistical Office of the Republic of North Macedonia. A retrospective analysis was conducted using a socio-medical and epidemiological model for the study.
Results: Diseases of the circulatory system rank second, accounting for around 18 % of the total outpatient- polyclinic morbidity. The number of patients increased from 24,403 (rate of 2440.3 per 10,000 inhabitants) in 2020 to 27,388 (rate of 2733.8 per 10,000 inhabitants) in 2024. Throughout the analyzed period, both the number of registered cases and the morbidity rate show an upward trend. The structure by gender shows higher participation of women (57%) compared to men (43%). These diseases are most common in the age group over 65 years and are treated within primary and secondary healthcare. However, such conditions are increasingly being registered among younger age groups, which is alarming. The most frequent circulatory system diseases are: essential primary hypertension, conduction disorders, cardiac arrhythmias, and ischemic heart disease. Conclusion: Globally, cardiovascular diseases are responsible for one in every three deaths-which translates to 17 million people worldwide each year. The number of patients shows an increasing trend year by year. Circulatory system diseases represent a serious public health problem. To prevent these diseases, it is necessary to implement and develop strategies and programs with a multisectoral approach to monitor and modify risk factors to improve population health.
Keywords: circulatory system diseases, outpatient polyclinic morbidity, hypertension, prevention

PREVALENCE OF PSYCHOSIS IN NORTH MACEDONIA FOR THE PERIOD FROM 2020 TO 2023

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The aim of the study was to estimate the prevalence of psychosis in the Republic of North Macedonia (RNM) for the period 2020-2023. Data from the Psychosis Registry of the Institute of Public Health - Skopje, as well as reports from the Public Health Centers in the Republic of North Macedonia, were used. A descriptive-analytical method was used to analyze and present the results. In 2020, the overall rate of psychosis cases was 134.88 per 100,000 population. In 2023, the rate doubled to 299.3 per 100,000 population. In 2023, the rate doubled to 299.3 per 100,000 inhabitants. The largest number of cases for the entire period was diagnosed in the population aged 45-54 years (3935). There are also regional differences, with the most cases documented in the Skopje (1462) and Pelagonia regions (1287). Conclusion: The trend of people suffering from psychosis in our country is continuously increasing. The most affected by this disease are males and the adult population. The results demonstrate the importance of early detection and targeted interventions to address the prevalence of psychosis across different population groups.

Keywords: prevalence, psychosis, North Macedonia

STATUS OF MUSCULOSKELETAL DISEASES M00–M99 (OUTPATIENT-POLYCLINIC – OPC/ INPATIENT CARE – IPC) IN POLOG REGION, FOR THE PERIOD 2021–2024

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Introduction:

Musculoskeletal diseases are increasingly prevalent and represent a significant public health and socioeconomic issue. They negatively affect the population working capacity through increased sick leaves, high treatment costs, and disability.

Objective:

To monitor the status and trends of musculoskeletal diseases (M00–M99) in the Polog Region from 2021 to 2024, using data from outpatient and inpatient care.

Materials and Methods:

Data were collected from aggregated outpatient (OPC) and inpatient care (IPC) reports. An analytical-descriptive method was applied.

Results:

In OPC, the musculoskeletal disease rate per 1,000 inhabitants increased over time: **118.1‰** (2021), **147.7**‰ (2022), **134.7‰** (2023), and **206.2‰** (2024). The highest rate was recorded in Tetovo (212.3‰), followed by Gostivar (113.4‰). Most patients were aged 55–74 (46,428 cases or 89%), with a predominance of females (39,158 cases or 75%).

Most common diagnoses: M40–M54 (other dorsopathies): 15,242 cases ; M50–M51 (disc disorders): 5,811 cases ; M15–M19 (arthrosis): 5,146 cases.

In IPC, hospitalizations increased from **262** (2021) to **382** (2022).**293** (2023) and **387** (2024). Average hospital stay: 3 days (2021–2022), 13 days (2023), and 5 days (2024).

Conclusion:

Over the 4-year period, OPC morbidity due to musculoskeletal diseases in the Polog Region increased from 118.1‰ in 2021 to 134.7‰ in 2024. In 2024, the highest number of cases was recorded in the Tetovo municipality (212.3‰/1000 resodents), predominantly in women aged 55–74. The most common diagnosis was “Other dorsopathies.” In IPC, hospitalizations rose from 262 (2021) to 387 (2024), with a notable increase in the average hospitalization period. Preventive measures such as physical activity and timely rehabilitation are urgently needed.

Keywords:

Outpatient-polyclinic morbidity, Inpatient morbidity, Musculoskeletal diseases, Age, Trend.

BLOCK 7- DERMATOVENEROLOGY SESSION

GLUTEN AND SKIN HEALTH

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Gluten-related disorders (GRD) represent a spectrum of immune-mediated conditions triggered by gluten ingestion in genetically predisposed individuals, including celiac disease (CD), wheat allergy, and non-celiac gluten sensitivity (NCGS). While gastrointestinal manifestations are well recognized, there is growing evidence that gluten can affect multiple organ systems, including the skin.

Dermatitis herpetiformis (DH) is the classical cutaneous manifestation of CD, characterized by pruritic vesiculopapular eruptions, and responds dramatically to a strict gluten-free diet (GFD). Beyond DH, several other dermatologic diseases have been associated with gluten sensitivity. Psoriasis, palmoplantar pustulosis, and aphthous stomatitis have shown clinical improvement following gluten elimination, while vitiligo, linear IgA bullous dermatosis, and hereditary angioedema have been reported to benefit in selected cases. Conversely, rosacea has been linked with an increased risk of CD. Atopic dermatitis (AD), one of the most prevalent chronic inflammatory skin diseases, has demonstrated inconsistent outcomes regarding gluten restriction, highlighting the need for further studies.

Emerging evidence suggests that a “cutaneous gluten sensitivity” may exist, especially in the context of NCGS, potentially serving as a diagnostic marker. Although observational and interventional studies indicate that a GFD can lead to significant symptomatic relief in some patients, robust clinical trials are still required to define the precise role of gluten in dermatologic pathology

It is important to consider dietary triggers in dermatology and the potential role of gluten-free interventions as adjunctive strategies. Clinicians should weigh the benefits of a GFD against potential nutritional deficiencies and guide patients with individualized, evidence-based recommendations.

DERMATOSCOPY IN MODERN MEDICAL DIAGNOSTICS

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Dermatoscopy is a modern non-invasive diagnostic technique that provides detailed insight into the morphological structures of the skin not visible to the naked eye. The use of dermatoscopy significantly improves early detection and differential diagnosis of benign and malignant skin lesions, particularly melanoma and non-melanoma skin cancers. This method also plays an important role in monitoring the dynamics of skin changes, as well as in clinical dermatology for the evaluation of inflammatory and pigmented conditions. The integration of dermatoscopy with modern digital technologies and artificial intelligence further enhances its accuracy and clinical value, making it an indispensable part of modern medical diagnostics.

HAND ECZEMA- CLINICAL AND AETIOLOGICAL SUBTYPES

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Hand eczema is a frequent skin disorder that can greatly affect a person's daily functioning and overall well-being. Proper classification plays a key role in its management, yet this is often challenging due to the wide variety of clinical forms and the significant overlap between different subtypes. Diagnosis is primarily guided by identifying both the causes and the clinical features of the hand lesions, though this can be complex. Recent progress in identifying biomarkers and the development of targeted treatments have improved our understanding of the disease's underlying mechanisms. This review takes a subtype-oriented perspective, exploring the clinical presentation, pathophysiology, and treatment options of hand eczema in order to offer a thorough insight into this diverse condition.

"MONKEY POX" FACTS FOR DERMATOVENEROLOGISTS

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Mpox (formerly monkey pox) is caused by an orthopoxvirus1 from the same genus as the Variola virus. Mpox is becoming a highly relevant and trending zoonotic infection that has been declared a public health emergency of international concern.

Sexual contact was the main route of transmission during the 2022 Mpox outbreak. Although the earliest cases were primarily reported in MSM, anyone in contact with infected people, animals, or contaminated fomites is at risk of developing the disease within 21 days. Systemic prodromal features may be subclinical, and the rash (which can be mild) may start in the genital or anal regions. Lesions in the viremic phase tend to be smaller and asymptomatic, whereas lesions at sites of virus inoculation tend to be more inflammatory. Typical pseudopustules and swollen lymph nodes are useful findings for distinguishing Mpox from other diseases. On the other side, there are atypical presentation of the disease such as presence of solitary lesions located in genital area, lesions in immunocompromised patients, eczema monkeypoxicum, acral lesions, edema in genital region. A definitive diagnosis of Mpox requires PCR detection of viral DNA in a lesion sample. STI coinfection is possible and common.

Currently, there are no treatments specifically approved for Mpox. Symptomatic treatment thus is the mainstay option and consists of antipyretics, nonsteroidal anti-inflammatory drugs, topical corticosteroids (or systemic when there is significant inflammation), creation of a clean, moist microenvironment with covering of infectious ulcers to potentially mitigate transmission and favor re-epithelialization and appropriate antibiotics to treat secondary bacterial infections.

The skin manifestations of the Mpox infection prove to be increasingly challenging for dermatovenerologists. They have varied clinical presentations, are sometimes tricky to diagnose, and can have potential mutilating consequences. Dermoscopy assessment and long-term follow-up appear to be useful strategies for dermatologists worldwide.

BLOCK 7A – MACEDONIAN ASSOCIATION FOR MALIGNANT HEMATOLOGY DISEASES

APHERESIS OF PERIPHERAL BLOOD HEMATOPOIETIC STEM CELLS USING THE CMNC METHOD – SINGLE CENTER EXPERIENCE FROM THE UNIVERSITY CLINIC FOR HEMATOLOGY IN SKOPJE

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ABSTRACT

Intoduction

Transplantation od hematopoietic stem cells, either autologous or allogeneic, represents a well established therapeutic method in treatment of many hematological malignant or non-malignant diseases. Providing a sufficient graft of hematopoietic stem cells is of most important essence in successful transplantation in hematology.

Methods

The bone marrow transplant unit on the university clinic for hematology is doing apheresis procedures of patients and healthy donors since 2021. We are using Spectra Optia cell separator and we are performing apheresis of hematopoietic cells from peripheral blood using the CMNC method and AIM system. Standard anticoagulation is with ACD-A and with intravenous reventiot of potential hypocalcaemia. We are mainly using central venous access as a sufficient blood inlet for the procedure.

Results

So far we have done 203 procedures. The majority were patients that were harvested in autologous setting and the diagnosis that predominated were patients with multiple myeloma. The main mobilization regimen used was G-CSF 5-10 mcg/Kg TT for 5 days. The enumeration of the harvest was done by calculation mononuclear cells using a blood smear and CD34+ cells using a flow cytometer. There were no serious adverse events noted that would lead to interruption of the procedure. One apheresis procedure was unsuccessful because contamination of the graft with malignant cells was noted. In the healthy donor setting no serious adverse events were noted and no prolonged hospitalizations were needed.

Conclusion

Apheresis of peripheral blood stem cells in patients and healthy donors represents a safe method providing sufficient grafts of stem cells needed for a successful autologous or allogeneic stem cell transplant.

TREATMENT OF HYPERVISCOSITY SYNDROME IN MULTIPLE MYELOMA PATIENTS USING THERAPEUTIC PLASMA EXCHANGE

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Hyperviscosity syndrome (HVS) represents a hematologic emergency most frequently associated with IgA or IgG3 multiple myeloma (MM), characterized by elevated serum viscosity due to high concentrations of monoclonal immunoglobulins. Clinical manifestations range from mucosal bleeding, visual disturbances, and neurologic deficits to life-threatening cardiovascular complications. Prompt recognition and intervention are critical to prevent irreversible end-organ damage. Therapeutic plasma exchange (TPE) remains the standard of care for rapid reduction of serum viscosity in symptomatic patients. At the University Clinic of Hematology in Skopje, TPE is implemented as a frontline intervention in patients presenting with clinical features of HVS secondary to MM. The procedure involves extracorporeal removal of plasma containing circulating paraproteins, typically replaced with albumin or fresh frozen plasma- to achieve significant symptomatic and laboratory improvement. While TPE does not modify the underlying clonal plasma cell disorder, it provides a crucial bridge to definitive treatment with anti-myeloma therapy, including proteasome inhibitors, immunomodulatory agents, and corticosteroids. Our clinical approach emphasizes early diagnosis based on symptomatology and serum viscosity assessment, with rapid initiation of TPE prior to or in parallel with cytoreductive therapy. Based on our institutional experience, TPE is a safe and effective modality that significantly improves patient outcomes when integrated into a multidisciplinary management strategy for MM-associated HVS. Ongoing evaluation of response parameters and incorporation of updated therapeutic protocols are essential to optimizing care in this high-risk patient population.

FOLLICULAR LYMPHOMA AND MULTIPLE MYELOMA – A DOUBLE MALIGNANCY CASE REPORT

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Abstract

Follicular lymphoma and multiple myeloma are both hematologic malignancies which most commonly affect the elder population. Although occurrence of these two entities in the same patient is not unheard of, the data in the scientific literature is limited. In this case report, we present our approach in treating a patient with follicular lymphoma and multiple myeloma, and complications which occured throughout the treatment.
A 68-year-old patient presented with weakness, malaise and night sweats to our clinic. On examination, cervical and axillar lymphadenopathy was noted, with palpable, painless, firm, immobile lymph nodes of up to 2 cm. A submandibular lymph node biopsy was performed with histopathology consistent with Follicular lymphoma grade 2, followed with a PET/CT which confirmed metabolically-active cervical, submandibular, mesenterial, retroperitoneal nodes and spinal affection on the pedicle of L5. The patient was started on Obinutuzumab, Cyclophosphamide, Vincristine and Prednisolone, finishing 6 cycles. The following 12-dose maintenance therapy with Obinutuzumab was delayed due to a HZV infection. Following the maintenance therapy, a follow-up PET/CT was performed, which showed no signs of metabolically active nodes, however multiple new lytic lesions were present in the spine, pelvis, ribs, scapula, sternum and femur. An increase in the globulin fraction and positive paraprotein was noted. Bone marrow biopsy was performed with findings of 30% plasma cell infiltration, consistent with multiple myeloma. The patient was started on Bortezomib, Thalidomide and Dexamethasone, however during the first cycle, the treatment was postponed due to a seizure episode. Brain CT was performed, which showed a parieto-occipital mass infiltrating the calvaria. Radiotherapy of 30Gy in 10 fractions was performed on the lesion, followed by continuation with the chemotherapy regimen. The patient finished 6 cycles of chemotherapy and is to be reevaluated in the following period for further treatment options.
Keywords: Follicular lymphoma, Multiple myeloma, Double malignancy

SUCCESSFUL TREATMENT OF EXTRANODAL MARGINAL ZONE LYMPHOMA WITH AFFECTION OF THE KIDNEY - CASE REPORT

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ABSTRACT

Introduction. Marginal zone lymphoma is an indolent B-cell lymphoproliferative malignancy with heterogeneous anatomical and clinical presentation. While MZLs are generally associated with longterm survival, some patients experience histological transformation to aggressive large B-cell lymphoma. Classifications distinguish three MZL subtypes: extranodal MZL, splenic MZL, and nodal MZL. EMZL is further categorized into gastric, nongastric (noncutaneous), and cutaneous variants.

Purpose. The purpose of this case report is to present a rare form of EMZL in a patient with HCV infection and to demonstrate the effectiveness of the treatment with the R-CHOP regimen.

Methods. 44 year old male presented in December 2023 with left abdominal pain. Laboratory tests revealed slight anemic blood count - Hgb 104 g/L WBC 6.4x109/L PLT 180x109/L Biochemistry - BUN 11.3 mmol/L Creatinin 260 umol/L CrCl 39 ml/min, LDH - elevated. No peripheral lymphadenopathy was noted. Abdominal ultrasound revealed a tumorous formation on left kidney confirmed by CT and showed right kidney hydronephrosis. In January 2024 the patient underwent uretheronephrectomia under e suspicion of renal cell carcinom. Patohistology confirmed NHL - MZL. PET/CT showed enlarged lymph nodes metabolically active up and below diaphragm, enlarged spleen with metabolically active lesions which was in favor of stage IV according to the Ann-Arbor staging system.. Bone marrow biopsy was done and confirmed infiltration by lymphoproliferative disease. Viral serology revealed hepatitis C positivity.

Results. IPI score indicated high risk considering that low (LRG, 0 factors) - 5-y PFS of 85%, intermediate (IRG, 1–2 factors) - 5-y PFS 66%, high (HRG, 3+) 5-y PFS 37%. HCV therapy with sofosbuvir/velpatasvir was administrated for 12 weeks. Almost parallel to the antiviral treatment we started with treatment according to R-CHOP regimen. A total of six cycles administered at 21-day intervals and additional 2 cycles of rituximab monotherapry. Treatment resulted in normalization of the blood count and the BUN and creatinine. In August 2024 we did an evaluation of response with PET/CT showing that CR was achieved.

Conclusions. MZL constitutes a subset of indolent B-cell neoplasms. Systemic therapy is recommended for patients with indications for treatment. The combination of immunochemotherapy with antiviral treatment resulted in CR.

Keywords. Extranodal marginal zone lymphoma, HCV, R-CHOP, CR.

OBSERVED OPPORTUNISTIC INFECTIONS IN IMMUNOCOMPROMISED HOSPITALIZED PATIENTS AT THE UNIVERSITY CLINIC FOR HEMATOLOGY SKOPJE

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Abstract

Timely microbiological diagnostics and understanding the disease course during chemotherapy are crucial for managing opportunistic infections in immunocompromised patients. This research aims to present the most frequently isolated microorganisms in the Induction Chemotherapy Department of the Hematology Clinic, through the data obtained during the discharge of our patients, thus raising awareness of the possible septic complications despite the applied comprehensive antibiotic, antimycotic, antiviral and intensive supportive care in these cases.

We analysed 32 patients diagnosed with 12 different hematologic malignancies hospitalized for induction or continuation of therapy at our department. Data were collected on aplasia duration, fever onset post-therapy, infection localization, isolated pathogens, antibiotic sensitivity and clinical outcomes.

Acute myeloblastic leukaemia was the most common diagnosis. Most patients underwent induction therapy per the DA protocol. Aplasia lasted 5–25 days, and febrile episodes began between days 1 and 21 (average 6.5 days). Afebrile status was reached after an average of 13 days. The most frequently isolated pathogens were Vancomycin-resistant *Enterococcus* (VRE) and *Candida* species. According to the antibiogram results, the most frequently used drug as a weapon against these opportunists was Vancomycin, followed by Linezolid, Voriconazole, Amikacin and Colistin. Despite targeted antimicrobial therapy, 21% of patients died from septic complications.

This study highlights the persistent risk of severe infections in haemato-oncology patients and underscores the importance of early detection and aggressive treatment of infectious complications in this vulnerable population.

COMPLEX CLINICAL COURSE AND FATAL OUTCOME FOLLOWING ALLOGENEIC HEMATOPOIETIC STEM CELL TRANSPLANTATION IN A FLT3+ AML PATIENT: A CASE REPORT

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Abstract

We present a case of a 42-year-old female diagnosed with FLT3-ITD–positive acute myeloid leukemia (AML), who underwent multiple lines of induction and consolidation chemotherapy followed by an allogeneic hematopoietic stem cell transplantation (allo-HSCT) from a mismatched unrelated donor (7/8 HLA match). Despite achieving complete hematologic and molecular remission prior to transplant, the post-transplant course was marked by a cascade of severe and ultimately fatal complications. Acute graft-versus-host disease (aGvHD) developed by day +31, manifesting with significant cutaneous and gastrointestinal symptoms and complicated by Clostridium difficile infection. By day +40, the patient exhibited signs of transplant-associated thrombotic microangiopathy (TA-TMA), including hemolytic anemia, thrombocytopenia, elevated LDH, and hyperbilirubinemia, requiring immunosuppression, rituximab, and plasmapheresis. On day +42, posterior reversible encephalopathy syndrome (PRES) emerged, attributed to cyclosporine toxicity, leading to seizures and altered mental status, requiring discontinuation of calcineurin inhibitors and antiepileptic therapy. Despite temporary neurological improvement, complications persisted. By day +99, the patient developed severe ocular involvement suggestive of ocular GvHD or a TEN-like manifestation, requiring topical immunosuppressive therapy and the addition of ruxolitinib. Despite comprehensive multidisciplinary care and achievement of complete donor chimerism, the patient succumbed to progressive multiorgan dysfunction and cardiorespiratory failure on day +99 post-transplant. This case highlights the complexity and high-risk nature of post-allo-HSCT management in FLT3+ AML patients, emphasizing the importance of early recognition and aggressive intervention for complications such as aGvHD, TA-TMA, PRES, and viral reactivation. It underscores the need for individualized risk-adapted strategies and vigilant supportive care to improve outcomes in this vulnerable population.

PRIMARY TESTICULAR NK/T-CELL LYMPHOMA: A RARE AND AGGRESSIVE PRESENTATION- Case report

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Abstract

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Extra nodal NK/T-cell lymphoma (ENKTCL) is a rare, aggressive form of non-Hodgkin lymphoma, typically involving the nasal cavity. Primary testicular ENKTCL is even more uncommon, with faster progression and poorer prognosis. We present a 38-year-old male who initially presented with painless testicular swelling. Following orchifuniculectomy, histopathology confirmed ENKTCL. PET/CT revealed no bone marrow involvement, and treatment began with SMILE chemotherapy. Due to pancreatitis, asparaginase was discontinued, and therapy shifted to the DeVIC regimen.

Despite initial remission, the patient experienced a relapse with subcutaneous lesions in the right arm. Treatment was restarted using the ESHAP regimen and localized radiotherapy, resulting in temporary remission. However, another relapse occurred in 2023, confirmed via biopsy. GDP chemotherapy and further radiotherapy were administered. Follow-up imaging in 2024 showed no evidence of active disease, and the patient remains under surveillance with normal hematological parameters. ENKTCL of the testis is extremely rare and lacks standardized treatment protocols. Radical orchiectomy, followed by chemotherapy and radiotherapy, remains the mainstay. However, relapse is common, and prognosis is poor. Non-anthracycline and L-asparaginase-containing regimens have improved outcomes in localized disease, yet advanced-stage or relapsed cases often fail to achieve durable remission. Stem cell transplantation has been recommended in some studies, though declined in this case.

This report highlights the aggressive nature of primary testicular ENKTCL, the need for early and multimodal treatment, and the challenges in managing relapsed disease. Continued research is crucial for developing more effective, targeted therapies to improve outcomes in this rare lymphoma subtype.

BLOCK 8 – STD PANEL

CONFRONTING HPV TODAY: MODERN SOLUTIONS FOR A PERSISTENT CHALLENGE

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President of the Croatian STD Society of the Croatian Medical Association, Chair of the HPV Task Force of the European Academy of Dermatology and Venereology (EADV), St. Catherine's Special Hospital and Zagreb University School of Medicine, Zagreb, Croatia.

Anogenital warts (condylomata acuminata) are the most common HPV lesions presented in men. However, during the last decade the other HPV-associated exaggerated lesions such as condylomata plana, penile, scrotal, and anal intraepithelial neoplasias, as well as the penile, tonsillar and oropharyngeal cancer have been studied a little bit more extensively. Consistent studies are still sparse for male population. However, the "banality" of anogenital warts should not be underestimated providing that the high risk HPV DNA 16 and 18 can be isolated (PCR) from "benign" HPV-associated genital lesions in 10-20% of patients, i.e. more than it is usually expected. On the other hand, the presence and the recalcitrant course of HPV DNA 6 and 11 associated diseases represent a significant physical and psychological problem for both men and women.

A prophylactic vaccine that targets these types should thus substantially reduce the burden of HPV-associated clinical diseases. Ultimately, within the spectrum of therapeutic options for condylomata, no method is really superior to others; recurrences occurred in 30-70% of cases. However, the proactive sequential treatment representing the combination of the ablative and immunomodulatory treatment (imiquimod, sinecatechins) might be considered as treatment of choice today. We definitely need the HPV vaccination programme to get rid of one of the oldest and up to now unsolved problems of humankind. Managing both partners is necessary in order to eliminate the virus in the population. Approaches to this include prophylactic vaccines such as nonavalent (9-v) HPV vaccine for both men and women. This should be the only way to significantly decrease the numbers of infected persons. Besides, a proper dermatological training is required as the clinical criterion is still very important and the HPV-induced lesions are often misdiagnosed unless managed by skilled professionals. In conclusion, while HPV remains a persistent global challenge, today's advances in vaccination, diagnostics, digital health, and global health policy provide a unique opportunity to reduce HPV-related disease burden and move closer to elimination.

NON-GONORRHOEIC URETHRITIS: WHAT IS IN FOCUS?

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In the majority of patients with non-gonococcal urethritis, the causative agents are *Chlamydia trachomatis* or *Mycoplasma genitalium*. These two bacteria play a significant role in the etiology of sexually transmitted infections, and their importance lies not only in the wide spectrum of symptoms and complications they cause but also in the fact that the infection is often asymptomatic. *Chlamydia trachomatis* infection is asymptomatic in 50% of men and 75% of women. Therefore, mandatory screening should be considered for young individuals, especially young women, to prevent tubal infertility and ectopic pregnancies. According to some studies, infertility in men occurs three times less frequently than in women. The NAAT test (nucleic acid amplification test) quickly and reliably detects *Chlamydia trachomatis*, making former laboratory diagnostic procedures (e.g., DIF, culture) no longer recommended. Treatment is primarily carried out with doxycycline or azithromycin, with erythromycin, levofloxacin, ofloxacin also being viable options.
The prevalence of *Mycoplasma genitalium* in the general population ranges from 1.3% to 3.2%, but it is likely higher, as it is the causative agent in up to 35% of all non-gonococcal urethritis cases in symptomatic men. The predominant routes of transmission are genito-genital and genito-anorectal. In men, it manifests as urethritis (acute, persistent, recurrent), balanoposthitis, proctitis, and epididymitis. It remains unclear to what extent *Mycoplasma genitalium* is associated with chronic prostatitis and infertility in men. In women, the pathogenic role of this bacterium is much less clear, but there is a high correlation with infertility. Diagnosis is made through a NAAT test, which has high specificity and sensitivity. The most effective treatment for urethritis caused by *Mycoplasma genitalium* is azithromycin. When administered orally at 500 mg on the first day, followed by 250 mg daily for the next four days, it is more effective than a single 1g dose. Alternative medications include moxifloxacin and josamycin.

MICROBIOME ON TRIAL: IS IT DYSBIOSIS OR IS IT DISEASE?

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Aim:
To assess the vaginal microbiome in reproductive-age women, focusing on *Lactobacillus* species, their association with hrHPV and cytology, and co-presence of pathogens, in order to distinguish dysbiosis from disease.
Methods:
In this cross-sectional study, 166 women were examined. Exclusion criteria included pregnancy, abnormal bleeding, recent antibiotics, vaginal products, or intercourse ≤3 days prior. Assessments included pH, liquid-based cytology (n=147), hrHPV testing (n=46), and 16S rRNA sequencing for *Lactobacillus*. Pathogens tested included *Gardnerella*, *Candida*, *Ureaplasma*, *Mycoplasma*, *Trichomonas*, *Chlamydia*, and *Neisseria*.
Results:
By Nugent score, 50% had normal flora, 25.9% intermediate, and 24.1% BV. *Lactobacillus* was detected in 100% of normal, 95.6% intermediate, and 68.4% BV cases. Normal pH was observed in 87.7% of NF, 62.5% of IM, and none of BV. *L. crispatus* and *L. casei* were strongly protective (OR ≈ 0.09), while *L. iners* predominated in hrHPV-positive women (53%) and LSIL (59%). hrHPV-negative cases were dominated by *L. crispatus*, *L. casei*, *L. gasseri*. HSIL showed *L. iners* with *L. delbrueckii* or *L. gasseri*, often with pathogens. Twelve hrHPV+ women treated with β-glucan cleared HPV and shifted toward protective flora.
Conclusion:
L. iners dominance without abnormal pH or pathogens may reflect high-risk dysbiosis; with co-pathogens and elevated pH, it defines disease. Integrating microbial, molecular, and clinical data refines therapy decisions between microbiome restoration and antimicrobials.
Keywords: Vaginal microbiome, dysbiosis, disease, HPV, *Lactobacillus*

CONVENTIONAL CYTOLOGY vs. LIQUID-BASED CYTOLOGY

Katerina KUBELKA-SABIT

Cervical cancer screening has traditionally relied on conventional cytology (CC), also known as the Pap smear, for the detection of precancerous and cancerous lesions of the cervix. While conventional cytology has significantly contributed to reducing cervical cancer incidence and mortality, it is not without limitations. In recent years, liquid-based cytology (LBC) has emerged as a superior alternative, offering enhanced specimen quality, improved diagnostic accuracy, and a broader scope for ancillary testing. In LBC, cervical cells are collected using a brush and immediately suspended in a preservative solution, an approach that minimizes air-drying artifacts, ensures better preservation of cellular morphology, and produces a more homogenous and representative sample for microscopic evaluation. One of the key advantages of LBC is its ability to support molecular testing. Since the sample is stored in a liquid medium, residual material can be used for high-risk HPV DNA testing, which is now a cornerstone of modern cervical cancer screening programs. Co-testing with cytology and HPV has shown increased sensitivity for detecting high-grade lesions and allows for better risk stratification of patients. In contrast, conventional cytology often does not retain sufficient material for reliable HPV testing, limiting its utility in integrated screening protocols. Moreover, the same LBC sample can be utilized for analysis of the vaginal microbiome, an area of growing clinical interest. The composition of the vaginal microbiota has been linked to susceptibility to HPV infection, persistence, and progression to neoplasia, as well as to broader gynecological and obstetric outcomes. LBC specimens are amenable to DNA extraction and sequencing methods, enabling comprehensive microbial profiling without the need for additional sample collection.

LBC also facilitates the detection of other sexually transmitted pathogens through nucleic acid amplification testing. The ability to perform multiplex testing from a single LBC vial enhances diagnostic efficiency and reduces patient discomfort.

In conclusion, while both cytology methods serve the primary purpose of cervical cancer screening, liquid-based cytology offers substantial advantages over conventional cytology. These include better sample adequacy, improved detection of cytological abnormalities, and the ability to perform additional testing for HPV, vaginal microbiota, and STDs from the same sample.

BLOCK 8A – PERINATOLOGY & NEONATOLOGY

GLOBAL PERSPECTIVES ON A PRETERM BIRTH: EPIDEMIOLOGY AND IMPACT REVIEW OF PRETERM BIRTH RATES, GLOBAL INEQUALITIES, AND SOCIOECONOMIC CONSEQUENCES

Milan Stanojevic

Preterm birth remains one of the most pressing challenges in perinatal medicine, with an estimated global incidence of around 10% of all live births. Recent analyses indicate that from 2010 to 2020 the number of preterm infants increased by more than half a million, primarily due to high fertility rates in populous countries. However, the burden of prematurity is not equally distributed: the highest prevalence rates are recorded in sub-Saharan Africa and South Asia, with Malawi (18.1%), Comoros (16.7%), and Congo (16.7%) among the leading countries. In absolute numbers, India, China, and Nigeria account for the majority of preterm births worldwide.

This global disparity reflects broader socioeconomic and health system inequalities. While developed countries achieve higher survival rates for infants born after 25 weeks of gestation due to advanced neonatal intensive care, in low-resource settings the survival rate of extremely preterm infants remains below 5%. Socioeconomic determinants, such as maternal nutrition, environmental exposures, access to antenatal care, and health system capacity, play a crucial role in outcomes. Moreover, preterm birth contributes significantly to under-five mortality, which the World Health Organization aims to reduce to at least 25 per 1000 live births by 2030 as part of the Sustainable Development Goals.

Regional data further highlight the magnitude of the problem. In Croatia, preterm infants accounted for 75% of all perinatal deaths in 2019, demonstrating their dominant role in perinatal and neonatal mortality. In North Macedonia, perinatal mortality rose from 6 per 1000 in 2018 to 7.2 per 1000 in 2023, with preterm birth being a major contributing factor.

The consequences of preterm birth extend beyond the neonatal period, encompassing increased risk of respiratory, neurological, and developmental disorders, as well as long-term morbidity and reduced life expectancy in adulthood. Economically, preterm birth imposes a heavy financial burden on families and health systems through prolonged hospitalizations, specialized therapies, and lifelong care needs. Addressing preterm birth therefore requires a comprehensive global approach, integrating perinatal health policies, socioeconomic interventions, and equitable access to neonatal care to reduce disparities and improve outcomes.

ROLE OF BIOMARKERS FOR PREDICATION AND MANAGEMENT OF PRETERM BIRTHS

Ana DANEVA Markova

Abstract

Partus praetemporarius, or preterm birth, remains a significant global health challenge, contributing to neonatal morbidity and mortality. The identification and application of biomarkers have emerged as critical tools for predicting and managing preterm birth, enabling early intervention and personalized care. This review explores the role of biomarkers in the prediction and management of preterm birth, focusing on their diagnostic, prognostic, and therapeutic implications. Key biomarkers, including inflammatory markers (e.g., C-reactive protein, interleukins), cervical length measurements, fetal fibronectin, and emerging omics-based markers (e.g., proteomics, metabolomics), are evaluated for their predictive accuracy and clinical utility. These biomarkers facilitate risk stratification, guide timely interventions, and support the development of targeted therapies to prevent preterm delivery. Additionally, advancements in non-invasive sampling techniques, such as maternal blood, urine, and cervicovaginal fluid, have enhanced the feasibility of routine biomarker testing. Despite significant progress, challenges remain, including the need for standardized assays, validation across diverse populations, and integration into clinical practice. This review underscores the transformative potential of biomarkers in improving maternal and neonatal outcomes through precision medicine approaches, while highlighting areas for future research to address current limitations and optimize preterm birth management.

ARTIFICIAL INTELLIGENCE IN OBSTETRICS: FROM PREDICTION TO PREVENTION OF PRETERM BIRTH – INSIGHTS THROUGH THE EYE OF FETAL MEDICINE FOUNDATION GUIDELINES

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Abstract

Artificial intelligence (AI) is fast translating from research to bedside, providing novel insights in obstetrics and specifically in prediction and prevention of preterm birth (PTB), the most frequent cause of neonatal morbidity and mortality globally. Contemporary evidence suggests that AI-augmented ultrasound enhances biometric precision and enables earlier detection of mild fetal and maternal changes, decreasing interobserver variability by over 30%. Machine learning algorithms utilizing cervical length, uterine artery Doppler, and maternal history have better predictive accuracy over traditional risk scoring (AUC to 0.80). Deep learning incorporating multi-omics data, such as cell-free DNA and RNA, further enhances early risk stratification of PTB, with referenced AUCs achieved at around 0.89. Integration of these strategies with Fetal Medicine Foundation (FMF) algorithms can facilitate earlier and more reliable detection of high-risk pregnancy, which can be followed by early application of targeted interventions like progesterone, cervical cerclage, or aspirin prophylaxis. The clinical case discussions in this context point out where AI models uncovered risk profiles that went undetected even with standard FMF measurements, paving the way for personalized preventive treatment. Beyond prediction, AI is being evaluated for real-time fetal monitoring, such as automated interpretation of non-stress tests and uterine activity analysis, with anticipation of increased objectivity and standardization. Restrictions persist, especially on algorithmic bias, population heterogeneity, and the requirement for harmonized data systems. Persistent clinical errors, such as misinterpretation of percentile cut-offs or failure to include early uterine artery Doppler, continue to threaten screening accuracy. Combining the prognostic potential of AI with structured FMF guidelines represents a move towards precision obstetrics, with the promise of lowering the incidence of PTB and improving perinatal outcomes.

HOMAGE TO THE ASSOCIATION OF NEONATOLOGISTS OF MACEDONIA - TRAJECTORY OF DEVELOPMENT AND FUTURE CHALLENGES

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With profound respect and sincere recognition, this homage is dedicated to the Association of Neonatologists of Macedonia - the cornerstone of neonatal medicine in our country and the advocate of its noblest mission: the care of the youngest and most vulnerable, the newborns. Grounded in vision, dedication, and professionalism, over the years the Association of Neonatologists has established a pathway of continuous advancement, promoting the development of neonatal care and the education of healthcare professionals. Through scientific conferences, international cooperation, training programs, and workshops, the Association has become a platform for exchanging experiences, monitoring global achievements, and adapting them to domestic clinical practice. During recent decades, remarkable outcomes have been achieved: neonatal intensive care has been enhanced, new diagnostic and therapeutic protocols have been introduced, while mortality and morbidity rates among newborns have shown a declining trend. Special acknowledgment is due to all pioneers— physicians, nurses, and supporters-who embedded their expertise, humanity, and compassion into the foundations of this Association. Nevertheless, new challenges remain. Contemporary neonatology requires continuous improvement, technological advancement, optimization of logistics, as well as ethical and emotional support for families. Essential are more intensive multidisciplinary collaboration, investments in equipment and personnel, and sustained governmental support for the development of the neonatal network throughout all regions of the country. Reflecting on the past with pride and looking ahead with vision and determination, the Association of Neonatologists remains faithful to its mission: to ensure that every newborn receives high-quality, modern, and humane healthcare. In honor of all who have been part of this endeavor, we express our deepest gratitude. Our work is a beacon that illuminates the future of our youngest citizens.

Keywords: homage, association, newborns

SPECIFIC FEATURES OF THE GASTROINTESTINAL TRACT MICROBIOME IN NEWBORNS

Prim. Dr. Marina Pop-Lazarova

The development of the human intestinal microbiota is a continuous, dynamic process that begins **in utero** and continues during the first 2–3 years of life. The microbiological composition depends on genetic and numerous environmental factors. Our body harbors more than 100 trillion microbes (10 times more microbes than human cells).

The gut microbiome, particularly the bacteria located in the colon, plays an essential role in overall health through its trophic, metabolic, and protective functions. Some intestinal commensal bacteria are “immunomodulatory” and directly interact with the immune system. They are critically important in the early period, when the “initial and long-term programming” of the immune system takes place.

The main factors influencing early colonization are: **gestational age** and the **mode of delivery**. The mode of birth determines the colonization process during the intrapartum period, with clear benefits from vaginal delivery compared to operative delivery (Cesarean section).

Early administration of probiotics and synbiotics supports the normal development of the microbiome in newborns delivered by Cesarean section. Breastfeeding and human milk represent the best, biocompatible nutrition for newborns and infants, as they naturally contain biotics. Nutrition during infancy and early childhood influences the normal development of the microbiome and thus contributes to a healthy immune, metabolic, and neurological development in children.

CESAREAN SECTION DELIVERY – EARLY AND LATE CONSEQUENCES FOR THE HEALTH OF THE MOTHER AND CHILD

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Abstract
The cesarean section (CS) is the most common surgical operation in gynecology and obstetrics. It is often believed that surgical delivery is a less painful and safer technique of birth, resulting in an increase in the number of procedures conducted without medical justifications.
The World Health Organization said that there is no reason for any region to have CS rates higher than 10-15% due to the inherent hazards. Guidelines were developed and put into practice regarding these numerous and serious issues that affect expectant mothers and fetuses, and a CS should be done when certain clearly defined risk factors are present.
The short-term maternal risk of SC includes infection, hemorrhage, visceral injury, and placental disorders, need for intensive care, and prolong hospital stay and increased health care cost.
The long-term complications of CS include increased risks of uterine rupture, abnormal placentation, subsequent infertility, and higher likelihoods of miscarriages, ectopic pregnancy, and stillbirth in the subsequent pregnancies.
Postpartum fetal complications of CS primarily consist of birth asphyxia, hypothermia, transient tachypnea of newborns, respiratory distress syndrome, sepsis, and soft tissue injury.
According to an increasing number of epidemiologic studies, during childhood, infants delivered by cesarean section more commonly developed respiratory and neurological disorders (e.g., autism spectrum disorders, schizophrenia) and immune-related diseases, such as asthma, skin atopy, juvenile arthritis, coeliac disease, type 1 diabetes or obesity.
If performed properly, cesarean delivery is a significant life-saving procedure. Unnecessary cesarean deliveries raise health care expenses and maternal and child health hazards. It was suggested that measures are required to stop needless caesarean deliveries. Health professionals and the general public should be informed about the risks of cesarean deliveries.
Key words: cesarean section, maternal complications, neonatal complications, childhood complications

BLOCK 9 – SCIENTIFIC THEME – CARDIOVASCULAR DISEASES

AORTIC VALVULAR STENOSIS - THE SIGNIFICANCE OF CLASSIFICATION AND PRECISE DIAGNOSIS

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Background: Calcific Aortic stenosis(AS) is the most prevalent valvular heart disease in developed countries and is responsible for approximately 85,000 valve replacement procedures and 15,000 deaths per year.

Presentation: According to the latest ESC Guidelines(2021), there are four grups of severe AS: 1)High-gradient AS, 2)Low-flow,Low-gradient AS with reduced EF, 3)Low-flow,Low-gradient AS with preserved EF-PARADOXICAL AS, 4)Normal-flow,Low-gradient AS with preserved EF.

High-gradient severeAS (mean LV/AV gradient ≥40mmHg): is so called in the cases with normal and reduced EF, as well as in cases with normal and reduced flow through LV outflow tract.

The Classical Low-flow,Low-gradient severeAS with reduced EF≤50% group of patients have the characteristics of the group of pts. with HFrEF. Here, there is a need to perform dobutamin stress echocardiography(DSE), to determine whether it is true-severe or pseudo-severe AS. Aortic valvular replacement(AVR) (in Class I- pts. with contractile reserve; or in Class IIa- pts. without contractile reserve) is recommended to the true-severe AS group. In the group without contractile reserve ,,projected AVA" should be measured. If this method is not fruitful, we should perform non-contrast CT in order to determine whether it is true-severe or pseudo-severe AS.

Another group of Low-flow,Low-gradient severeAS with preserved EF are the pts. with Paradoxical AS. This group shares the characteristics of the group of pts. with HFpEF. These pts. have specific characteristics: small BSA; small LV; LV concentric hypertrophy; LV diastolic dysfunction; SVI<35 ml/m2; GLS<16%; EF>50%. In order to distinguish between true-severe and pseudo-severe AS, we should perform non-contrast CT to measure the calcium score of the aortic valve. If the calcium score is above 2000(men)/1200(women)AU, there is a Class I/IIa indication for AVR intervention.

AV calcium scoring is also recommended for the Normal-flow-Low-gradient severeAS group.

Conclussion: DSE and CTcalcium scoring are useful methods to distinguish true severe from pseudosevere Low-flow,Low-gradient severe AS groups of pts.

The importance of precise classification into AS goups, is necessary because of different management and drug therapy in some groups, as well as taking next steps for SAVR or transcatheter aortic valve replacement (TAVI) on time.

Key words: aortic stenosis classification groups, DSE, CTcalcium scoring

CORONARY SHOCKWAVE INTRAVASCULAR LITHOTRIPSY IN THE TREATMENT OF CALCIFIED CORONARY ARTERY DISEASE

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Abstract
Coronary artery disease (CAD) is leading cause for morbidity and mortality worldwide. Around 30% of the coronary lesions show moderate to severe coronary calcification. Coronary artery calcification prolongs procedural time of intervention, increases the rate of procedural complications, impedes stent delivery and it is the main reason for suboptimal stent expansion. Coronary shockwave intravascular lithotripsy (IVL) is an innovative technology which allows interventional cardiologists to bridge the gap between predictably safe and consistently effective coronary calcium modification in patients suffering from calcified CAD. It is an interventional procedure that utilizes a fluid-filled catheter connected to power sources that generate acoustic shock waves to modify calcified plaque in coronary arteries. Shockwave coronary IVL disrupts coronary calcium through its unique mechanism of action, modifying calcium in a safe, effective and intuitive manner prior to stent deployment. The shockwave IVL catheter is placed against a calcified blockage in the artery. Then an electrical discharge from the catheter emitters vaporizes the liquid within the balloon, creating a rapidly expanding and collapsing bubble that generates sonic pressure waves, or shock waves. The shock waves create a localized field effect that travels through the soft vascular tissue, selectively cracking superficial and deep calcium within the vessel wall while leaving the soft tissue undisturbed. The concept of coronary shockwave IVL is to crack heavily calcified coronary plaque allowing enough space for further treatment of the lesion with balloons and/or stents. We will present our first experience of treating heavily calcified CAD using shockwave IVL.
Keywords: CAD, IVL, shockwave, calcium.

CASE REPORT: A PATIENT WITH GASTROINTESTINAL COMPLAINTS AND LIFE-THREATENING CARDIAC PATHOLOGY – A CASE OF MASKED CORONARY ARTERY DISEASE

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Coronary artery disease (CAD) often presents with chest pain or shortness of breath, but in some cases, it can manifest through atypical symptoms, especially in elderly patients. When CAD is masked by gastrointestinal complaints, timely diagnosis and treatment may be delayed, increasing the risk of life-threatening events. This report discusses a case where a patient's cardiac pathology was initially misattributed to gastrointestinal issues.

A 66-year-old male (T.M.) with a history of epigastric pain and occasional syncopal episodes had been treated for a diagnosed hiatal hernia, with no improvement. His symptoms worsened, prompting further evaluation. A 24-hour Holter ECG revealed multiple episodes of ventricular tachycardia and transitory ST-segment elevation in the inferior leads, raising concern for cardiac involvement. Coronary angiography confirmed a critical stenosis of the right coronary artery. The patient underwent percutaneous coronary intervention (PCI) with stent placement, resulting in the complete resolution of both gastrointestinal-like symptoms and arrhythmias. Follow-up showed no further ischemic changes.

This case illustrates how CAD can present with nonspecific gastrointestinal symptoms, delaying diagnosis and treatment. It emphasizes the importance of a multidisciplinary approach and the role of Holter monitoring in identifying underlying cardiac pathology. Timely intervention is crucial, particularly in elderly patients with risk factors for CAD.

Key Words: Coronary artery disease, atypical presentation, gastrointestinal symptoms, ventricular tachycardia, hiatal hernia, Holter ECG, percutaneous coronary intervention.

VENTRICULAR TACHYCARDIA IN POST-CABG PATIENT

CASE-REPORT

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Ventricular arrhythmias (VAs) are life-threatening conditions, particularly in patients with structural heart disease. Prompt diagnosis and appropriate management are critical to reducing morbidity and mortality. A 69-year-old male collapsed in a supermarket while waiting in line at the checkout, accompanied by his wife. According to his medical history, he is a cardiology patient with a history of coronary artery bypass grafting (CABG) and is on regular medication. An electrocardiogram (ECG) revealed ventricular tachycardia with a ventricular rate of 180 bpm, a northwest axis, and positive concordant morphology. Capillary blood glucose was 10 mmol/L, and his pupils showed no signs of mydriasis. After administering amiodarone intravenously, he was transported by ambulance to the cardiology unit. Upon admission, he underwent defibrillation and coronary angiography, where thromboaspiration was performed. Echocardiography confirmed a reduced ejection fraction (EF 27%) with globally impaired wall motion and dilated left ventricular chambers. The patients with acute coronary syndrome (ACS) may develop ventricular arrhythmia within the initial hours following symptom onset, potentially influencing early clinical outcomes and treatment strategies. Upon hospital discharge, the ECG showed sinus rhythm at 60 bpm, with left bundle branch block (LBBB) morphology. Optimal medical therapy (OMT) was recommended. Although further diagnostic tests were suggested after discharge, they were not carried out.This case highlights the need for early recognition of ventricular arrhythmias in patients with structural heart disease and recent ischemic events. Effective acute management, including antiarrhythmic therapy and coronary intervention, is essential for improving patient outcomes.

Key words: VA, CABG, ECG, ACS.

TOXIC SLIMMING: VENTRICULAR TACHYCARDIA AS A MANIFESTATION OF SUSPECTED SUPPLEMENT-INDUCED MYOCARDITIS

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Ventricular tachycardia is a potentially life-threatening arrhythmia, typically associated with structural heart disease, but it can also result from toxin-induced myocardial injury. With the rise in popularity of unregulated, internet-purchased weight loss products, cases of supplement-related cardiotoxicity are increasingly recognized. This case highlights sustained ventricular tachycardia (VT) as the initial manifestation of myocarditis following prolonged use of weight loss drops.

A 48-year-old previously healthy woman presented to General Hospital with palpitations, nausea, dizziness and shortness of breath. She reported daily use of online-purchased weight loss drops for two months. Despite experiencing palpitations after each dose, she continued taking them. ECG on arrival showed sustained monomorphic VT at 200 bpm. She was stabilized and transferred to Emergency room in University clinic of cardiology-Skopje.

On admission, vital signs revealed hypertension and laboratory tests showed elevated high-sensitivity troponin, aspartate transaminase, alanin transaminase, blood glucose, white blood count count and C-reactive protein . ECG monitoring revealed recurring VT. Echocardiography revealed hypokinesia of the inferior and inferolateral walls with mildly reduced ejection fraction, and pathological value of global longitudinal strain . Coronary angiography was performed to rule out ischemic causes. MRI confirmed acute myopericarditis with myocardial edema and late gadolinium enhancement. A 24-hour Holter recorded VES , including bigeminy, trigeminy and one VT recurrence.

The patient was stabilized with intravenous amiodarone and beta-blockers. Anti-inflammatory therapy with high-dose NSAIDs and colchicine was initiated to treat the pericardial component. Cardioprotective agents, including ACE inhibitors,SGLT-2i were started to support left ventricular function. Electrolyte balance was maintained and the patient was monitored continuously in the arrhythmia unit and the weight loss drops were discontinued immediately. On follow-up, a repeat Holter monitor showed only isolated VES and no further VT. Control echocardiography showed signs of subacute myocarditis and partial improvement in wall motion abnormalities. Given the strong temporal association between the use of unregulated weight loss supplements and the onset of VT, it is challenging to definitively determine whether the myocarditis is primarily toxic, inflammatory or a combination of both. This case serves as a reminder for clinicians to consider supplement use in patients presenting with unexplained arrhythmias or myocardial dysfunction, and to advocate for stronger regulation of potentially harmful products sold online.

Keywords: Ventricular tachycardia, myopericarditis, weight loss supplements, echocardiography, electrocardiography

CALCIUM MODIFICATION TOOLBOX: EVOLVING TECHNIQUES IN THE ERA OF COMPLEX PCI

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Calcified coronary lesions represent a significant and growing challenge in the cardiac catheterization laboratory, affecting up to one-third of patients undergoing percutaneous coronary intervention (PCI). Their rising prevalence is driven by an aging population and the increasing burden of comorbidities such as diabetes mellitus and chronic kidney disease. Recent advances in intracoronary imaging and the development of novel calcium modification technologies have markedly improved lesion assessment and treatment.

Calcium modification is pivotal to optimizing PCI outcomes in calcified coronary lesions. The **cutting balloon** employs microsurgical blades to create controlled intimal incisions, facilitating lesion preparation at low inflation pressures and promoting symmetrical stent expansion. **Rotational atherectomy (rotablation)** utilizes a high-speed, diamond-coated burr to selectively ablate superficial calcium via differential cutting, enhancing lesion compliance and device deliverability. **Orbital atherectomy** employs centrifugal force to generate an orbital motion, creating microfractures in calcified plaque and allowing adjustable ablation diameters. **Intravascular lithotripsy**, using the Shockwave system, delivers sonic pressure waves through a specialized balloon to fracture both superficial and deep calcium with minimal trauma to adjacent soft tissue, thereby improving vessel compliance and stent deployment. The **OPN non-compliant balloon,** with its double-layer design, permits ultra-high-pressure inflations (>40 atm) for resistant lesions that remain undilatable with conventional methods.

When guided by high-resolution intravascular imaging, these techniques enable lesion-specific treatment strategies, improving stent expansion, procedural success, and long-term outcomes in patients with heavily calcified coronary artery disease.

Keywords : complex high risk interventions(CHIP), calcium modification techniques.

ACUTE POSTPARTUM HEART FAILURE WITH REDUCED EJECTION FRACTION

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Background: Postpartum cardiomyopathy, also known as peripartum cardiomyopathy (PPCM), is defined as new-onset heart failure(HF) occurring between the last month of pregnancy and up to five months post-delivery, with no identifiable cause.

Case report: A 33-year-old woman, who had delivered a healthy baby two months earlier, was admitted to our CICU with symptoms of acute heart failure. She presented with dyspnea, lower extremity edema, orthopnea, and palpitations. She denied experiencing these symptoms before or during pregnancy. Her medical history included type 1 diabetes mellitus and pregnancy-related hypertension. On physical examination, her blood pressure was 129/83 mmHg, with bilateral lung rales and lower extremity edema. An infected cesarean section wound was noted, and a bacterial swab was performed. Electrocardiography revealed normal sinus rhythm. NT-proBNP was elevated at 3615 pg/ml, while other laboratory tests showed no evidence of myocardial injury, renal failure, proteinuria, or coagulopathy. Transthoracic echocardiography revealed a dilated left ventricle, reduced LV systolic function with an ejection fraction of 31%, reduced global longitudinal strain, and an enlarged left atrium. The right atrium and right ventricle had normal dimensions but reduced RV systolic function. There was also moderate mitral and moderate tricuspid regurgitation. Based on these findings, a diagnosis of postpartum heart failure was established. The patient was treated with a beta-blocker, ACE inhibitor, mineralocorticoid receptor antagonist (MRA), SGLT2 inhibitor, loop diuretic, low-molecular-weight heparin (LMWH), and long-acting insulin. On the third day of hospitalization, the bacterial culture returned positive for MRSA, and intravenous vancomycin was initiated as the treatment of choice. She was discharged with HF therapy recommendations and advised to undergo follow-up echocardiography. One year later, follow-up echocardiography demonstrated improvement in LV dimensions and systolic function.

Conclusion: Peripartum cardiomyopathy (PPCM) carries a substantial risk of morbidity and mortality, with reported mortality rates ranging from 20% to 40%. More than half of patients may show improvement in cardiac function within the first 3–6 months. In complex PPCM cases complicated by MRSA infection, prompt diagnosis, antimicrobial therapy, and HF management can result in favorable long-term outcomes. Continuous follow-up, especially beyond the first year, is essential to detect potential late deterioration in cardiac function.

Key words: Postpartum heart failure, Diabetes mellitus, MRSA

BLOCK 10 – SCIENTIFIC THEME – MALIGNANT DISEASES

OSTEID OSTEOMA MIMICING BRODIE ABCESS

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Abstract:
A 10-year-old girl with a history of treated *Helicobacter pylori* infection and recurrent urinary tract symptoms presented with suprapubic tenderness and left lower limb pain. Initial blood work, CRP, abdominal radiography, and urinary tract ultrasound were unremarkable. Orthopedic evaluation revealed pain on terminal knee flexion with a suspicious lesion on pelvic X-ray.
CT showed an oval hypodense lesion with a hyperdense center in the left pubic bone, suggestive of osteoid osteoma or Brodie's abscess.
MRI confirmed a multilobulated lesion with surrounding edema, periosteal elevation, and soft tissue involvement.
Scintigraphy showed increased tracer uptake, and labs revealed elevated bone turnover markers and liver enzymes. Urine culture grew *Escherichia coli*, and ASO titers were elevated. Due to the age of the patient for CT guided biopsy, open biopsy was recommended and done where the histopathology confirmed Brodie's abscess.
The importance of this case is to emphasizes the correlation of imaging, orthopedic assessment and biochemical and pathohistological findings to distinguish subacute or chronic osteomyelitis from bone tumors in pediatric patients.
Key words: Osteid osteoma, Brodie abscess, CT, MRI.

COLONIC ADENOCARCINOMA IN A YOUNG FEMALE PATIENT- A CASE REPORT

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Colorectal cancer (CRC) is traditionally considered a disease of older adults, with screening programs generally recommended starting at age 50. However, an increasing incidence of early-onset CRC has been observed globally, often presented with nonspecific symptoms and delayed diagnosis. This case highlights the importance of maintaining a high index of suspicion for CRC even in younger patients without a family history. A 35-year-old female patient presented with a 3-month history of left lower abdominal pain, constipation, and difficulty in defecation. She denied any family history of colorectal malignancy. Laboratory workup revealed microcytic hypochromic anemia (Hemoglobin-110 g/L, Mean Corpuscular Volume 83 fL, serum iron 4.9 µmol/L), leukocytosis (WBC 13.8 $x10^9$/L). Liver function tests, viral hepatitis markers, and coagulation profile were within normal limits. Abdominal ultrasound was unremarkable. Computer tomography (CT) imaging identified a suspicious lesion in the descending colon with localized fat stranding and a few small lymph nodes. Colonoscopy revealed an obstructive, infiltrative mass at 70 cm from the anal verge. Histopathological analysis of biopsy samples confirmed **colonic adenocarcinoma.** The patient underwent laparoscopic left hemicolectomy. Final histopathology confirmed **adenocarcinoma of the sigmoid colon** (pT3, pN0, pMx, G2, R0 – Stage IIA). She received 8 cycles of adjuvant chemotherapy and was referred for MSI and DPYD testing. Follow-up imaging (abdominal and thoracic CT) was clear, and a control colonoscopy was scheduled one year post-op. Early-onset colorectal cancer, though less common, is increasingly recognized and may present without classic risk factors. Persistent gastrointestinal complaints and iron-deficiency anemia in younger patients warrant prompt and thorough evaluation to allow early diagnosis and treatment.

ADRENAL HIGH-GRADE CORTICAL CARCINOMA IN THE LEFT ADRENAL GLAND, FOLLOWED BY ATYPICAL FINDING -AN ACCESSORY SPLEEN IN A 7-MONTH-OLD MALE CHILD – VERY RARE CASE REPORT

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Introduction: Adrenocortical carcinoma remains a rare endocrine malignancy of the suprarenal gland with an overall unfavorable prognosis. It is rare neoplasm among pediatric patients with an estimated incidence of a 0.2-0.3 patients per million in a patients under 20 years old, accounting for less than 0.2% of all pediatric malignancies worldwide. The tumor is primary associated with children suffering from genetic disorders, such as Li-Fraumeni and Beckwith-Wiederman Syndrome. Pediatric patients with adrenal cortical carcinoma are often present differently than adult population's presentation. They are often more functional presenting with excessive androgen production.

Case presentation: We present a 7-month-old male child with chief medical complaints of an excessive hormone production, Cushing like Syndrome appearance, facial enlargement and tachycardia. The child came to our department via pediatrician and after initial clinical exams, lab tests and imaging exams were ordinated. Due to anamnesis extended laboratory, including specific hormones were elevated and all of the CBC's markers were elevated as well. MRI showed enlarged tumor in the left adrenal gland. The Transversal Laparotomy was done and intraoperative finding besides the tumor in the left adrenal gland the finding was a surprisingly accessory spleen. Decision for splenectomy was obtained altogether with left adrenelectomy and lymphadenectomy. Operative material, was sent for Histopathological verification altogether with Immunohistochemistry verification.

Conclusion: The Histopathological verification confirmed high-grade adrenal cortical carcinoma - using Lin-Weiss-Bisceglia criteria for diagnostic categorization of

oncocytic adrenal neoplasms. According to the AJCC (8th edition) the disease conditionally is in stadium II. After the operative treatment, an FDG pet scan and Control 3T MRI were obtained. The results were without any pathological findings. Postoperative control checkups were regularly obtained. The patients with diagnosed ACC have a 5-year survival rate reported to be between 30%-70% according on disease presentation.
Keywords: adrenal cortical tumor, child, accessory spleen, surgery management, oncology

SYNCHRONOUS TUMORS IN HEMODIALYSIS PATIENT - ADENOCARCINOMA OF THE SIGMOID COLON AND INVASIVE PAPILLARY UROTHELIAL CARCINOMA OF THE URINARY BLADDER – CASE REPORT

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Synchronous tumors are rare, particularly in patients with end-stage renal disease (ESRD) undergoing chronic hemodialysis. Their diagnosis and treatment are clinically challenging due to overlapping symptoms and limited therapeutic options. We report the case of a 72-year-old male patient on hemodialysis who presented with fatigue, subfebrile temperatures, ascites, hypoalbuminemia, intermittent hematuria and symptomatic anemia. Imaging and cystoscopy revealed multiple tu formations on the wall of the smooth muscle layer along with the presence of blood clot, which was evacuated. The patient was admitted as an emergency case to the operating room at the Urology Department due to massive hematuria and anemia. During transurethral resection (TUR) of the urinary bladder, a spontaneous rupture of the smooth muscle layer on the anterior wall of the bladder was visualized. A median laparotomy and abdominal exploration were performed, followed by a radical cystoprostatectomy and urinary diversion with terminal ureterolateral anastomosis and ureterocutaneous anastomosis. Upon inspection of the intestines, a tumor mass was found in the sigmoid colon. An abdominal surgeon performed left hemicolectomy with left-sided unipolar colostomy. The histopathological findings of the analyzed specimens are consistent with two synchronous tumors of the urinary bladder and the sigmoid colon. PET/CT- There were no imaging signs of secondary involvement of lymph nodes or parenchymal organs. This case illustrates a highly complex clinical scenario of synchronous malignancies in a dialysis patient. Regular follow-up remains essential to detect recurrence or complications in time.

BLOCK 11 – INTERNATIONAL PARTICIPANTS SESSION

APPROACH TO PRESSURE ULCERS

Hüseyin CAN, Merveözge KAHRAMAN

Pressure ulcers, also known as pressure injuries or bedsores, are localized damage to the skin and underlying soft tissues, most often over bony prominences, resulting from sustained pressure and shear forces. They are frequently seen in patients with comorbidities such as diabetes, vascular disease, obesity, and immobility, and are associated with significant morbidity and impaired quality of life. The National Pressure Injury Advisory Panel (NPIAP) and European Pressure Ulcer Advisory Panel (EPUAP) classify pressure ulcers into stages I–IV, along with unstageable and deep tissue injury categories, according to depth and tissue involvement.

Prevention remains the most effective management strategy and requires a multidisciplinary, holistic approach. Risk identification using tools such as the Braden Scale, regular repositioning, skin inspection, pressure-relieving surfaces, and optimization of nutrition and hydration are central measures. Education of patients and caregivers is equally important. In established ulcers, treatment follows the TIMERS principles: Tissue management, Infection/inflammation control, Moisture balance, Edge care, Regeneration/repair, and Social factors.

Management may include debridement, infection control, tailored dressings, barrier products, and appropriate surgical or conservative techniques, alongside comprehensive nutritional and psychosocial support. Modern wound care products can facilitate healing, but no single option is universally effective, making clinician expertise critical. Ultimately, early recognition of risk factors, preventive strategies, and a holistic, patient-centered approach can minimize ulcer formation, promote healing, and improve outcomes in vulnerable populations.

DECADE DECLINE IN INFANT & MATERNAL MORTALITY IN TURKEY

An analytical overview of the significant reduction in healthcare-related fatalities among mothers and infants in Turkey over the past twenty years.

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İzmir Katip Çelebi Üniversitesi Tıp Fakültesi Aile Hekimliği AD

Abstract

Maternal and infant mortality are widely regarded as key indicators of healthcare performance and social development. At the beginning of the 2000s, Turkey's rates of maternal and infant mortality were significantly higher than those of OECD countries, reflecting gaps in accessibility, preventive care, and healthcare infrastructure. Over the last two decades, however, Turkey has undergone a comprehensive health transformation that has led to remarkable improvements in maternal and child health outcomes.

This analysis draws on data from the Turkish Statistical Institute (TÜİK), the Ministry of Health, the World Health Organization (WHO), and UNICEF, covering the period between 2000 and 2025. The two primary indicators assessed were the Infant Mortality Rate (IMR), defined as the number of deaths among children under one year of age per 1,000 live births, and the Maternal Mortality Ratio (MMR), defined as the number of maternal deaths per 100,000 live births. Trend analysis was used to evaluate progress, with particular focus on the period before and after the nationwide rollout of the **Family Medicine Model** in 2010.

Findings reveal that Turkey achieved a reduction in IMR from 22.6‰ in 2005 to 9.0‰ in 2024, while MMR fell from 28.5 to 11.5 per 100,000 live births during the same period. These results correspond to a reduction of over 60% in both indicators and demonstrate that Turkey has already surpassed the **UN Sustainable Development Goal 3.1 target** of fewer than 70 maternal deaths per 100,000 live births by 2030. Key drivers of this success include the Family Medicine Model, the introduction of Universal Health Coverage, expanded immunization programs, free prenatal and postnatal care, and investments in neonatal intensive care units and emergency transport systems.

In conclusion, Turkey's progress represents a major public health achievement and a model for other middle-income countries. The next challenge will be to sustain these improvements, reduce regional disparities, and incorporate digital health and AI-based tools to ensure equitable, high-quality maternal and child healthcare.

Keywords: Maternal Mortality; Infant Mortality; Family Medicine Model; Primary Healthcare; Turkey; Sustainable Development Goals

NUTRITIONAL SUPPORT AMONG PALLIATIVE CARE PATIENTS – EXPERIENCES FROM TURKIYE

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Abstract

Palliative Care is a globally trending approach that aims to improve the QoL of patients and caregivers facing life threatening illness. As physical, psychosocial and spiritual dimensions must be covered by a multidisciplinary team, the design of the care process must be culturally adopted for target populations.

Although pain is known to be the most important symptom by palliative care, other most common problems are weight loss and nutritional deficiency. Nutrition holds a significant role that extends well beyond sustaining physical health. Food serving and meals are closely tied to culture, family traditions, and emotional bonds. Feeding another person—whether a newborn, an elderly individual, or someone who is ill—is widely seen as an act of care, bonding, connection, and survival.

In contrast, loss of appetite and reduced food intake are common among people who are critically ill. Facing a loved one stop eating can be deeply distressing, and it seems often signifying that death is near.

Deciding not to continue feeding someone at the end of life involves emotional, ethical, and medical complexities. Open and honest discussions among team members, patients, and caregivers are crucial. When food no longer contributes to healing or enhancing quality of life, insisting on eating can become burdensome rather than beneficial, especially when oral feeding is no longer possible and nutritional support therapies must be considered.

To address the challenges properly, a multidisciplinary team approach is essential. Moreover, early identification of malnutrition allows targeted and personalized nutritional plans. Supporting oral intake when possible from the diagnosis of life threatening illness or turning to enteral feeding (via NG or PEG) or parenteral nutrition when necessary should be considered during the whole period. When applied appropriately, nutritional support improves quality of life during active treatment phases.

In certain patient groups, such as progressive neurological diseases or cancer, nutritional support can improve both survival and well-being. However, each patient's situation must be evaluated independently, based on clinical condition, prognosis, and personal wishes.

Cultural overview of nutritional support practices from a palliative care service in Turkiye will be discussed during the session.

CLINICAL PRACTICE GUIDELINES: BRIDGING EVIDENCE AND PRACTICE

Meltem Esra Koc

Clinical practice guidelines (CPGs) represent the most concrete and systematically developed tools of evidence-based medicine, aiming to synthesize the best available scientific knowledge into clear, transparent, and actionable recommendations for clinical decision-making. By providing standardized guidance, CPGs help reduce unwarranted variations in clinical practice, prevent the use of ineffective or potentially harmful interventions, and promote the rational allocation of healthcare resources. This not only enhances the quality and safety of patient care but also supports cost-effectiveness within health systems facing increasing financial pressures.

In recent years, CPGs have gained prominence as essential instruments for strengthening health systems. Their use has been shown to improve clinical outcomes, foster patient-centered care, and contribute to continuous professional development of healthcare providers. Particularly in the management of chronic diseases and multimorbidity, guidelines offer a structured approach that integrates multidisciplinary perspectives, ensuring comprehensive and equitable care.

Despite these advantages, the process of translating research evidence into routine practice remains complex and insufficiently understood. Numerous studies have highlighted that while high-quality evidence exists, its consistent application in clinical settings is still limited. This gap underscores the growing importance of implementation research, which seeks to identify, design, and evaluate effective strategies for evidence uptake. Facilitation, as an emerging approach, has demonstrated potential to support healthcare professionals in integrating guidelines into daily practice, particularly within nursing and other primary care disciplines.

Ultimately, bridging the gap between evidence and practice through robust, context-sensitive guideline development and implementation strategies is critical to achieving sustainable, high-quality, and equitable healthcare delivery.

BIOREZONANCE THERAPY – SUMMARY

Uğur ALFATLI

Biorezonance is a therapeutic method based on the principle of resonance in physics, which posits that biological tissues emit their own specific electromagnetic frequencies. Rooted in the integrative medicine approach, this method aims to activate the body's innate self-healing capacity rather than focusing solely on symptoms.

The treatment is based on identifying disrupted or pathological frequencies within the body and either neutralizing them or amplifying beneficial ones. Devices used for this purpose are connected to the body via electrodes and analyze frequencies using specialized software.

Biorezonance therapy is applied in three primary modalities:

- Frequency Detection: Abnormal frequencies in tissues or organs are identified prior to the onset of symptoms, allowing for early diagnosis. This function is comparable to a preventive medical screening or check-up.
- Application of Therapeutic Frequencies: Weakened cellular oscillations are enhanced to support the body's natural regenerative and metabolic processes.
- Neutralization of Pathological Frequencies: Harmful frequencies are detected and neutralized using their inverse counterparts. This approach is particularly utilized in the treatment of addictions, allergies, and chronic conditions.

Scientific studies have demonstrated the efficacy of biorezonance in areas such as smoking cessation and allergy management.

In conclusion, biorezonance represents a patient-centered therapeutic modality, offering a holistic and non-invasive alternative—particularly valuable in cases where conventional medical treatments are insufficient.

‘PREVENTION OF FALLS IN THE ELDERLY’

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Falls are the leading cause of injury, hospitalisation, and loss of independence in adults aged 65 years and older. The risk increases as one gets older in view of age related factors such hearing problems, mobility issues, balance, vision deterioration etc.

The aim of this presentation is look into the effectiveness of multifactorial interventions in reducing fall risk among community dwelling older adults and also explore the most evidence based strategies for fall prevention in elderly populations. Prevention requires a holistic and personalised approach integrating risk assessments into routine geriatric care. Interventions that combine physical exercise, looking at strengthening exercises, medication review, home hazard modification reduce fall incidence.

Education and awareness alone are not enough, there has to be the environmental and physical factors incorporated into the management to help maintain indolence and also for the elderly individual to maintain confidence in themselves.

TITLE: EFFICACY AND SAFETY OF TERBINAFINE IN THE TREATMENT OF TINEA CORPORIS: A SUMMARY OF CLINICAL INSIGHTS

Elsa DYLA

Background: A 27-year-old male presented with well-demarcated, pruritic, scaly erythematous plaques on the trunk, clinically diagnosed as tinea corporis. The patient had a history of similar infections, and was treated unsuccessfully with topical antifungals.

Treatment and Outcome: The patient was prescribed oral terbinafine, 250 mg twice daily, for a duration of four weeks. Aconcomitant topical antifungal agent(Myconazole ointment) were used. Regular follow-ups were conducted to assess clinical response and monitor for adverse effects for liver function. The treatment resulted in complete resolution of lesions, with no recurrence observed during the follow-up period. The patient reported no side effects or discomfort related to the medication.

Discussion: This case highlights the efficacy of terbinafine in managing tinea corporis at the prescribed dosage. The twice-daily dosage of 250 mg proved beneficial in achieving favorable outcomes within a short treatment period.This case supports terbinafine as a first-line treatment for tinea corporis, particularly in cases requiring systemic therapy.

Conclusion: Oral terbinafine remains a cornerstone in the management of tinea corporis, delivering high efficacy with excellent tolerability. This case underscores the importance of individualized treatment regimens to optimize outcomes in dermatophyte infections.

APPROACH TO SARCOPENIA IN PRIMARY CARE

Elif NEGIS

Background:
Sarcopenia can be summarized as the progressive loss of skeletal muscle mass, strength, and function. In aging societies such as ours, its primary and secondary consequences have become a major public health concern. Secondary outcomes include frailty, falls, loss of independence, and increased morbidity and mortality. Although traditionally associated with secondary and tertiary hospital-based care, sarcopenia is now increasingly recognized as a condition that should be identified and managed within primary health care in order to maintain muscle mass and ensure timely implementation of preventive and therapeutic interventions.

Objective:
The aim of this review is to emphasize the importance of preventing, recognizing, and managing sarcopenia in at-risk patient groups in primary care, with a focus on screening tools, risk factors, and evidence-based interventions.

Methods:
A review of international consensus statements and recent clinical guidelines was conducted to summarize practical approaches for family physicians in the detection and management of sarcopenia.

Results:
Primary care physicians play a pivotal role in the early identification of at-risk individuals. Tools such as SARC-F and simple physical performance tests (e.g., handgrip strength, chair stand test, gait speed) enable timely recognition of sarcopenia in outpatient practice. Risk factors include advanced age, chronic diseases, malnutrition, physical inactivity, and polypharmacy. Core management strategies consist of resistance exercise, adequate protein intake, and avoidance of modifiable risk factors. Preventive strategies such as lifestyle counseling and early screening in primary care have the potential to reduce disability and healthcare expenditures while improving quality of life in older adults.

Conclusion:
Despite its significant impact, sarcopenia remains underrecognized in primary care. Family physicians are in a unique position to implement early screening, preventive strategies, and individualized management plans. To preserve functional capacity and improve patient outcomes, sarcopenia must be more fully integrated into primary health services.

Keywords: sarcopenia, muscle loss, preventive care, SARC-F, family medicine

MONITORING SLEEP QUALITY WITH SMARTWATCHES

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Smartwatches and wearable devices use algorithms that analyze a wide range of biological signals based on Big Data collection, machine learning, and artificial intelligence (AI).

In addition to their commercial use, a growing number of scientific studies evaluate the reliability, sensitivity, and validity of the visualized results that present sleep quality, sleep stages, oxygen saturation, and nocturnal apneas.

Polysomnography (PSG) remains the gold standard for objective assessment of sleep. However, it has several limitations: it is expensive, time-consuming, and labor-intensive; it requires specialized equipment and technical expertise, and it is impractical for long-term or home-based monitoring.

Smartwatches and wearable devices represent potential alternatives to PSG. Their wide availability and ease of use have contributed to their rapid popularity in recent years.

Within the framework of this short lecture, current meta-analyses and systematic reviews on the latest wearable devices—such as Fitbit, Garmin, WHOOP, Apple Watch, Oura Ring, and others—will be presented.

HEALTH SERVİCES FOR OLDER ADULTS İN TÜRKİYE

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With the extension of life expectancy worldwide and in Türkiye, the proportion of individuals aged 65 and over within the total population has been increasing. According to the 2024 Turkish Elderly Statistics, this proportion was recorded at 10.6%. Based on the main scenario of population projections, it is estimated that the proportion of the elderly population will reach 13.5% in 2030, 17.9% in 2040, 27.0% in 2060. Biological aging is accompanied by a gradual decline in physical and cognitive capacities, as well as an increased risk of chronic diseases. The effects of these changes necessitate close monitoring from both health and social perspectives. Nursing homes and elderly care and rehabilitation centers offer fundamental care services such as assistance with dressing, feeding, bathing, and medication management. Health personnels are responsible for addressing the comprehensive health needs of the elderly. Rehabilitation services are provided by physiotherapists, while psychological support services are delivered by psychologists. Also the elderly participate in social activities.

Home care services are designed to deliver medical care, rehabilitation, physiotherapy and psychological treatment within the patients' own living environments, in accordance with physicians' recommendations, ensuring continuity of care in a familiar setting. Based on the medical necessity and the patient's treatment plan, the responsible physician determines the appropriate healthcare personnel and forms the healthcare team accordingly.

Furthermore, Healthy Aging Centers have been established to facilitate elderly individuals' access to healthcare services, particularly for those aged 80 and above. These centers provide on-site health services, remote consultation and examination when necessary, and coordinate hospital transfers and in-hospital medical services. Efforts to protect and improve the health of the elderly population continue to be a priority.

THE ROLE OF DERMATOLOGICAL ASSESSMENT IN HEALTHY AGING CLINICS

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Objective: In Family Medicine, dermatological examination holds as much importance as other systemic assessments. In individuals over the age of 80, regular examination of skin lesions plays a critical role in the early identification and prevention of cutaneous malignancies.
Case Presentation -Case 1: An 81-year-old male with no previous history of dermatological complaints had never visited a dermatology clinic. He was assessed during a routine visit to the healthy aging clinic. On physical examination, a pigmented lesion with irregular borders was identified on the abdomen. Due to the suspicious appearance of the lesion, I referred the patient to the dermatology clinic. A punch biopsy confirmed Bowen's disease (SCC in situ). Case 2: An 84-year-old male was diagnosed with squamous cell carcinoma (SCC) five years ago and underwent surgical excision of a lesion on his left ear. However, he did not attend any postoperative follow-up examinations. During a routine assessment at the healthy aging clinic, lesions with malignant potential were observed on his right ear, nipple, and sternum. The patient was referred to a specialist for further evaluation. Case 3 :An 87-year-old female visited to the dermatology clinic with a non-healing wound on the nasal dorsum and cheek. She was diagnosed with SCC via incisional biopsy and referred to the Otorhinolaryngology department, where the lesion was excised and her nasal dorsum reconstructed with a local flap. No additional findings were detected during her evaluation at the healthy aging clinic. The patient continues regular follow-up examinations.
Conclusion: These cases demonstrate that skin lesions can be detected through careful physical examination in family medicine and appropriately referred for further evaluation. In family medicine practice, especially in elderly patients, dermatological assessment should be included as part of a systematic and holistic approach.
Keywords: Aged,80 and over; Carcinoma, Squamous cell ; Early Diagnosis; Primary Health Care

INVESTIGATION OF PHYSICIANS' KNOWLEDGE LEVELS AND ATTITUDES ABOUT RESPIRATORY SYNCYTIAL VIRUS VACCINATIONS: AN EXAMPLE OF A TRAINING AND RESEARCH HOSPİTAL

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This study aims to determine the knowledge and attitudes of physicians at İzmir Atatürk Training and Research Hospital regarding Respiratory Syncytial Virus (RSV) vaccines and how these relate to sociodemographic and professional factors such as age, gender, specialty, experience, clinical exposure, and prior training. Conducted as a descriptive, cross-sectional study, the population included all physicians at the hospital as of September 2024. While the sample size was set at 298, data were collected from 312 physicians through voluntary convenience sampling between January and March 2025. A 22-item questionnaire, prepared from the literature and administered in printed form, covered demographics, RSV knowledge, attitudes, and opinions on vaccines. Data were analyzed using IBM SPSS with descriptive statistics and chi-square tests. Most participants demonstrated awareness of RSV symptoms, risk groups, and outcomes, and about 80% considered it a significant public health problem. However, knowledge of preventive agents and FDA-approved vaccines was limited, particularly among younger physicians. Attitudes showed high willingness to recommend vaccination for elderly and immunosuppressed patients, but greater hesitancy regarding pregnant women. Awareness of reimbursement policies was low, though 87.5% believed reimbursement would increase recommendation rates. Significant differences emerged by gender, specialty, and experience. Overall, physicians had a basic understanding of RSV and vaccination, yet gaps persisted in implementation, risk group prioritization, and healthcare accessibility. While elderly and immunosuppressed patients were consistently prioritized, awareness of maternal vaccination remained low. These findings underline the need for broad in-service training, specialty-specific education, and clarification of financial pathways to improve physicians' vaccine recommendation practices.

A FIELD PROJECT FOR ELDERLY INDIVIDUALS AFTER THE EARTHQUAKE: THE MARMARIS EXAMPLE

Zeynep ACAR - Emine Neşe YENİÇERİ - Müesser ÖZCAN - Ümmühani Özel TÜRKCÜ - Aynur ÖZDEMİR - Sema AKKAYA - Cem ŞAHİN

On February 6, two earthquakes of magnitude 7.7 and 7.6, which occurred in Kahramanmaraş caused major destruction in 10 provinces of Türkiye. In the province of Muğla, many hotels, public guesthouses and student dormitories providing accommodation opportunities have been opened as temporary accommodation areas for earthquake victims and more than 3000 earthquake victims have been accommodated after the earthquake, This project aimed to rapidly perform physical examinations and physical assessments of individuals aged 65 and over who are accommodated in hotels and public guesthouses in the center and neighborhoods of Marmaris, a town of Muğla, and to identify their needs, especially regarding health problems.

During the visits, medical history were taken, physical examinations were performed by family physicians, family medicine residents and 6th year medical students. Comprehensive assessment forms were filled out and recorded and when necessary, they were referred to primary and secondary healthcare institutions

A total of 32 elderly (22.5%) were directed to Psychiatry polyclinic, 22 elderly (15.5%) to Cardiology, 28 elderly (19.7%) to Internal Medicine poly, and 16 elderly (11.3%) to Ophthalmology polyclinic for examination. For those whose condition was urgent, relevant branch physicians were contacted and their examinations were carried out as soon as possible and their treatments were started rapidly. In addition, blood pressure devices purchased by volunteers were delivered to 72 elderly. Again, glucometers to 30 elderly, eye glasses to 23, Hearing aid devices to 5, walker device to 4 and wheelchair to 4 elderly. An appointment was made for 3 bedridden elderly people by calling the Marmaris State Hospital home care unit.

POPULATION AGING IN TÜRKIYE AND ITS IMPACT ON THE HEALTH SYSTEM: A DATA-DRIVEN ASSESSMENT

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Introduction: As in many parts of the world, the proportion of older adults in Türkiye is rapidly increasing. Population aging is not only a demographic shift but also brings substantial implications for the planning and delivery of healthcare services. This study evaluates Türkiye's aging trends and their impact on primary healthcare.

Findings: According to the Turkish Statistical Institute (TURKSTAT) 2023 data, individuals aged 65 and over account for 10.2% of the total population, and the old-age dependency ratio has reached 17.2%, indicating a rising burden on the working-age population. Projections suggest that this proportion will exceed 25% by 2080. The population pyramid is shifting from a broad-based to a cylindrical structure. As of 2023, over 647,000 individuals receive home healthcare services, with more than 4.4 million visits annually. However, the total public nursing home capacity of around 30,000 is insufficient to meet both current and future needs. Moreover, Türkiye ranks below the European average in the Active Aging Index.

Conclusion: The increasing proportion of older adults in Türkiye directly affects all levels of healthcare, especially primary care. Strengthening home care, palliative care, and institutional services is urgent. Developing evidence-based, elderly-friendly, and sustainable health policies is essential to ensure readiness for the demographic transition.

Keywords: Aging, Demography, Health Policy

A SEEMINGLY INNOCENT OINTANCE, A COMMON REACTION: ALLERGIC CONTACT DERMATITIS TO NITROFURAZONE

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Introduction

Allergic contact dermatitis (ACD) is an inflammatory skin disease that develops due to a type IV delayed hypersensitivity reaction to substances that come into contact with the skin.

When applied to areas where skin integrity is compromised, allergens found in topical treatments often cause sensitivity, and this is becoming increasingly important.

Case Report

A 66-year-old man with a known diagnosis of hypertension presented to the dermatology clinic with an erythematous vesicular lesion on his left first toe. He has been using nitrofurazone cream for 1 week.

Treatment Approach

Diagnosis is based on history and physical examination. Patch testing is the gold standard for determining sensitivity to nitrofurazone. Discontinuation of the drug is the first step. Symptomatic treatment with topical corticosteroids and antihistamines was planned, followed by the use of a topical antifungal agent 1 week later.

Discussion and Conclusion

Nitrofurazone-containing ointments are frequently prescribed for the topical treatment of skin diseases by non-dermatological specialists, particularly surgical departments. However, the active ingredient, nitrofurazone, and the carrier polyethylene glycol (PEG) are significant contact sensitizers that can cause allergic contact dermatitis. In our country, severe ACD is frequently observed due to nitrofurazone, a widely used antiseptic. Our case also involved ACD following nitrofurazone use following onycholysis following tinea inguium. Topical agents containing nitrofurazone can cause Type IV hypersensitivity reactions, leading to the development of ACD, especially when used on damaged skin. Clinical symptoms generally include pruritic papules/plaques, vesicles, and, rarely, erythroderma; diagnosis is confirmed by patch testing; treatment is with local or systemic corticosteroids. It is important to avoid products containing nitrofurazone or PEG of the risk of sensitization.

A RARE CLINICAL CASE: CUTANEOUS LEISHMANIASIS

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Introduction

Leishmaniasis is a parasitic disease caused by infection with Leishmania parasites, which are spread by the bite of infected female phlebotomine sandflies.

The disease impacts people of lower socioeconomic status and is associated with malnutrition, poor housing, a weak immune system and lack of financial resources. The annual prevalance of new cases range between 700 000 to 1 million cases.

Only a small fraction of the people infected by leishmaniasis-carrying parasites will eventually develop the disease.

There are 3 main forms of leishmaniases: visceral (the most serious form because it is almost always fatal without treatment), cutaneous (the most common, usually causing skin ulcers), and mucocutaneous (affecting mouth, nose and throat).

A 41-year-old woman without any known diseases presented to the dermatology clinic with an erythematous papular lesion on her right upper cheek. About one week prior, she was bitten by a fly in Niğde, situated in central Turkey where she had traveled. She used various topical creams in her home for a week, and went to the hospital. She was prescribed oral and topical antibiotics, and eventually came to our clinic upon seeing no improvements in her lesions. Due to her wound being an atypical leison, she was directed to a dermatology clinic. Leishmania was detected in the biopsy report from the dermatology clinic. The official form of parasitic diseases was filled and a treatment plan was made. Intralesioner glucantime was chosen as the treatment method.

Despite Cutaneous leishmaniasis being a rare disease, it should not be overlooked. Cutaneous leishmaniasis can be misdiagnosed as other conditions such as bacterial skin infections, cutaneous tuberculosis, anthrax, malignant ulcers, infected insect bites, fungal infections, or sarcoidosis. The lesion, which usually begins as a papule or nodule, may evolve into an ulcer. Regional lymphadenopathy can occur in nearby areas. Lesions typically appear on exposed areas prone to bites, such as the face, arms, and legs. They usually heal within a few months, leaving scars. The diagnosis is confirmed by parasitological tests in conjunction with clinical findings.

There is currently no preventive vaccine or medication against the disease. For travelers, the best way to protect themselves is to avoid sand fly bites. In particular, insect repellents should be applied after sunset. Wearing clothing with long sleeves and minimizing exposed skin are recommended. Anti-fly bed nets or curtains that sand flies cannot pass through should be used, and staying in rooms with air-conditioning is preferable. In sleeping areas, insecticides or pyrethroids may also be applied.

Key words: Leishmania, Phlebotomus, Cutaneous Leishmaniasis

MANAGEMENT OF ANTICOAGULANTS IN GERIATRIC PATIENTS WITH IDIOPATHIC THROMBOCYTOPENIC PURPURA: CHALLENGES AND THERAPEUTIC STRATEGIES

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Anticoagulation in elderly patients with non-valvular atrial fibrillation presents significant challenges, particularly when associated with hematologic disorders such as idiopathic thrombocytopenic purpura (ITP). This case report highlights the complexity of managing anticoagulant therapy in a 77-year-old female with chronic atrial fibrillation, hypertension, heart failure, and newly diagnosed ITP. The patient, previously treated with edoxaban (60 mg/day), presented with diffuse ecchymoses and hematomas; laboratory findings revealed severe thrombocytopenia (4/mm^3), confirmed on peripheral smear. Hospitalization established a diagnosis of ITP and concomitant hepatitis B infection. Anticoagulation was discontinued, and high-dose prednisolone (100 mg/day) was initiated, leading to platelet normalization but causing severe metabolic and clinical complications, including hyperglycemia, massive edema, morphological changes, seizures, and psychosis. After gradual steroid tapering and clinical stabilization, a multidisciplinary team recommended replacing edoxaban with apixaban (2.5 mg once daily) due to its favorable safety profile in geriatric patients, lower risk of intracranial and gastrointestinal bleeding, reduced renal clearance dependency, and minimal association with immune thrombocytopenia. This case underscores the need for individualized anticoagulation strategies in elderly patients with hematologic comorbidities, balancing thromboembolic risk against bleeding risk. Restarting anticoagulation should be guided by multidisciplinary assessment, patient stability, and platelet recovery, while close monitoring of platelet count and renal function remains essential. Apixaban may represent a safer therapeutic option in such complex clinical scenarios.

A COMPARISON OF EFFECTIVE COMMUNICATION SKILLS OF RESIDENT PHYSICIANS IN INTERNAL AND SURGICAL MEDICAL DISCIPLINES

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Objective: This study aimed to evaluate the effective communication skills of resident physicians working in internal and surgical medical sciences, along with the subdimensions of these skills, and to examine their relationship with gender, professional experience, on-call frequency, parental status, communication training history, and clinical stressors.

Materials and Methods: Designed as a cross-sectional and descriptive study, the research was conducted with 259 resident physicians working at Manisa Celal Bayar University Faculty of Medicine Hafsa Sultan Hospital. Data were collected between October and December 2023 using a two-part questionnaire: the first part consisted of 17 sociodemographic questions, and the second part included the Turkish version of the Health Professionals Communication Skills Scale (HP-CSS-TR). Data were analyzed using IBM SPSS 27.0 with Mann Whitney U, Kruskal Wallis, Chi-square, and Spearman correlation tests. A significance level of $p<0.05$ was accepted.

Results: No statistically significant difference was found between the internal and surgical branches in total communication scores; however, significant differences were observed in the empathy and social skills subdimensions. Female physicians scored significantly higher in empathy than their male colleagues. Although gender distribution was similar across specialties, this difference persisted within the internal medicine group, suggesting that empathy levels may be influenced not only by gender but also by the specific clinical dynamics of the specialty. Participants who had received communication training had significantly higher empathy and respect scores. Parental status positively affected social skills, while more frequent on-call shifts were associated with decreased empathy. Although stressors such as difficult patient interactions and exposure to physical violence negatively impacted certain subdimensions, no statistically significant differences were observed across overall communication skills.

Conclusion: The findings suggest that communication skills are shaped not only by individual and educational factors but also by the nature of clinical practice, workload, and contextual dynamics of medical specialties. Therefore, it is recommended that residency training programs incorporate structured, multidimensional, and context-sensitive interventions to promote the development and sustainability of effective communication skills.

Keywords: Communication Skills, Specialty Training, Internal Medical Disciplines, Surgical Discipline

MACEDONIAN ASSOCIATION FOR GYNECOLOGY AND OBSTETRICS SESSION

MODERN DIAGNOSTICS FOR ENDOMETRIOSIS

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Endometriosis is a disease in which endometrial tissue is found outside the uterine cavity. Patients with endometriosis present with numerous symptoms: dysmenorrhea, dyspareunia, chronic pelvic pain. This disease is usually more difficult to diagnose, so that 7-11 years pass from the onset of the disease to the diagnosis. Today, a definitive diagnosis of endometriosis can only be made with a biopsy of the endometriotic foci by laparoscopy under general anesthesia and histopathological verification of the disease. Ultrasound and magnetic resonance imaging can be used in the diagnosis of endometriosis. Magnetic resonance imaging provides detailed imaging of the pelvic organs and helps identify deep infiltrating endometriosis. Other potential biomarkers for the diagnosis of endometriosis include:

1. Serum levels of the tumor marker CA-125, which is not specific for endometriosis, but can be used in conjunction with other indicators of endometriosis.
2. MicroRNA – several studies are investigating the use of microRNA in blood or saliva as a potential biomarker for endometriosis.
3. Metabolomic profile: sphingolipids, glycerophospholipids, and acylcarnitine as biomarkers according to the National Institutes of Health (NIH).
4. Mitochondrial DNA (mDNA) deletion as a non-invasive biomarker.
5. EndoSure test: it use topical electrodes with aim to measure the myoelectric activity of smooth muscles in the gastrointestinal tract, analyzing the specific signals caused by endometriosis. This test has about 100% diagnostic value for diagnosis of endometriosis.
7. Ziwig endotest: saliva test that analyzes about 109 different microRNAs using next-generation sequencing and artificial intelligence in the diagnosis of endometriosis.
8. EndoSearch diagnostic test, the latest test for non-invasive diagnosis of endometriosis that allows easy and effective diagnosis of endometriosis.

SURGICAL TREATMENT OF ENDOMETRIOSIS

Mile TANTUROVSKI

Abstract

Endometriosis is a chronic, estrogen-dependent disease in which tissue similar to the endometrium grows outside the uterus, most often in the pelvis. This condition can cause severe chronic pain, infertility, and impaired quality of life. Initial treatment is medical; however, in patients with insufficient response to medical therapy, surgical treatment represents a key option.

Patient selection for surgical treatment is based on clinical presentation, imaging studies, and the individual goals of the patient (pain control, fertility preservation, etc.). The laparoscopic approach is the gold standard, allowing for precise diagnosis and effective therapy with minimal invasiveness. Surgical techniques include excision or ablation of lesions, adhesiolysis, and restoration of normal pelvic anatomy.

Deeply infiltrating endometriosis, which may affect the rectovaginal septum and adjacent structures, the bowel and/or other deep abdominal structures, requires a careful approach and often multidisciplinary collaboration. Procedures in such situations are frequently associated with an increased risk of complications, such as injury to the ureter, bowel, or bladder.

The aim of surgical treatment is not only the removal of pathology but also the improvement of quality of life and support of the patient's reproductive goals. Postoperative medical therapy may help reduce recurrence and maintain long-term outcomes.

This lecture will provide a brief systematic overview of the surgical treatment of endometriosis, focusing on patient selection, surgical techniques, options for managing complex cases and minimizing surgical risks, as well as tailoring the approach to the individual characteristics of the disease and the needs of the patient.

MODERN APPROACH TO DIAGNOSTICS AND TREATMENT OF MENOPAUSE

Gligor TOFOSKI

Perimenopause is a biologically and psychophysically complex period in a woman's life, often insufficiently recognized in clinical practice. For the first time in the Republic of North Macedonia, an expert guide to perimenopause has been developed, created in cooperation with the Macedonian Association of Gynecologists and Obstetricians (MAGO) and the civil organization HERA. The guide offers a systematized and modern approach to recognition, diagnosis and treatment of symptoms that follow the transition to menopause. Recommendations for hormonal and non-hormonal therapy, mental health, sexual health, prevention of chronic diseases and individualized management are explained. Prof. Dr. Gligor Tofoski will present the main components of the guide, its application in everyday gynecological practice and the importance of a multidisciplinary approach. Special emphasis will be placed on the role of the gynecologist as the first contact in the health care system for women in this phase. The guide is the result of a comprehensive effort aimed at improving the quality of care, timely recognition of conditions and improving the lives of perimenopausal women. The event has an educational and promotional purpose, and the lecture will serve as an introduction to a broader expert discussion on future challenges and the practical application of the guide.

MACEDONIAN ASSOCIATION FOR HEMATOLOGY SESSION

FROM DIAGNOSIS TO CURE: MODERN MANAGEMENT OF PEDIATRIC ACUTE LYMPHOBLASTIC LEUKEMIA

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Acute Lymphoblastic Leukemia (ALL) is the most common malignancy in children and represents a significant challenge for pediatricians and primary care physicians. Advances in risk stratification, molecular diagnostics, and treatment protocols over the past decades have dramatically improved survival, now exceeding 90% in high-income countries. Early recognition of symptoms—such as pallor, fatigue, bruising, bone pain, and recurrent infections—is critical for timely referral. Diagnosis relies on a combination of clinical evaluation, complete blood count, bone marrow examination, immunophenotyping, and genetic/molecular testing. In North Macedonia, approximately 35–40 new cases of pediatric malignancies are diagnosed annually, of which 25–30% are acute leukemia.

Treatment is based on the principles of risk-adapted multi-agent chemotherapy, combined with supportive care and monitoring of minimal residual disease (MRD). Novel therapies, including targeted drugs and immunotherapies such as blinatumomab, significantly improve therapeutic outcomes. Modern treatment protocols in North Macedonia achieve a therapeutic success with current survival rates around 80% for children with ALL.

This lecture provides an overview of diagnostic approaches, therapeutic principles, innovations in treatment, and improvements in outcomes, emphasizing the importance of a multidisciplinary approach and collaboration among pediatricians, hematologists, and primary care physicians. This session aims to bridge early diagnosis with successful cure, providing clinicians with the knowledge to optimize patient care.

CLINICAL PRESENTATION, DIAGNOSIS AND TREATMENT OF NEUROBLASTOMA

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Neuroblastoma is an embryonic tumor of the peripheral sympathetic nervous system. It is the most common cancer in infancy and also the most prevalent extracranial solid tumor of childhood. Clinical presentation is highly variable and depends on the tumor's location and disease stage, with symptoms ranging from abdominal mass, pain, and weight loss to fever or signs of metastatic spread such as bone pain, cytopenias, or proptosis and periorbital ecchymosis. Diagnosis is based on a combination of clinical findings, laboratory tests (including elevated urinary catecholamine metabolites), imaging studies (ultrasound, MRI, CT, and MIBG scintigraphy), and histopathological confirmation via biopsy. The prognosis of neuroblastoma is also highly variable, ranging from spontaneous regression to widespread metastatic disease that is unresponsive to treatment and leading to death. The age of the patient, stage of disease, histopathological findings, and multiple biologic factors contribute to the international pretreatment risk stratification, which in turn determines the intensity of treatment. Patients at low risk receive minimal intervention and those at high risk receive multimodality treatment. Current standard approach to newly diagnosed high-risk neuroblastoma includes induction chemotherapy and surgery, consolidation therapy consisted of high-dose chemotherapy with autologous hematopoietic stem-cell rescue and irradiation, and post-consolidation therapy to treat minimal residual disease. The post-consolidation phase incorporates targeted therapies, including immunotherapy with a monoclonal antibody directed against cell surface target GD2 and isotretinoin as a differentiating agent. With this complex multimodal treatment survival of high-risk neuroblastoma now approaches above 50%. The field continues to expand its efforts in developing more targeted therapies to further improve survival rates.

LATE EFFECTS OF THE TREATMENT FOR CHILDHOOD CANCER

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In recent decades, cure rates for pediatric malignancies have improved significantly, with over 80% of children with access to modern therapies being cured. However, these treatments can cause late effects—long-term physical, psychological, and health-related complications that may emerge months or years after therapy. Such complications can involve multiple organ systems, including cardiovascular, endocrine/metabolic, reproductive, neurologic, immune, pulmonary, gastrointestinal, urinary, musculoskeletal, auditory, ocular, dermatologic, and oral/dental systems, as well as neurocognitive and psychosocial difficulties or subsequent malignant neoplasms. Research shows that 60%–90% of childhood cancer survivors develop chronic health conditions, with 20%–80% facing severe or life-threatening complications in adulthood. Therefore, long-term multidisciplinary follow-up, along with structured life-long care focused on prevention, detection, and timely interventions, is essential to optimize health outcomes and improve the quality of life of childhood cancer survivors.

PEDIATRIC ASSOCIATION OF MACEDONIA

NEUROPROTECTION OF THE BRAIN – BEYOND THE POSSIBILITY

Aspazija SOFIJANOVA

Newborn deaths account for nearly half of all deaths in children under five, with 2.7 million lives lost each year. This represents a critical global health challenge, as most of these deaths are preventable, and inequities in access to care mean that newborns in fragile and vulnerable settings are disproportionately affected. Hypoxic–ischaemic encephalopathy (HIE) is a major contributor to this burden and remains a leading cause of neonatal death and long-term disability. Therapeutic hypothermia is the only proven therapy, though its benefits are not universal and its reach remains uneven across health systems. These combined limitations have accelerated research into novel and complementary neuroprotective strategies.

The purpose of this narrative review is to synthesise evidence on both established and emerging therapies for neonatal neuroprotection. Adjunctive care bundles that stabilise physiological parameters, control seizures, and optimise nutrition contribute to both short and long-term outcomes. Pharmacological agents such as erythropoietin and melatonin have demonstrated anti-inflammatory and antioxidant potential, whereas stem cell–based therapies are characterised by regenerative and immunomodulatory effects. Other experimental approaches, including magnesium sulphate, cannabinoids, and polyphenols such as curcumin and resveratrol, are under investigation but remain largely in preclinical or early clinical stages. Non-pharmacological measures, including family-centred developmental care and kangaroo mother care, further enhance neuroplasticity and cognitive outcomes.

Neonatal neuroprotection is evolving toward integrated multimodal and holistic approaches that unite medical innovation with family-centred care. Future research must refine these strategies, close evidence gaps, and expand global accessibility to reduce disparities in neonatal survival and long-term neurological health.

NOVEL STRATEGIES FOR PREVENTION OF RSV INFECTION

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Respiratory syncytial virus (RSV) is the leading cause of lower respiratory tract infections (LRTIs) in infants. Hospitalizations due to respiratory infections from RSV in infants result in significant global health costs each year, with some linked to adverse outcomes.

Although preterm infants, children with congenital heart or chronic lung disease, neuromuscular disorders, or Down's syndrome are the infants with the highest risk of severe disease, most hospitalized pediatric cases occur amongst otherwise healthy younger children. In addition to acute disease, there is evidence suggesting that RSV infection in childhood may trigger persistent or recurrent wheezing and asthma in later life, linking RSV morbidity to chronic illness. As the primary therapeutic approach for acute RSV infection is supportive care, emphasis remains on the prevention of severe disease and hospitalization. In the last two decades, our understanding of the pathogenesis and immunopathology of RSV has continued to evolve, leading to significant advancements in RSV prevention strategies.

In November 2022, the EMA approved a new long-acting, human, recombinant mAb for the prevention of RSV infection in newborns and infants during their first RSV season.

Nirsevimab is a recombinant human IgG1 monoclonal antibody that binds the F1 and F2 subunits of the RSV fusion (F) protein at a highly conserved epitope which locks the RSV F protein in the conformation to block viral entry into the host cell. Studies have proved significant efficacy in preterm infants born at 29 to 34 weeks of gestational age, a single injection of nirsevimab administered before the RSV season resulted in a 70% reduction in the incidence of RSV-associated disease, and a 78% reduction in the number of hospitalizations. Efficacy was also proved in healthy late-preterm and term infants.

Maternal immunization is another promising potential strategy for protecting infants during their period of greatest vulnerability to RSV infection and severe disease.

Understanding the true burden of childhood RSV disease is very important to support public health authorities and policy makers in the assessment of these new opportunities against RSV disease.

GASTROESOPHAGEAL REFLUX DISEASE IN CHILDREN – DIAGNOSTIC AND THERAPEUTIC APPROACH

Aco KOSTOVSKI
Faculty of Medicine Skopje

Gastroesophageal reflux (GER) is defined as the passage of gastric contents above the lower esophageal sphincter. This condition can occur in a normal (physiological) manner, particularly in infants. In contrast, gastroesophageal reflux disease (GERD) represents a pathological form of reflux that can lead to complications, including reflux esophagitis, non-progression, and various atypical manifestations. GERD affects approximately one in every 300 infants in their first year of life, while uncomplicated GER is observed in 40-65% of infants. The primary pathophysiological mechanism underlying GER is inadequate transient relaxation of the lower esophageal sphincter. Furthermore, respiratory issues associated with GER can result from microaspiration or macroaspiration, as well as mechanisms linked to the vagus nerve, which may lead to a condition commonly referred to as gastric asthma.

Unusual manifestations of the upper respiratory tract include: stridor, subglotic stenosis, otitis, recurring laryngitis, coughing, and by the lower respiratory tract: recurrent pneumonia, bronchial asthma, recurring bronchitis. Studies indicate that gastroesophageal reflux disease (GERD) is associated with respiratory manifestations in approximately 40% to 75% of cases, with our own research showing a prevalence of 54% in respiratory diseases linked to GERD.

The gold standard for diagnosing GERD in children with respiratory conditions—after excluding other potential causes—has traditionally been 24-hour pH monitoring. However, this method fails to detect poorly acidic reflux episodes, which are significant triggers for respiratory diseases associated with GERD. Recently, the combined 24-hour pH monitoring with impedance has emerged as the new gold standard for diagnosis. This method can identify both acidic and non-acidic gastroesophageal reflux and provide detailed characteristics of the reflux, including its height and whether it is liquid or gas.

In our study involving patients with respiratory diseases, we found that a notable number of children with GERD experienced poorly acidic reflux, which can only be detected through the combined 24-hour pH monitoring with impedance. In addition to the standard treatments currently available, we have recently introduced liquid forms of antacids and proton pump inhibitors

VARIA SESSION

Homozygous BBS5 Variant (c.665T>G; p.Ile222Arg) Identified in Two Sisters with Bardet-Biedl Syndrome

Dr. Artan Ibishi ; Sara Ismail; Arbenita A. Alili; Simona P. Davidovska, Sumejje Kurtishagai, Dr. Ladon Murseli, Dr.Angelka S. Maderoska.

Background: Bardet-Biedl syndrome (BBS) is a rare, genetically heterogeneous ciliopathy characterized by retinal dystrophy, obesity, polydactyly, renal anomalies, and cognitive impairment. It is inherited in an autosomal recessive pattern. BBS type 5 is caused by biallelic pathogenic variants in the *BBS5* gene.
Material and methods: Whole genome sequencing (WGS) and copy number variation (CNV) analysis were performed on two sisters, Dielza Djemaili and Rilinda Djemaili, both presenting with vision loss. Subsequent Sanger sequencing of the *BBS5* gene was conducted for familial segregation analysis.
Results: Genetic analysis revealed a homozygous missense variant in the *BBS5* gene, NM_152384.3: c.665T>G, resulting in the amino acid substitution p.(Ile222Arg). This variant is extremely rare in population databases (gnomAD allele frequency: 0.0001%) and is predicted to be deleterious by multiple *in silico* tools (REVEL: 0.95, AlphaMissense: 0.997, SIFT: 0). Segregation analysis confirmed the mother, Sehare Djemaili, is a heterozygous carrier. The variant is currently classified as a Strong Variant of Uncertain Significance (sVUS) based on ACMG criteria (PM2, PP3), indicating it is on the borderline of being classified as likely pathogenic due to strong supporting evidence but a lack of definitive functional or familial data.
Conclusion: The homozygous state of the *BBS5* c.665T>G (p.Ile222Arg) variant is the most likely molecular cause of Bardet-Biedl syndrome in these two siblings. This finding is consistent with their clinical presentation of vision loss. This case contributes to the mutational spectrum of *BBS5* and underscores the utility of WGS in diagnosing genetically heterogeneous disorders.

CHOLEDOCHOLITHIASIS AND CALCULOUS CHOLECYSTITIS IN A 12-YEAR-OLD PATIENT: DIAGNOSTIC AND THERAPEUTIC APPROACH

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Abstract:
A 12-year-old female patient was admitted with a five-day history of postprandial abdominal pain radiating to the right shoulder, accompanied by repeated vomiting. Initial evaluation included abdominal ultrasound showing multiple small gallstones and dilatation of the common bile duct (CBD), with elevated hepatic enzymes and bilirubin levels. The patient was hospitalized for further diagnostic workup and treatment, receiving intravenous fluids, parenteral antibiotic, proton pump inhibitor, and hepatoprotective therapy. Serial laboratory tests confirmed hepatocellular injury with transient hyperamylasemia. Repeated abdominal ultrasound, contrast-enhanced CT, and MRCP confirmed gallbladder calculi, mildly thickened wall, CBD dilatation up to 12–19 mm, and suspected distal choledochal obstruction. The patient underwent endoscopic retrograde cholangiopancreatography (ERCP), which was performed successfully with papillotomy, balloon sweep, and removal of microcholedocholithiasis without complications. Post-intervention, transient elevation of pancreatic enzymes was observed, normalizing withing days. Symptomatic improvement was noted with normalization of biochemical parameters. The patient was transferred to pediatric surgery for elective cholecystectomy. This case highlights that although choledocholithiasis and calculous cholecystitis are rare in pediatric populations, they must be considered in recurrent upper abdominal pain with cholestatic liver test abnormalities. Multimodal imaging, including ultrasound and MRCP, is essential for diagnosis, while ERCP remains both a diagnostic and therapeutic tool, even in children, provided it is performed in specialized centers with pediatric expertise. Early multidisciplinary collaboration enabled timely intervention, prevented progression to cholangitis or pancreatitis, and optimized surgical planning for definitive management.

TREATMENT OF LOBAR PNEUMONIA IN A FOUR-YEAR-OLD CHILD WITH CEPHALOSPORINE ALLERGY - CASE REPORT

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Abstract:
Introduction: Lobar pneumonia in children is a severe type of pneumonia where one or more lobes of the lung become infected. Lobar pneumonia is primarly bacterial, with Streptococcus pneumoniae being a common culprit.
Case report: a four-year-old boy was admitted to the pediatric ward due to fever and intense cough. The illness began three days before admission with high temperature of up to 40 C and cough. It was treated with oral Azithromycin and Budesonide inhalations. Because no improvement was achieved, he was referred to our department for further treatment. The child has frequent respiratory infections, and has been treated outpatient until now. On admission, he was febrile, tachycardic, dyspnoeic. Auscultatory vesicular breathing with diffuse wheezing noises bilaterally was present, along with weakened vesicular breathing and crepitations on the right basal side.
Analyses: Chest X-ray showed reduced pleural transparency on the right costal margin in the middle parts in addition to lobar pneumonia. Le 30,6...15,6 x 10*9/L CRP 116,1...17,4 mg/L
Due to information of Cephalosporin allergy, parenteral Amikacin, Salbutamol inhalations and systemic corticosteroid was given. On the third day of the stay, because there was still high fever and elevated inflammatory markers, oral Amoxicillin + clavulanic acid was added to the therapy, after which a decrease in fever, improvement in general condition and calming of the cough was accomplished.
Conclusion: The good response to antibiotic therapy with regression of the auscultatory finding, normalization of inflammatory markers and withdrawal of radiological changes are in favor of lobar pneumonia.
Keywords: lobar pneumonia, Cephalosporin allergy, treatment.

THE SIGNIFICANCE OF FAECAL CALPROTECTIN IN CHILDREN AND ADOLESCENTS WITH INFLAMMATORY BOWEL DISEASE: A COMPREHENSIVE REVIEW

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Abstract:
Faecal calprotectin (FC) is a key non-invasive biomarker for detecting and monitoring intestinal inflammation, particularly in pediatric inflammatory bowel disease (IBD), which includes Crohn's disease (CD) and ulcerative colitis (UC). Derived predominantly from neutrophils during active inflammation, FC reflects mucosal immune activation and offers a practical alternative to invasive endoscopic evaluation. Its stability in stool samples for several days at room temperature further enhances its suitability for routine clinical use. Early diagnosis and monitoring in children and adolescents are vital, as delays may cause growth impairment, nutritional deficits, and bowel damage. FC helps differentiate IBD from functional gastrointestinal disorders with high sensitivity and specificity and correlates with disease activity indices such as the Pediatric Crohn Disease Activity Index and Pediatric Ulcerative Colitis Activity Index. Beyond diagnosis, FC is valuable for monitoring, as rising levels often precede relapse, enabling timely treatment adjustments. Low FC values in remission suggest mucosal healing and may reduce the need for repeated endoscopy, minimizing discomfort, anesthesia exposure, and healthcare costs. While FC is an excellent indicator of intestinal inflammation, it does not provide anatomical localization, so imaging or endoscopy may still be required when clinically indicated. In conclusion, FC measurement represents a transformative advancement in the management of pediatric IBD. Its ability to non-invasively quantify intestinal inflammation, predict relapse, and assess treatment response makes it indispensable in modern pediatric gastroenterology. Integrating FC into routine practice can improve disease control, optimize healthcare resources, and enhance quality of life for children and adolescents living with IBD.

INCARCERATED INCISIONAL HERNIA: AN UNUSUAL PRESENTATION OF LIPOSARCOMA MYXOIDES METASTATICUM

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Abstract:
Abdominal wall hernia is a common condition seen in the clinical practice of surgery. Soft tissue sarcomas are rare neoplasms, representing less than 1% of tumors in adults. However, recurrent liposarcoma reason for incarcerated incisional are rare and there are limited studies on this subject. We report a case of a 43-year-old female who presented with generalized abdominal pain and vomiting. She was treated for an incarcerated incisional hernia and underwent an exploratory laparotomy, which showed a multiseptated incisional hernia sac, with small bowel loops and the presence of recurrent liposarcoma in the mesentery. Desincarceration with maximal adhesiolysis and total extirpation of the recurrent liposarcoma and abdominal wall hernioplasty were performed. Contrast-enhanced CT is the first-line investigation, complete surgical excision remains the gold standard treatment for primary and even recurrent tumors. Prognosis depends on the histological type and grade. Histopathological examination revealed a liposarcoma myxoides metastaticum. The patient had surgeries for liposarcoma three and one years ago, and appropriate oncological treatment. The operative and postoperative course were uneventful. Postoperatively, she continued with oncological treatment. Follow-up after 6 months remains clean and is ongoing. Conclusion: Liposarcomas are aggressive malignant tumors with frequent recurrences.
***Keywords**:* Ventral hernia, Liposarcoma, incarceration, surgery, recurrence

THE ROLE OF NITRIC OXIDE IN HEALTH AND DISEASE

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Abstract:
Nitric oxide (NO) plays an important role in a variety of body processes as a messenger molecule in physiology, biochemistry, immunology and clinical science. It is produced within the body by the conversion of the amino acid L-arginine, that also stimulates the release of growth hormone and insulin. This biological molecule transmits the signals to cells in cardiovascular, nervous, and immune system. It is well known that it may increase blood flow and reduce blood pressure by relaxing the smooth muscle cell of the blood vessels. However, its potential effects are much more, placing the NO on the list of the most powerful signaling agents with a huge diversity of actions. The aim of the study was to investigate the role of NO in physiology and pathophysiology related to health and disease. The study methodology was based on available literature in Medline by using PubMed, EMBASE, Web of Science in the period of 2015-2025. The used articles were cross-sectional, longitudinal and review ones, reporting the NO role in health and disease. A number of 57 articles were included, using the keywords such as “nitric oxide”, “physiology”, “chronic disease”, “cardiovascular disease”, “neurodegenerative disease”, “malignant disease” “aging”, “oxidative stress”. While NO is a beneficial agent at its low concentration, higher levels may be harmful and may induce health disturbances. It is synthesized from L-arginine by 3 enzymes isoforms nNOS, eNOS, and iNOS. The nNOS is related to nervous tissue, cell communication, signal transduction, neurotransmission; eNOS plays a role in regulation of vascular function as a smooth muscle tone controller (vasodilatation, modulation of platelet aggregation, modulation of leukocyte endothelial interaction), cardiac function, angiogenesis, insulin secretion and airway tone; and iNOS is involved in defensive mechanism in a response to cytokines, and a reaction to bacteria / parasite invasion and to tumor growth, respectively. On the other hand, NO isoforms are related to different diseases such as Cardiovascular diseases: atherosclerosis, hypertension, heart failure and myocarditis, myocardial ischemia and reperfusion injury; Neurodegenerative disorders: Alzheimer’s disease, Huntington’s disease, Parkinson’s disease, etc.; Inflammatory diseases: bowel disease, chronic arthritis; Metabolic diseases: diabetes, obesity, thyroid disorders, dyslipidemia; Malignant diseases: breast, cervical, gastric, colorectal and other cancers. Also, NO may react with free radicals and may produce a compound to activate oxidative stress and accelerate the aging process. Some chronic diseases can lead to NO production which can mediate DNA damage. Recent studies are conducted to explore the therapeutic potential of

NO, thus the synthesis of molecules capable of releasing optimal NO amounts at the right time and at a right place poses a great challenge to the pharmaceutical industry research. Due to the NO important role in health and disease, the need of more studies are preferable to elucidate its beneficial physiological mechanisms, but also its pathological potential effect either to cause or to promote the disease process. It may also contribute to establish a new approach toward possible therapeutic effect as a great challenge in the future therapeutic era.
Key words: nitric oxide; oxidative stress; chronic diseases.

QEEG AS A WINDOW OF OBJECTIVE PSYCHIATRY

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Abstract:
Traditional psychiatric diagnosis has long relied on subjective clinical observations and patient self-reports, creating challenges in diagnostic accuracy, treatment selection, and outcome measurement. Quantitative electroencephalography (QEEG) emerges as a transformative neuroimaging tool that provides objective, quantifiable measures of brain function, offering unprecedented insights into the neurobiological substrates of mental health conditions.

This presentation explores the clinical applications of QEEG in modern psychiatry, examining how brain wave analysis is revolutionizing diagnostic precision and treatment approaches across psychiatric disorders, with particular emphasis on child and adolescent populations where objective measures are critically needed.

QEEG technology captures and analyzes electrical activity patterns in the brain, comparing individual profiles against normative databases to identify deviations associated with specific psychiatric conditions. Advanced signal processing techniques, including spectral analysis, connectivity mapping, and machine learning algorithms, enable the extraction of clinically meaningful biomarkers from raw EEG data.

QEEG demonstrates significant clinical utility across multiple domains: (1) Enhanced diagnostic accuracy through objective neural signatures for ADHD, autism spectrum disorders, depression, and anxiety; (2) Personalized treatment selection via neurobiological phenotyping; (3) Real-time monitoring of treatment response and medication effects; (4) Early identification of at-risk individuals before symptom manifestation; and (5) Reduced diagnostic uncertainty in complex cases where traditional methods yield ambiguous results.

The integration of QEEG into psychiatric practice represents a paradigm shift toward precision medicine in mental health care. By providing objective, reproducible measures of brain function, QEEG enables clinicians to move beyond symptom-based diagnosis to neurobiologically-informed treatment decisions. This approach is particularly valuable in pediatric populations, where subjective symptom reporting may be unreliable and early intervention is crucial for optimal outcomes.

QEEG serves as a critical window into objective psychiatry, bridging the gap between subjective clinical assessment and measurable neurobiological reality. As the field advances toward evidence-based, personalized mental health care, QEEG stands as an essential tool for transforming psychiatric practice from art to science, ultimately improving patient outcomes through more precise diagnosis and targeted interventions.

Keywords: Quantitative EEG, biomarkers, objective psychiatry, neuroimaging, precision medicine, child and adolescent psychiatry

ON SOME PRACTICAL ASPECTS OF MENTAL DISORDERS IN PRIMARY PRACTISE

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Abstract:

We will address to some practical issues in approachment , treatment and assistance in primary practice with different mental disorders, with accent on psychosis (schizofrenia). As a developing country with low mental health services , efforts have to be made to improve and increase support measures for this type of patients. Primary care doctors are on the first line of contact and detection of the patient with mental issues, so it is imperative they to be referred to secondary specialist care and establishment of mutual collaboration has to made, due to lack of centers for mental health in our country. Different diagnostic units of mental disorders will be explained with practical advices of their treatment.

Mental health care is on the margine of social and health system, neglected in the past without interest of its improvement especially in the primary care. But there is a new young force in primary care services, formed during the COVID 19 era, which has to be acknowledged and supported (helped) in their efforts for equal status of every patient.

FIFTY YEARS EXPERIENCE OF VASCULAR ACCESS FOR HEMODIAYSIS - EVOLUTION, CHALLENGES AND FUTURE PERSPECTIVES

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Abstract:
Over the past 50 years, vascular access (VA) has played a critical role in the success of hemodialysis (HD). Since the introduction of the arterio-venous fistula (AVF), significant improvements were made in access techniques, materials, and management strategies. Despite these developments, VA complications remain a major challenge, impacting patient outcomes and healthcare resources. This study provides an overview of our 50 year experience in VA for HD, highlighting key advancement, clinical challenges, and future directions. A retrospective analysis of experience, patient outcomes, and technological advancements in VA was conducted. Literature reviews and registry data were also examined to contextualize our findings within broader clinical trends.
Our 50 year experience reflects significant progress in surgical techniques, access surveillance, and complication management. The shift from central venous catheters (CVC) to AVF and arterio-venous grafts (AVG) has improved long term outcomes, while innovations such as endovascular procedures and bioengineered grafts offer promising alternatives. In the beginning we started with AV shunts, then continue with CVC (femoral, subclavian, and jugular), and AVF, AVG and tunneled catheters as permanent VA. However, access failure due to stenosis, thrombosis, and infection remains a persistent challenge. Advances in imaging, vascular biology, and precision medicine are paving the way for improved access longevity and functionality.
Reflecting on 5 decades of VA experience, we recognize both, the achievements and ongoing challenges in HD access. Future efforts should focus on optimizing patient selection, enhancing surveillance strategies, and integrating novel technologies to improve VA outcomes.

Key words: vascular access; hemodialysis; complications.

ARTIFICIAL INTELLIGENCE APPLICATION TO IMPROVE SOCIAL MEDICINE AND PUBLIC HEALTH – FROM NUMBERS TO POLICY INTERVENTION

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Abstract:

The integration of digitalization and artificial intelligence (AI) into social medicine and public health is revolutionizing healthcare delivery and policy-making, offering innovative solutions to persistent challenges in North Macedonia. This presentation explores how digital tools and AI can enhance public health outcomes by addressing gaps in disease surveillance, healthcare access, and health equity.

Electronic health records and AI-driven predictive analytics enable early detection of disease outbreaks, optimizing resource allocation in underserved rural areas. Telemedicine platforms expand access to care, particularly for chronic disease management, overcoming barriers posed by geographic isolation and limited healthcare infrastructure, sparing patients from financial burden for travel costs and waiting in overcrowded rooms, ultimately addressing equity.

AI-powered health communication strategies, including targeted mobile apps and social media campaigns, promote preventive behaviors and address low health literacy. In North Macedonia, where public health systems face challenges like fragmented data and resource constraints, these technologies can strengthen surveillance, improve maternal and child health, and reduce non-communicable disease burdens. Drawing on global case studies, such as AI-enhanced epidemiology models and digital vaccination tracking, this study proposes a framework for adopting these innovations locally. Collaboration among government, healthcare providers, and international partners is essential to harness digitalization and AI, ensuring equitable, data-driven public health advancements.

Keywords: digitalization, artificial intelligence, social medicine, public health, health policy

DELAYED UNILATERAL DIEP FLAP BREAST RECONSTRUCTION IN A 67-YEAR-OLD POST-MASTECTOMY PATIENT: A CASE REPORT

Tomislav JOVANOSKI[1], Jasmina GJORGJIEVSKA PAVLOVSKA[1], Igor PEEV[1], Sofija PEJKOVA[1], Viktor TRENCHEV[1], Blagoja SRBOV[1], Gjorgji STAVRIKJ[1]

Abstract:

The deep inferior epigastric perforator (DIEP) flap is considered the gold standard for autologous breast reconstruction due to its durability, natural contour, and muscle-sparing technique. While often performed in younger patients shortly after mastectomy, delayed reconstruction in older patients is increasingly relevant as life expectancy and patient expectations rise.

We present the case of a 67-year-old woman who underwent delayed unilateral breast reconstruction with a DIEP flap a few months ago, following a left-sided mastectomy performed several years earlier for breast cancer. The patient, in good overall health (ASA II) with no prior abdominal surgeries, sought reconstruction to restore symmetry and improve body image.

Preoperative CT angiography confirmed a dominant perforator suitable for flap harvest. A standard DIEP flap was raised and transferred to the chest, with microvascular anastomosis to the internal mammary vessels. The donor site was closed primarily. The total operative time was approximately 6 hours, with no intraoperative complications.

Recovery was smooth, and the patient was discharged on postoperative day 5. At follow-up appointments over several months, the flap remained viable with excellent contour and volume. The abdominal donor site healed well. The patient reported high satisfaction with the aesthetic outcome and experienced improved confidence and quality of life. No revision procedures have been necessary to date.

This case supports the safety and efficacy of DIEP flap reconstruction in elderly patients, even when performed years after mastectomy. With appropriate patient selection, delayed autologous reconstruction can yield excellent aesthetic and functional outcomes in older populations.

OCULAR LATERAL CANTHAL BASAL CELL CARCINOMA– CASE REPORT

Andrijana TRAJKOVA MARUSHEVSKI [1], Jasmina GJORGIEVSKA PAVLOVSKA [1], Darko ALEKSOVSKI [1], Gjorgji STAVRIKJ [1], Elizabeta MIRCHEVSKA-ZJOGOVSKA [1,2]

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Abstract:

Basal cell carcinoma is the most common cancer in the world. These carcinomas represent more than 90% of eyelid malignancies, with 5% occurrence in lateral canthus. Their local growth and invasion of the underlying tissues lead to high risk of recurrence. Wide surgical excision with margin control is considered to be the first and best treatment for these malignancies. Eyelid reconstruction should be age appropriate and acceptable for the patient and should include both functional and esthetic outcome. We have a case report of 71-year old male presenting in our clinic with invasive lateral canthal carcinoma of the right eye, 1.5cm in diameter with ulceration and occasional bleeding. This paper explains the surgical technique, intraoperative and postoperative treatment, documented with photographs. The ultimate goal is complete removal of the carcinoma with functional restoring of the postoperative tissue defect. Pathology report showed complete removal of the carcinoma with clean resection margins. Postoperative satisfactory results were obtained, accepted by the surgeons and patient as well.

Keywords: BCC, cantus, eyelid, basalioma

BILATERAL MASTECTOMY AND PRIMARY RECONSTRUCTION IN A PATIENT WITH LEFT-SIDED INVASIVE BREAST CARCINOMA: A CASE REPORT

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Abstract:
This is a case report of a 52-year-old female patient diagnosed with breast carcinoma localized on the left side. Breast ultrasound identified a suspicious lesion classified as BI-RADS 4, and subsequent core needle biopsy confirmed invasive breast carcinoma of no special type (NST). The patient also had positive family anamnesis with breast carcinoma. Multidisciplinary evaluation led to the decision to perform a left radical subcutaneous mastectomy with axillary lymph node dissection and a prophylactic subcutaneous mastectomy of the contralateral (right) breast. Bilateral tissue expanders were implanted to provide further reconstructive surgery. Histopathological analysis of the left breast confirmed the core needle biopsy result and found invasive carcinoma NST, Stage IIB. Microscopic analysis revealed lymphatic invasion (pL1) without vascular (pV0) or perineural (pPn0) invasion, and resection margins were tumor-free (pR0). One axillary lymph node showed only reactive hyperplasia without metastases. Examination of the right prophylactic mastectomy specimen revealed a proliferative lesion with atypia but no malignancy. The patient had an uneventful postoperative recovery. This case illustrates the importance of thorough preoperative imaging and biopsy, the role of prophylactic surgery in selected patients with family history of breast carcinoma, and integration of oncologic and reconstructive strategies to optimize both disease control and quality of life. Postoperative satisfactory results were obtained, accepted by the surgeons and patient as well.
Keywords: Invasive breast carcinoma NST; radical mastectomy; prophylactic mastectomy; lymph node dissection; tissue expanders; breast reconstruction

POSTHERPETIC ABDOMINAL PSEUDOHERNIA IN A PATIENT WITH MYASTENIA GRAVIS: AN EXTREMELY RARE CASE REPORT AND LITERATURE REVIEW

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Abstract:
Herpes zoster, caused by the reactivation of the varicella-zoster virus, predominantly affects individuals over the age of 65 and those with compromised immune systems. The classic presentation involves a unilateral vesicular rash on an erythematous base, localized to a specific dermatome, often accompanied by pain and sensory deficits. While sensory complications are common, motor neuropathy, particularly involving the abdominal muscles, is an infrequent and underreported postherpetic sequela, occurring in approximately 0.17% of cases. We present an extremely rare case of a 74-year-old male patient diagnosed with myasthenia gravis-associated postherpetic right abdominal pseudohernia, which developed 5 days after the onset of a typical herpes zoster rash. Dermatological examination revealed the characteristic vesicular rash in the T12-L2 dermatomal distribution. On palpation, the abdomen was soft, with no palpable visceromegaly. The Valsalva maneuver accentuated the abdominal protrusion. Laboratory tests were performed and found to be within normal reference ranges. Further evaluation, including abdominal X-ray and ultrasound, revealed no abnormalities. The treatment regimen included both oral and topical acyclovir. The patient was advised to undergo long-term follow-up to assess the progression of this post-viral complication. To the best of our knowledge, this is the first documented case in R. N. Macedonia, and we conducted a comprehensive literature review to update current understanding of this uncommon entity. This case highlights the critical role of dermatologists in identifying rare post-herpetic complications, and the coexistence of myasthenia gravis may have predisposed the patient to this uncommon manifestation. Differentiating this condition from more common causes, such as true abdominal hernias, is essential, as the latter may necessitate surgical intervention. Early recognition can prevent unnecessary invasive procedures and facilitate appropriate management strategies. Continued follow-up is crucial to ensure full resolution and prevent long-term complications.
Keywords: Herpes zoster, Postherpetic complication, Motor neuropathy, Abdominal distension, Abdominal pseudohernia, Myasthenia gravis

PUBLIC HEALTH AND PREVENTIVE DIPLOMACY AS INSTRUMENTS OF PREVENTION FOR GLOBAL BIOHAZARD POTENTIAL

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Abstract:

The preventive branches of public health play a vital role in promoting, preserving and improving the overall health and well-being of populations. Their mission aligns closely with the principles of preventive diplomacy, which emphasizes early and proactive actions to promote and sustain peace, thereby preventing conflict and instability. Eradicated diseases can still pose a "silent" threat as potential biological weapons — “smallpox” being a prime example. Although smallpox infection was officially declared eradicated worldwide in 1980, virus samples are still preserved under high-security conditions in two designated laboratories: the State Research Center for Virology and Biotechnology (Vector) in Koltsovo, Russia and the Centers for Disease Control and Prevention (CDC) in Atlanta, United States. The existence of these virus stocks continues to pose a latent biological risk, particularly in the context of bioterrorism or accidental release. One of the most effective and least disruptive approaches to minimize the threat of biological weapons and to protect global populations from the revival of “old” infectious diseases is the application of preventive diplomacy. This strategy involves dialogue, early warning systems, transparency in health data, and collaborative international efforts aimed at identifying and addressing biological risks before they escalate into crises. Preventive diplomacy serves as a bridge between public health initiatives and global security frameworks. The timely exchange of reliable information, coordinated response mechanisms, capacity-building and mutual assistance are all essential elements in preventing and managing biological risks. Strengthening these collaborative efforts will not only enhance preparedness but also ensure a more secure and resilient global health environment.

Keywords: public health, preventive diplomacy, global politics, biohazard

POSITIVE PATCH TEST TO NICKEL SULFATE AND COBALT CHLORIDE IN A PATIENT WITH ATOPIC DERMATITIS

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Abstract:

Atopic dermatitis (AD) is a chronic inflammatory skin disorder frequently complicated by hypersensitivity reactions, including allergic contact dermatitis (ACD). Differentiating between AD and coexisting ACD is crucial for effective management. We present a case of a 19-year-old male with a history of moderate-to-severe AD who presented with persistent, pruritic, eczematous lesions, particularly in areas exposed to metallic items such as jewelry and buttons. Despite adherence to standard AD therapy, including topical corticosteroids and emollients, symptoms remained refractory. Patch testing with the European Baseline Series was performed using Finn Chambers on the upper back and revealed positive reactions at both 48 and 96 hours to nickel sulfate 5% pet. (++ reaction with erythema, papules, and infiltration) and cobalt chloride 1% pet. (+ reaction with erythema and edema). These findings confirmed contact allergy to nickel and cobalt and confirming ACD as a contributing factor. Given the common presence of these allergens in everyday items and the impaired skin barrier in AD patients, sensitization is not uncommon. Management included strict allergen avoidance (e.g., nickel-free jewelry, plastic-coated buttons), continued use of emollients and intermittent topical corticosteroids for AD flares. Follow-up was scheduled for three months to monitor clinical improvement. This case underscores the importance of patch testing in patients with refractory dermatitis and AD, where overlapping allergic triggers may complicate the clinical picture. Identification of relevant allergens such as nickel and cobalt facilitated targeted avoidance strategies, improving disease control and patient quality of life. Comprehensive evaluation for contact allergens should be considered in atopic individuals with chronic or therapy-resistant eczema.

Keywords: Atopic dermatitis, allergic contact dermatitis, patch testing, nickel sulfate, cobalt chloride, eczema, metal allergy

EVALUATION OF ISSUED BLOOD UNITS AT SELECTED SURGICAL CLINICS

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Abstract:
The transfusion of red cells concentrates (RCCs) is indicated to rapidly increase oxygen delivery to tissues when hemoglobin concentration is low and oxygen-carring capacity is reduced.RCCs are depleted of all or almost all plasma and contain the additive solution Salin, Adenin, Glukosse and Mannitol(SAG-M).

The aim od study is to present number of blood units issued by the Surgery Department- Gynecology and Obstetrics Clinic (GOC), Orthopedics and Traumatology Clinic (OTC), Cardiac Surgery Clinic (CSC) and Intensive care Clinic (ICC) in 2022 to 2024.

A retrospective study was performed using data collected from the annual reports and the information system E-delfyn at Institut for Transfusion Medicine of North Macedonia. During this period, a total of 163 535 RCCs were issued, of wich 24 753(15,1%)were issued to the aforementioned clinics. In 2022, 8 879 RCCs were issued, in 2023-8 396, and in 2024 -7 478. We can conclude that number of issued RCC decreased over the years, possibly due to the implentation of new surgical techniques with less blood loss or the use of autologous transfusion methods.

QUINOLONE RESISTANCE IN COMMUNITY-ACQUIRED *ESCHERICHIA COLI* URINARY TRACT INFECTIONS: SURVEILLANCE DATA FROM CENTER FOR PUBLIC HEALTH , SKOPJE

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Urinary tract infections (UTIs) caused by *Escherichia coli* remain among the most common community-acquired bacterial infections. The increasing resistance to quinolones poses a significant public health concern, especially in regions with rising Extended-Spectrum Beta-Lactamase (ESBL)-producing strains. This study aims to assess quinolone resistance patterns in community-acquired *E. coli* UTIs using data from the Center for Public Health – Skopje, North Macedonia. Between January 1st and July 15th, 2025, urine samples from 6,579 community patients were analyzed. A total of 4,385 (66.6%) were positive for *E. coli*, of which 168 (3.8%) were identified as ESBL-positive, and 2,932 were negative. Antimicrobial susceptibility testing was conducted using the Kirby-Bauer disc diffusion method and the automated VITEK® 2 Compact system. Susceptibility to quinolones—norfloxacin and ciprofloxacin—was evaluated simultaneously for both *E. coli* and *E. coli* ESBL+ strains. The comparison between the disc diffusion and VITEK® 2 Compact methods for *E. coli* susceptibility testing reveals generally consistent results, with slight variations in sensitivity and resistance rates. Using the disc diffusion method, *E. coli* isolates showed 72.0% sensitivity to norfloxacin and 72.5% to ciprofloxacin, while VITEK results indicated slightly lower sensitivities of 70.1% and 69.3%, respectively. Resistance rates were correspondingly higher in VITEK (29.9% for norfloxacin and 30.7% for ciprofloxacin) compared to disc diffusion (28.0% and 27.5%). The disparity becomes more pronounced in ESBL-producing E. coli isolates: the disc diffusion method showed 23.3% sensitivity to norfloxacin and 25.4% to ciprofloxacin, whereas VITEK results revealed significantly lower sensitivity—only 7.7% for norfloxacin and 7.4% for ciprofloxacin. These findings suggest that while both methods identify similar trends, VITEK tends to report higher resistance rates, particularly among ESBL+ strains.

The data reveal a concerning rate of quinolone resistance in both *E. coli* and particularly among *E. coli* ESBL+ strains. Ciprofloxacin and norfloxacin resistance was significantly higher in the ESBL-positive group, with resistance exceeding 70% in both testing methods. These findings underscore the importance of continued antimicrobial surveillance and judicious antibiotic prescribing in community settings to curb the spread of resistant *E. coli* strains.

Keywords: *Escherichia coli*, urinary tract infection, quinolone resistance, ESBL, ciprofloxacin, norfloxacin, VITEK 2, disc diffusion, antimicrobial susceptibility

ADOS IN CLINICAL PRACTICE: EXPERIENCES, CHALLENGES, AND RECOMMENDATIONS FROM THE DIAGNOSTIC PROCESS

Biljana ARIZANKOVSKA EFTIMOVA[1], Silvana FILIPOVA[1 2], Biljana MARICIC JAKIMOVSKA[1], Anita NACEVSKA[1]

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Abstract:
Early diagnosis of autism spectrum disorder (ASD) is a key prerequisite for appropriate support and intervention. However, in individuals with atypical or subtle clinical profiles, the diagnosis may be delayed or missed. This paper presents the case of a 14-year-old adolescent without a prior diagnosis, referred for assessment due to difficulties in learning, social interaction, and communication, observed during preparations for secondary school enrollment. The clinical assessment revealed limited spontaneity in communication, literal understanding of language, difficulties with abstract concepts, and poorly structured narrative skills. No classical stereotypical behaviors or restricted interests were observed. On standardized assessment using the Autism Diagnostic Observation Schedule – Second Edition (ADOS-2), the adolescent received a total score of 11, which is consistent with a diagnosis of autism, indicating a moderate presence of symptoms. Cognitive assessment showed functioning within the range of mild intellectual disability. This case highlights the value of standardized diagnostic tools such as the ADOS-2 in identifying adolescents with "masked" symptoms of ASD who went undiagnosed during childhood. It also emphasizes the importance of standardized assessment in developing a timely and individualized approach that addresses the specific needs and potential of the individual. Such an approach facilitates more functional inclusion in educational and social contexts and reduces the risk of comorbid mental health conditions. By integrating standardized tools with qualitative analysis of developmental history, clinicians can achieve accurate and timely diagnoses.

Keywords: diagnosis, autism spectrum disorder, adolescent, ADOS-2, individualized approach.

INFECTIONS OF THE LOWER RESPIRATORY TRACT AT CHILDRENS - PEDIATRIC DEPARTMENT– GENERAL HOSPITAL WITH EXTENDED ACTIVITY KAVADARCI – PERIOD 2020-2024

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Abstract:
Infections of the lower respiratory tract involve the trachea, bronchi, bronchioles and lungs. The most common infections of the lower respiratory tract at children`s include bronchitis, bronchiolitis and bronchopneumonia. The treatment was based on the clinical picture and X-ray findings.
To present cases of lower respiratory infections at pediatric department - General Hospital with extended activity Kavadarci.
Children`s medical history for the last 5 years were extended - General Hosptal with extended activity Kavadarci period 2020-2024. A statistical method of data processing was used.
In the year 2020 there were hospitalized 310 children – 115 children with infection of the lower respiratory tract – 37% of hospitalized children.
In the year 2021 there was hospitalized 312 children – 122 children with infection of the lower respiratory tract – 39% of hospitalized children.
In the year 2022 there was hospitalized 414 children – 127 children with infection of the lower respiratory tract – 30, 6% of hospitalized children.
In the year 2023 there was hospitalized 589 children – 132 children with infection of the lower respiratory tract – 22, 4% of hospitalized children.
In the year 2024 there was hospitalized 614 children – 102 children with infection of the lower respiratory tract – 16, 6% of hospitalized children.
Period of hospitalization was on average from 3 to 7 days. The treatment includes the third generation of cephalosporins or aminoglycoside antiobiotic.
The number of children with infection of lower respiratory tract is decreasing because the children are receiving proper treatment from family doctors.
Key words: children, lower respiratory tract infections, treatment.

ANTIMICROBIAL SUSCEPTIBILITY TO ENTEROCOCCI ISOLATED FROM THE GENITOURINARY TRACT

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Abstract:

The Enterococci have been documented to infect the genitourinary tract with the second most common patogenic bacteria. Our goal was to determine their sensitivity to different antibiotics, especially those in daily clinics pracitice.
553 enterococci were isolated from the genitourinary tract that predicted infection in the period from 01.01.2021 to 30.06.2025. Enterococci can be identified with identifying strips from the BBL CRYSTAL SYSTEM. Testing for antibiotic sensitivty is performed using the disc difusion method.
In strains (277 – E. faecalis, 178 – E. faecium, 79 – E. avium and 19 – E. Caseiflavus) resistance to aminoglycosides was determined with the presence or high level resistance of gentamicin – (96%), streptomycin – (86%) and amikacin – (68). Also, the resistance of penicillins – (25%), hight level was observed. a large number of isolated strains are multi-resistant. 29 strtains of E. faecalis showed resistance to vancomycin and teicoplamin.
The emeergence of multiresistance in enterococci and high resistance to certain antibiotics require the perceptible use of antimicrobial therapy in genitourinary infections caused by enterococci.

Key words: Enterocooci, multiresistance, genitourinary system, antibiotics.

INTRADIALYTIC MAGNESIUM PROFILES AND FLUX IN HEMODIALYSIS PATIENTS

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Abstract:

Magnesium dynamics during hemodialysis are not yet fully characterized, despite their relevance to cardiovascular and bone health in end-stage renal disease (ESRD). The aim of this study is to evaluate intradialytic magnesium flux in chronic hemodialysis patients and determine whether serum magnesium levels increase post-dialysis despite a standard dialysate magnesium concentration of 1 mmol/L (2.43mg/dl). Sixty-seven patients were included. Serum magnesium was measured (Mg-pre) and after (Mg-post) dialysis in two separate midweek sessions (HD1 and HD2), using spectrophotometric xylidil blue method. Reference values ranged from 1.7-2.4mg/dl. In HD1, 77.61% of patients showed a post-dialysis magnesium increase. Mean Mg-pre was 3.19mg/dl (SD=0.42), and Mg-post was 3.44mg/dl (SD=0.28), with a mean intradialytic increase of 0.25mg/dl. The 95%-CI for Mg-pre ranged from 3.09 to 3.29mg/dl, while for Mg-post it ranged from 3.37 to 3.51mg/dl, confirming that the increase in plasma magnesium following HD1 was statistically significant. In HD2, 56.72% of patients showed an increase. Mean Mg-pre was 3.30mg/dl (SD=0.35) and Mg-post was 3.37mg/dl (SD=0.21), with a mean intradialytic increase of 0.07mg/dl. The 95%-CI for Mg-pre ranged from 3.22 to 3.39mg/dl, while for Mg-post it ranged from 3.32 to 3.42mg/dl, confirming a smaller but still notable increase in plasma magnesium following HD2. Despite the use of a standard dialysate magnesium concentration of 1 mmol/L a significant post-dialysis increase in serum magnesium was observed in hemodialysis patients. These findings underscore the need for individualized magnesium management in hemodialysis patients, particularly in those with residual diuresis, magnesium supplementation or magnesium-altering medications.

Keywords: magnesium dynamics, hemodialysis, ESRD, magnesium flux, serum magnesium.

STUDENT SESSION

TOBACCO SMOKING AS A RISK FACTOR FOR THE DEVELOPMENT OF CERVICAL INTRAEPITHELIAL NEOPLASIA (CIN)

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Cervical intraepithelial neoplasia (CIN) represents a spectrum of premalignant changes in the cervical epithelium and remains a significant public health concern worldwide. Although Human papillomavirus (HPV) is the main etiological factor in the development of CIN and cervical cancer, increasing evidence also suggests that cigarette smoking acts as an independent risk factor for the occurrence of these changes. Tobacco smoking contributes to CIN development by compromising local immune responses, inducing cellular DNA damage, and promoting the persistence of HPV infection. Multiple studies have shown that women who smoke have a higher risk of developing CIN compared to non-smokers. This risk appears to be dose-dependent, increasing with the number of cigarettes smoked per day and the duration of smoking. Quitting smoking is thought to reduce the risk of developing CIN, particularly in women with persistent HPV infection. Women who smoked 10 or more cigarettes per day had approximately a twofold increased risk of developing CIN (CIN2/3). Another study shows that CIN or cervical cancer occurred in 267/100,000 women who never smoked, 183/100,000 former smokers, and 476/100,000 active smokers. Passive smoking also significantly increases the risk of CIN 1, especially with long-term exposure. According to a study from Korea, the risk is 53% higher in women exposed to passive smoking compared to unexposed women. According to our data, in a case-control study of 192 women with histologically confirmed CIN and 200 HPV-negative controls, smoking prevalence was 34% in the CIN group versus 17% in controls. The odds ratio (≈ 2.5) suggests that smokers had more than twice the odds of developing CIN. A positive association was observed between CIN severity and the estimated number of cigarettes smoked daily. Although HPV is the primary risk factor for CIN, smoking can still significantly increase the risk.

Keywords: tobacco smoking, risk factor, cervical intraepithelial neoplasia, CIN, Human papillomavirus, HPV

FUTURE OF MEDICINE: WHY EVERY DOCTOR NEEDS TO KNOW BIOFEEDBACK AND NEUROFEEDBACK

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Abstract:
Biofeedback and neurofeedback are evidence-based therapeutic techniques that use real-time monitoring of physiological processes to teach patients voluntary control over normally unconscious bodily functions. Biofeedback monitors signals like muscle tension, heart rate, skin temperature, and breathing patterns, while neurofeedback specifically focuses on brain electrical activity (EEG).
Both therapies operate on the principle of operant conditioning - patients receive immediate visual or auditory feedback about their physiological state and learn to modify these responses through practice. The brain's neuroplasticity allows for lasting changes in self-regulation abilities. Strong evidence supports biofeedback for tension headaches, migraine prevention, chronic pain, and anxiety disorders. Neurofeedback shows significant efficacy in ADHD treatment, epilepsy management, and sleep disorders. Both can serve as alternatives or adjuncts to medication. These non-invasive, non-pharmacological interventions offer valuable treatment options for patients seeking alternatives to medication or experiencing treatment resistance. They empower patients with self-management skills and can reduce healthcare costs while improving quality of life.
As future physicians, understanding these therapies enables appropriate patient counseling, referral decisions, and collaborative care with certified practitioners. They represent the growing field of integrative medicine that combines conventional treatment with evidence-based complementary approaches.
Biofeedback and neurofeedback are scientifically validated tools that harness the mind-body connection for therapeutic benefit, offering patients active participation in their healing process while providing measurable, objective outcomes.
Key words: biofeedback, neurofeedback, operant conditioning, neuroplasticity

VAGUS NERVE NEUROPATHY IN SARS-COV-2 INFECTION: AN ULTRASOUND STUDY

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Abstract:

The vagus nerve plays a crucial role in preventing hyperinflammation through the inflammatory reflex arc. Neuropathy of this nerve, as a consequence of direct and indirect effects from the SARS-CoV-2 virus, disrupts this reflex and is most likely the cause of the cytokine storm and clinical manifestations observed in COVID-19 patients. This study aims to determine the presence of vagus nerve neuropathy in SARS-CoV-2 infected patients. A prospective study was conducted from October 2019 to April 2020, including 68 patients of both sexes (mean age 53.16 ± 14.33 years) with a positive PCR test for the delta variant of SARS-CoV-2. The control group consisted of 50 healthy individuals of both sexes (mean age 22.7 ± 2.44 years). Ultrasound examination of the vagus nerve was performed at the level of the cricoid cartilage (X2) and common carotid artery bifurcation (X1) on both sides, using a 10-18 MHz linear probe. Statistical analysis was performed using IBM SPSS Statistics version 26, with the Mann-Whitney U test, as the data were not normally distributed. Results showed no significant difference between the left X1 values of the study group and the control group ($p>0.05$), but the right X1 and X2 values exhibited a highly significant difference ($p<0.001$). The left X2 value was at the borderline of significance ($p=0.05$). Medians of X1 and X2 were higher in the study group compared to the control, contrary to what would be expected based on average age. These findings suggest that vagus nerve neuropathy may contribute to the pathophysiology of SARS-CoV-2 infection, particularly in the development of cytokine storm.

CASE REPORT: UNRESOLVED ABDOMINAL PAIN IN TYPE 1 DIABETES: A COMPLEX CASE OF POST-APPENDICITIS, SUSPECTED ENDOMETRIOSIS, AND OVARIAN TORSION

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Abstract:

Introduction: A 20-year-old female with Type 1 diabetes presented with persistent abdominal pain seven months following an emergency appendectomy performed in February. Even after a lot of tests, including imaging studies and meetings with different experts, no clear diagnosis could be made until endometriosis and ovarian torsion were thought to be possible causes.

Case presentation: A low WBC and CRP of 0.05 compounded the patient's probable appendicitis, which led to an appendectomy. Despite the surgery and a relatively normal recovery period, she continued to experience chronic, severe abdominal pain. She spent the next few months undergoing a series of medical examinations.

She underwent

CT scans, and gynecological ultrasounds revealed no indications of any significant issu es.

The nephrology sonography results were also normal.The blood tests showed no indi cations of active inflammation.Despite these findings, the pain persisted, raising the possibility of ovarian torsion and endometriosis. During the procedure, while no evidence of ovarian torsion was found, endometriosis was strongly suspected. The lesions were carefully excised and ablated using laparoscopic techniques to reduce pain and prevent further progression of the disease. The patient's recovery was further complicated by her underlying Type 1 diabetes and new evidence of another autoimmune disorder, which together contributed to a complex and challenging clinical scenario.

Conclusion: This case highlights the process of diagnosing a condition from persistent discomfort which comes with a multitude of challenges, including the inadequacy of imaging modalities. This case underscores the need for invasive—exploration to reveal condition such as endometriosis. Given the patient two autoimmune diseases, including Type 1 diabetes, continued monitoring will be essential to manage her discomfort and autoimmune condition.

A MULTIDISCIPLINARY APPROACH TO PEDIATRIC NEURODEVELOPMENTAL DISORDERS: FOUR ILLUSTRATIVE CASES

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Abstract:
The following case series consists of four pediatric patients with overlapping neurodevelopmental difficulties, in whom genetic analysis revealed distinct copy number variants and sequence alterations.
A number of the detected variants included a microduplication at 17q21.31 involving KANSL1, ARL17A and neighboring genes, a deletion at 4q31.21 spanning GYPB and GYPE, another deletion at 8p23.1 affecting PRAG1 and CLDN23, and a likely pathogenic heterozygous variant in CYP21A2. These alterations are associated with a spectrum of features such as psychomotor delay, microcephaly, dysmorphic traits, behavioral difficulties, immunological vulnerability, vesicoureteral reflux, and links to autism spectrum disorders, although their pathogenicity ranges from uncertain to established.
Electroencephalographic studies further revealed abnormal background activity and increased slow-wave burden, pointing toward a shared neurophysiological substrate. Taken together, we will present how distinct genomic alterations may converge into similar neurodevelopmental and electrophysiological profiles, highlighting the need for integrative evaluation.
In conclusion these cases emphasise the complexity of interpreting rare genomic variants in pediatric neurodevelopment and the value of combining molecular findings with EEG phenotyping to guide clinical assessment.
Keywords: pediatric neurodevelopment, copy number variants, 17q21.31 microduplication, psychomotor delay, autism spectrum disorders, EEG abnormalities

THE POWERHOUSE HEIST: MITOCHONDRIAL TRANSPLANTATION AND PERFORMANCE ENHANCEMENT

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Mitochondrial transplantation, the transfer of healthy mitochondria into compromised cells to restore cellular energy, is an emerging therapeutic approach with applications in cardiology, neurology, and regenerative medicine. Although no athlete has been sanctioned for its use in sports, the procedure's potential to enhance endurance, accelerate recovery, and improve overall physical performance has attracted the attention of anti-doping authorities. The technique generally involves isolating functional mitochondria from autologous muscle or blood samples via centrifugation and delivering them either directly—through local tissue injection or systemic infusion, where host cells can internalize them—or indirectly, by using carrier cells such as mesenchymal stem cells that subsequently transfer mitochondria to recipient tissues. Once integrated, these organelles may augment adenosine triphosphate (ATP) production and cellular resilience. While therapeutically beneficial for patients, these mechanisms could provide unfair advantages to healthy athletes, representing a novel form of "cellular doping." Unlike conventional pharmacological doping, mitochondrial transplantation operates at a cellular and organelle level, making detection challenging.

According to the World Anti-Doping Agency (WADA) Prohibited List, mitochondrial transplantation would fall under the category of *Gene and Cell Doping* (Method M3), which is prohibited at all times, in and out of competition. Although the technique is not explicitly named, the transfer and manipulation of mitochondria constitute a form of cellular intervention aimed at enhancing performance and therefore aligns with WADA's definition. Potential strategies to detect misuse include longitudinal monitoring of mitochondrial DNA heteroplasmy with high-resolution single-cell sequencing to uncover unnatural shifts, combined with metabolomic profiling to reveal abnormal mitochondrial activity.

Given the rapid development and increasing accessibility of mitochondrial therapies, proactive research, regulatory policy, and interdisciplinary collaboration are essential to anticipate potential abuse. By addressing mitochondrial transplantation as a theoretical doping risk, the sporting community can implement early testing frameworks, safeguard fairness, and ensure that medical innovations remain tools for healing rather than instruments for performance enhancement.

Keywords: mitochondrial transplantation, sports medicine, (anti)doping, cellular therapy, performance enhancement

RAPID RECOVERY AFTER ACUTE CARBAMAZEPINE OVERDOSE WITH SEIZURES

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Abstract:
Acute carbamazepine intoxication is a potentially life-threatening condition due to a narrow therapeutic index, slow gastrointestinal absorption, and the possibility of delayed peak serum concentrations. We present a case of severe overdose complicated by seizures, with a remarkably rapid recovery achieved without extracorporeal elimination techniques. A 19-year-old male ingested 10g of carbamazepine (Tegretol - 50 tablets of 200mg) in a suicide attempt and was admitted 3 hours later in stupor (GCS 6), with horizontal nystagmus, hypotension (BP 22/15 kPa), and HR 95 bpm. Serum carbamazepine was 182 µmol/L; urine toxicology was positive only for cannabinoids, no ethanol detected. The patient's mother reported no previous history of seizure disorder. Management included multidose activated charcoal, hydration, and hemodynamic monitoring. Twelve hours post-ingestion, at a peak level of 192 µmol/L, the patient developed two repeated four-minute generalized myoclonic seizures. Successful treatment with IV diazepam 10mg was followed by a drop of systolic pressure to 10kPa, resolved with brief dopamine support. Upon stabilisation, activated charcoal detoxification was resumed. No hemoperfusion was performed. Despite high serum concentrations and presence of neurological complications, the patient achieved full recovery within 62 hours, discharged without sequelae. This case highlights the potential for multidose activated charcoal to be both safe and effective in severe carbamazepine toxicity, even in complicated presentations, avoiding invasive elimination methods.
Keywords: carbamazepine poisoning, multidose activated charcoal, seizure, overdose, toxicology

ANALYSIS OF THE ACCURACY OF THE PARAMETERS OF LIPID STATUS BASED ON THE EXTERNAL QUALITY CONTROL RESULTS

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Abstract:
External quality assessment (EQA), alongside internal quality control, represents a fundamental tool for verifying the accuracy of a laboratory's results in order to ensure the quality and reliability of the test results. According to the Law of health protection of the Republic of North Macedonia, every laboratory has to participate at least twice a year in the EQAS in order to assure the reliability of the results.
The aim of this paper was to analyze the accuracy of the test results of the lipid status parameters using the obtained results from the participation in EQAS of our laboratory. The results of total cholesterol (mmolL), triglycerides (mmolL), HDL cholesterol (mmolL) and LDL cholesterol (mmolL), over a two year period of external quality control conducted under the annual Prevecal scheme were analyzed using Microsoft Excel. The results with a z-score greater than 1.96 were considered non satisfactory.
According to the analysis, total cholesterol and LDL cholesterol showed satisfactory results for the entire period (z-score<1.61). For triglycerides, deviations were observed on three occasions over the two years (z-scores: 5.62;-2.51;-2.31). HDL cholesterol was the parameter with the highest number of unsatisfactory results, a total of 12, or 6 times per year, with z-scores ranging from -2.97 to +5.43.
Based on the analysis of the results, we can conclude that all parameters of the lipid status meet the criteria for application in our laboratory without the need for corrective actions, with the exception of HDL cholesterol, which showed unsatisfactory performance in several instances that were appropriately corrected.
Keywords: total cholesterol, triglycerides, HDL cholesterol, LDL cholesterol, z-score, quality control analyzes.

PULMONARY MANIFESTATIONS IN A PATIENT WITH KARTAGENER SYNDROME

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A 45-year-old female patient presented for an outpatient follow-up visit, reporting a several-month history of exertional fatigue, nasal congestion, a sensation of facial fullness, and sinus pain.The patient had a history of frequent middle ear infections during childhood, treated with antibiotics and corticosteroids. Two years ago she was diagnosed with Chronic Obstructive Pulmonary Disease(COPD)and was treated with methylxanthines, antimuscarinic bronchodilators, and corticosteroid therapy. It was also noted that the patient has previously had tuberculosis. On clinical examination, auscultation revealed vesicular breath sounds with prolonged expiration. Bilaterally, in the basal lung fields, there were accompanying inspiratory medium-to-coarse bronchitic crackles. An ECG was performed, showing right axis deviation. Spirometry showed an obstructive pattern. The chest CT scan revealed situs inversus and bronchiectatic changes in the right lower lung. The left lung exhibited multiple cicatricial bronchiectatic and fibro-adhesive changes. The patient's existing therapy was continued, with the addition of a nasal corticosteroid. Additional tests were performed, including biochemical analyses, nasal and throat swabs, sputum culture with antibiogram, and a GENEXPETRT test for active tuberculosis. The patient was hospitalized at the Pulmoallergology Clinic due to a Pseudomonas Aeruginosa infection and received parenteral antibiotic therapy. She was discharged in improved condition with negative microbiological findings and showed slight improvement in pulmonary function tests. A follow-up appointment was recommended in one month. Kartagener syndrome, as a rare disease, should be considered in patients with recurrent infections, sinusitis, and expectorating thick, sticky secretions. The use of corticosteroids can be a double-edged sword, as it may trigger tuberculosis or lead to candidiasis.

SUDDEN UNEXPECTED DEATH IN EPILEPSY-FORENSIC ASPECT

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Epilepsy is one of the most common diseases in neurology. It is assumed that the cause lies in a disturbance in the midbrain region. It manifests with partial seizures or generalized seizures. Globally, 3–4% of the total percentage of natural deaths are due to epilepsy. Sudden unexpected death in epilepsy (SUDEP) is defined as a sudden, unexpected death, with or without the presence of witnesses, in a person suffering from epilepsy, where postmortem examinations do not reveal the exact cause of death. SUDEP is a cause of premature death among people with epilepsy, occurring in 8–17% of such patients.

The presented case concerns a 25-year-old female who was found in the bathroom of the casino where she worked, showing no signs of life. A conversation with her father revealed that she had been suffering from epilepsy for 20 years and was receiving treatment. She rarely visited a doctor. Recently, she had not been feeling well but did not seek medical help. At autopsy, the external examination revealed minor abrasions and contusions on the body, cyanosis of the face, and acrocyanosis of the fingers. Internal findings included significant signs of an epileptic seizure (tongue lacerations and haemorrhages) and pronounced swelling of the brain and lungs. Non-specific signs of asphyxia were also found: liquid blood, petechial haemorrhages under the pleura and epicardium, and congestion of the internal organs.Toxicological examination revealed the presence of antiepileptic drugs and benzodiazepines in the blood and urine. No ethyl alcohol was detected. Microscopic images revealed brain swelling, pulmonary congestion, pulmonary edema, torn myofibrils, and myofibril edema. The cause of death was determined to be an epileptic seizure due to myocardial arrhythmia.

In SUDEP, there are no characteristic neuropathological or cardiac tissue changes that can definitively indicate this condition. In the future, for cases of this type, it is necessary for the forensic expert to integrate clinical, pathological, and molecular research in order to determine the true cause of death.

THYREOTOXIC CARDIOMYOPATHY- WHEN CAUSE IS CAUSE IS SOLVED

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Thyrotoxic cardiomyopathy (TCM) is an uncommon but potentially severe cardiac complication of hyperthyroidism, particularly when the condition is untreated or poorly controlled. It is characterized by left ventricular dysfunction, heart failure, and arrhythmias. However, with appropriate management of the underlying thyroid disorder, TCM is often reversible. A 53 years old female patient referred for preoperative evaluation for thyroid gland due to thyrotoxicosis. Her complaint was increased palpitations, fatigue, and shortness of breath, especially on exertion. She reports a noticeable weight loss of approximately 10 kg over the past month despite an increased appetite. Patients electrocardiogram presents atrial fibrillation (AF) with ventricular response of 120/min. On echocardiography was noted reduced ejected fraction (EF) 40%, dilated left ventricle (LVEDd=58mm) and left atrium (LAVI 55ml/m2), diastolic function gr 2. The optimal hearth failure therapy was edited to antithyroid medication (methimasole). Postoperative pathohistological finding was toxic nodular struma, patient was placed on thyroid replacement therapy to the average range of TSH (Thyroid-stimulating hormone). After a year of the thyroidectomy, patient was still in AF with dilated left ventricular chambers and mild left ventricular EF -50% (by Simpson). Thyrotoxic cardiomyopathy is a reversible form of heart failure that occurs due to the deleterious effects of excess thyroid hormones on the heart. Early diagnosis and treatment of hyperthyroidism are crucial for preventing long-term cardiac damage and improving the patient's outcome. Timely management, including both thyroid-specific therapy and supportive heart failure treatment, offers an excellent prognosis for most patients.

Key points: TCM, toxic struma, hearth failure

DOES SIZE REALLY MATTERS FOR STARTING GLP 1 AGONIST?

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Papillary thyroid carcinoma (PTC) is the most common thyroid malignancy, accounting for around 80% of cases. It typically grows slowly and has a favorable prognosis when diagnosed early. Glucagon-like peptide-1 receptor agonist (GLP-1 RA) are widely used for metabolic control, though their potential effects on the thyroid remain under investigation. A 54-year-old female patient was referred for a routine diabetes check-up. Laboratory findings revealed an HbA1c 7.5%, fasting glucose 7.0 mmol/L, urine albumin-to-creatinine ratio -189 mg/g and an estimated glomerular filtration rate -70 mL/min/1.73 m². Thyroid-stimulating hormone - 4.5mIU/L and body mass index (BMI) was 34kg/m². Thyroid ultrasound revealed a hypoechoic nodule measuring 0.46 × 0.58 cm was detected in the mid-inferior portion of the thyroid lobe. Strain elastography demonstrated increased stiffness in the anterior portion of the lesion, raising concern for malignancy. Due to suboptimal glycemic control and elevated BMI, initiation of GLP-1 RA therapy was considered. Fine-needle biopsy (FNB) was recommended for the malignancy features on the nodule (hypoechoic nature and the taller-than-wide orientation). Following FNB, the pathohistological findings revealed multiple locally clustered thyrocytes exhibiting features highly suggestive of malignancy. Notable findings included rare atypical intranuclear vacuoles, mild cellular hyperplasia, and nuclear indentations. Based on these suspicious features, surgical intervention was undertaken. Histopathological analysis of the resected specimen confirmed the diagnosis of papillary thyroid carcinoma. The decision to initiate GLP-1 RA therapy in patients with thyroid nodules or a history of thyroid malignancy should be individualized. Clinicians must rely on current evidence and potential risks, emphasizing careful monitoring and caution in therapy planning.

Key points: PTC, GLP-1 RA

PRIMARY PERCUTANEUS CORONARY INTERVENTION WITH DRUG COATED BALLOON IN STEMI PATIENT

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A 48-year-old male presented with an inferior ST-elevation myocardial infarction (STEMI) characterized by ST-elevation in leads II, III, and aVF, with onset of chest pain 60 minutes prior to presentation. Coronary angiography revealed left dominant anatomy with tortuosity and positive remodeling of the coronary arteries and occlusion of the distal circumflex artery. Primary percutaneous coronary intervention (PPCI) was performed using a drug-coated balloon (DCB) due to the complex coronary anatomy instead of stent (DES) implantation. Following thrombus aspiration and predilatation with a 1:1 balloon-to-vessel ratio, a paclitaxel-coated DCB was deployed, achieving Thrombolysis in Myocardial Infarction (TIMI) 3 flow, residual stenosis ≤30%, and no flow-limiting dissection. Recent studies, including the REVELATION trial, showed DCB noninferiority to drug-eluting stents (DES) in STEMI. A 2022 meta-analysis of five randomized controlled trials (528 patients) reported lower late lumen loss (LLL) with DCB (WMD -0.29, 95% CI -0.46 to -0.12, $p<0.001$) and no significant difference in MACE, cardiac death, or target lesion revascularization compared to DES. DCB's advantages include reduced stent-related complications, such as thrombosis, and shorter DAPT duration, particularly beneficial in complex anatomies like tortuous vessels. At one-year follow-up, coronary angiography confirmed sustained vessel patency with minimal LLL and no MACE. This case supports DCB as a safe and effective alternative to DES in STEMI patients with challenging coronary anatomy and minimizing long-term complications.

ROLE OF DRUG-COATED BALLOONS IN THE TREATMENT OF ACUTE MYOCARDIAL INFARCTION

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Abstract
Drug-eluting stents (DES) remain the default interventional treatment for coronary artery disease (CAD) including both chronic coronary syndromes (CCS) and acute coronary syndrome (ACS). Nevertheless, we have been witnessing significantly increased use of the drug-coated balloons (DCBs) as an effective treatment of different clinical scenarios especially in the last decade. DCBs are semi-compliant balloons which represent a novel technology based on special coating that allows delivery of antiproliferative drug (usually Paclitaxel or Sirolimus) locally to the vessel wall during the percutaneous coronary interventions (PCIs). They may offer several potential advantages over DES: no permanent metallic structure in the coronary vessel, preservation of the coronary physiology and vasoreactivity, avoidance of late and very late stent thrombosis, possibility of a future surgical coronary revascularization, potentially shorter duration of the dual antiplatelet therapy, and treatment of specific lesion subsets and patients` clinical scenarios including in-stent restenosis, small vessels, long and diffusely diseased segments, calcified lesions, bifurcation lesions, diabetics, high-bleeding risk patients, acute coronary syndrome etc. DCBs-based PCI requires an optimal lesion preparation using compliant, semi-compliant or non-compliant balloons with a 1:1 balloon-reference vessel diameter ratio. Optimal lesion preparation means residual stenosis <30%, balloon-reference vessel diameter ratio 1:1, TIMI (thrombolysis in myocardial infarction) flow grade 3, and absence of flow limiting dissection (dissection type A and B are acceptable). Handling with DCBs should be careful, avoiding direct contact with the balloon in order not to remove the drug from the surface. Minimum inflation time varies from 30 up to 120 s depending on the manufacturer. When treating coronary lesion, it is important to select at least 4 mm longer DCB than the lesion itself (2 mm proximally and 2 mm distally). We will present a clinical case of patient with an acute myocardial infarction successfully treated with DCB.
Keywords: drug-coated balloon, PCI, acute myocardial infarction.

PATENT FORAMEN OVALE AS A POTENTIAL CAUSE OF CRYPTOGENIC STROKE: A CLINICAL CASE

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Abstract

Background: Patent foramen ovale (PFO) is a persistent interatrial septal communication with a prevalence of 25% in the general population. It is increasingly recognized as a potential contributor to cryptogenic stroke (CS), especially in younger individuals without conventional vascular risk factors. The principal pathophysiologic mechanism is a 'paradoxical embolism' of a thrombus passing through the PFO and entering the arterial circulation. Considering the above, percutaneous PFO closure has been proposed as a strategy for stroke recurrence prevention.

Case report: We present the case of a previously healthy 39-year-old male with sudden-onset of right-sided hemiparesis and dysarthria during physical activity. Brain MRI confirmed an acute ischemic lesion in the left temporoparietal cerebral cortical territory. Initial transthoracic echocardiography revealed thinning and aneurysmal morphology of the interatrial septum at the level of fossa ovalis, with a suspected right-to-left shunt. Subsequent transcranial Doppler with bubble study followed by transesophageal echocardiography demonstrated PFO with moderate-to-large right-to-left shunt. Comprehensive diagnostic work-up excluded conventional etiologies such as atherosclerosis, cardioembolism, and, hypercoagulability, as well as other potential causes of CS, including paroxysmal atrial fibrillation and inherited thrombophilias. Establishing PFO as the probable cause of the stroke, the patient underwent successful percutaneous PFO closure with an Amplatzer PFO occluder and received dual antiplatelet therapy for 6 months. At one-month follow-up, he had no neurological deficits, and echocardiographic reassessment showed the device was well-seated with no residual shunt.

Conclusion: This case underscores the significance of considering PFO as a possible underlying cause of ischemic stroke in young adults without traditional vascular risk factors. Early detection and appropriate percutaneous PFO closure, combined with antiplatelet therapy, have been associated with improved clinical outcomes and a reduction in the risk of recurrent neurological events.

Keywords: Patent foramen ovale, cryptogenic stroke, paradoxical embolism, transesophageal echocardiography, Amplatzer occluder

DISSEMINATED HERPES ZOSTER IN A HEMODIALYSIS PATIENT: A CASE REPORT AND IMPLICATIONS FOR VACCINE ACCESS IN IMMUNOCOMPROMISED POPOULATIONS

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Generalization of the Herpes zoster virus in patients undergoing hemodialysis, due to immunodeficiency, is common. Preventative measures, such as vaccination, are needed to reduce the risk of severe complications, including widespread infection and postherpetic neuralgia, which impact quality of life and health outcomes. We present a case of an 83 year old male patient with ADPKD, and multiple cardiovascular comorbidities who is undergoing hemodialysis. After a hip fracture and surgery, the patient presented with a HZV infection of the ophthalmic branch of the trigeminal nerve. Oral Acyclovir (800 mg twice daily) was initiated. During the subsequent dialysis session, new respiratory and neurological symptoms emerged, raising suspicion of viral dissemination. The patient was referred to the infectious diseases´ hospital, where systemic antiviral therapy was administered. During his hospitalization he continued with the dialysis sessions in our hospital, which enabled observation of the resolution of neurologic symptoms within 7 days of treatment, and the patient's general condition improved. Given the impact of HZV reactivation on hemodialysis patients and the neurotoxic effects of the antivirals, a better management option is needed. At this moment there are two vaccines available for Varicella zoster infection, a live attenuated vaccine and a recombinant subunit vaccine. In North Macedonia, only the live attenuated VZV vaccine is available, which is contraindicated in immunocompromised patients. Ensuring the availability of the recombinant vaccine for this vulnerable population is crucial for protection against Herpes zoster.
Key words: Herpes zoster virus, haemodialysis, VZV vaccines.

"PROSTHETIC VALVE ENDOCARDITIS WITH INITIAL RESPIRATORY PRESENTATION AND SKIN MANIFESTATIONS – A CASE REPORT"

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Infective endocarditis (IE) is a serious infection of the endocardial surface, often involving heart valves. Although typical presentations include fever, heart murmurs, and positive blood cultures, some cases manifest with atypical, extra-cardiac symptoms, complicating the diagnosis. IE is considered the fourth most common life-threatening infection syndrome after sepsis, pneumonia, and intra-abdominal abscess. The variability in clinical presentation of IE and the importance of early diagnosis requires a diagnostic strategy that is prompt for disease detection and specific for its exclusion across all forms of the disease.

In this case report we present a 67-year-old man with a history of aortic valve replacement admitted to UC of Pulmonology and allergology for progressive dyspnea, cough, and fatigue. Initial evaluation suggested a primary pulmonary process raising suspicion for atypical pneumonia or pulmonary malignancy, but these suspicions were ruled out. This case highlights the importance of considering IE in the differential diagnosis of patients with atypical respiratory symptoms and a history of valve replacement, even in the absence of classical signs. Early recognition of the symptom is crucial to avoid delays in appropriate management.

Keywords: prosthetic valve endocarditis, infective endocarditis, pulmonary infiltrates, atypical presentation, echocardiography, purpuric rash, pancytopenia.

CARDIOVASCULAR COMPLICATIONS IN CROUZON SYNDROME: A CASE OF DILATED CARDIOMYOPATHY AND AORTIC STENOSIS

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Crouzon Syndrome is a rare genetic disorder that primarily affects cranial and facial development, yet its cardiovascular complications are often overlooked. This case emphasizes the connection between Crouzon Syndrome, dilated cardiomyopathy, heart failure and aortic stenosis.

A 42-year-old patient presented with fatigue, high blood pressure, and swelling of the lower extremities for four days before admission. On physical examination, a mid-systolic, crescendo-decrescendo murmur was detected, most prominent at the right upper sternal border. His medical history included anticoagulant, antiarrhythmic, and antihypertensive therapy. Laboratory analysis revealed elevated NT-proBNP, high-sensitive troponin, and C-reactive protein levels, prompting urgent evaluation for heart failure. Transthoracic echocardiography showed severe left ventricular systolic and diastolic dysfunction with globally wall motion abnormality, enlarged all heart cavities and marked left ventricular (LV) trabeculation. Echocardiographic examinations showed significant reduction of LV ejection fraction , significant increase of LV dimensions and volumes. Additionally, aortic valve was bicuspid with calcifications and reduced aortic valve function. The echocardiographic analyzes confirmed aortic disease with moderate aortic stenosis. The patient received comprehensive medical management, including diuretics, ACE inhibitors, beta-blockers, SGLT2 inhibitors, mineralocorticoid receptor antagonists, calcium channel blockers, anticoagulants, antibiotics, and gastroprotective therapy. His condition improved significantly with treatment, leading to symptomatic relief and hemodynamic stabilization. Given the severity of his cardiac disease, a follow-up appointment was scheduled at the cardiology clinic after 4 weeks to optimize long-term management and assess the progression of heart failure and valvular dysfunction. This case underscores the importance of early cardiovascular evaluation in patients with Crouzon Syndrome to facilitate prompt diagnosis and treatment of potentially life-threatening complications, such as dilated cardiomyopathy and aortic stenosis
As patients with Crouzon Syndrome age, the risk of developing severe cardiovascular conditions increases, highlighting the need for routine cardiac monitoring and early intervention to manage heart disease and improve patient outcomes.
Keywords: Crouzon Syndrome, dilated cardiomyopathy, aortic stenosis

DOES CORONARY ARTERY DISEASE INFLUENCE NT-proBNP LEVELS IN SEVERE AORTIC STENOSIS?

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Aim: NT-proBNP levels increase in proportion to the severity of aortic stenosis (AS). The aim of this study was to evaluate the significance of NT-proBNP in patients with severe AS, with and without concomitant coronary artery disease (CAD).

Materials and Methods: We analyzed 187 patients with severe AS and preserved left ventricular function (LVEF >50%). Of these, 61 (33%) were asymptomatic (ASAS), followed for 2–36 months, and 126 (67%) were symptomatic (SAS), followed for 3–88 months. Coronary angiography was performed in 142 patients when referral for aortic valve replacement (AVR) was considered, revealing 41 patients with CAD and 101 without CAD. NT-proBNP was measured from serum samples, echocardiography was used to assess AS severity, and coronary angiography was used to evaluate CAD.

Results: In the total cohort (n=187), mean NT-proBNP values (pg/ml) were significantly higher in SAS patients (901±709) compared to ASAS patients (404±425) ($t=5.95$, $df=177$, $p<0.0001$). Symptomatic AS patients with more severe disease demonstrated significantly elevated NT-proBNP levels.

Among patients with severe AS undergoing coronary angiography, mean NT-proBNP was 708.8±558 pg/ml in those without CAD (n=101) versus 830.6±626 pg/ml in those with CAD (n=41). The difference was not statistically significant ($t=-1.13$, $df=140$, $p=0.25$).

In the subgroup of patients with NT-proBNP levels above the study-derived cut-off value of 460 pg/ml, 70 patients (67.3%) had severe AS without CAD compared to 34 patients (32.7%) with severe AS with CAD ($t=3.7$, $df=103$, $p<0.05$). The difference was statistically significant.

Conclusion: In this study, elevated NT-proBNP levels in patients with severe AS were determined by the severity of aortic stenosis rather than the presence of CAD. NT-proBNP proved to be a strong predictor of clinical deterioration in patients with severe AS, regardless of CAD status, with increases attributed solely to stenosis severity.

Keywords: Aortic stenosis, NT-proBNP, Coronary artery disease

AORTIC VALVULAR STENOSIS AND CORONARY ARTERY DISEASE: SHARED THE SAME SYMPTOMS, WHICH IS THE DOMINANT CONDITION?

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Aim: Coronary artery disease (CAD) may influence the manifestation of symptoms in patients with severe aortic stenosis (AS). We hypothesized that patients with severe AS and concomitant CAD would present with earlier symptoms, face a higher risk of adverse events, and experience shorter event-free survival compared to those with AS alone.

Materials and Methods: We analyzed 187 patients with severe AS, both symptomatic and asymptomatic, with severity defined by echocardiographic criteria and left ventricular ejection fraction (LVEF) >50%. An "event" was defined as the onset of symptoms in asymptomatic patients and death in both groups. A total of 142 patients underwent coronary angiography when a decision regarding referral for aortic valve replacement (AVR) was considered. Echocardiography and coronary angiography were the primary diagnostic tools.

Results: Echocardiographic analysis showed significant differences between symptomatic and asymptomatic patients in LVEF, AV Vmax, AV MaxGrad, and AVA ($n=187$, $p<0.0001$ for all).

Among the 142 patients who underwent coronary angiography, 101 (71%) had severe AS without CAD, while 41 (29%) had severe AS with CAD.

Comparing the two groups of pts. with severe AS (with and without CAD), with the distribution of asymptomatic and symptomatic pts., we found that: of all AS patients with CAD, 87.8% have symptoms, compared to 74.3% AS pts. who do not have CAD but have symptoms. Frequency distribution analysis showed no significant difference ($p=0.077$).

Kaplan–Meier survival analysis demonstrated an average event-free survival of 24.7±2.9 months in patients with AS and CAD, versus 27.5±1.9 months in those with AS without CAD. The log-rank test showed no significant difference between the groups ($p=0.35$).

There was no significantly increased risk of earlier event occurrence in AS patients with CAD compared to those without CAD ($p=0.36$).

Conclusion: In our cohort of patients with severe AS (101 without CAD and 41 with CAD), there was no significant difference in event-free survival or risk of adverse event occurrence between groups. The presence of symptoms in severe AS patients in this study was not dependent on the coexistence of CAD.

Keywords: Coronary artery disease, Aortic stenosis

PARADOXICAL AORTIC STENOSIS

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Introduction: Paradoxical aortic stenosis (AS) is one of the four groups of AS and still remains a diagnostic and therapeutic challenge. Its characteristics are: low flow (stroke volume index <35 ml/m²), low gradient (mean gradient <40 mmHg), severe aortic stenosis (AS) with preserved left ventricular ejection fraction (EF >50%).

Case report: Our case concerns a 78-year-old woman with relatively low body surface area (BSA) of 1.6 m². She complained of irregular heartbeats, chest pain, fatigue, and dizziness. Her comorbidities included hypertension and type II diabetes mellitus. She was aware of her moderate to severe AS but had refused an early proposed aortic valve replacement (AVR).

Heart examination revealed arrhythmic action, clear heart tones, and an ejection systolic murmur over the aortic region (grade 3/6). Blood pressure was within normal range. ECG showed atrial fibrillation/flutter with adequate heart rate control. Ultrasound of the carotids demonstrated atherosclerotic changes with increased IMT and plaques. Carotidography, coronary angiography, and peripheral angiography revealed normal findings. CT angiography of the heart and aorta revealed extensive plaques on the aortic annulus and cusps. Echocardiography demonstrated a small left ventricle (LV) with dimensions 40/20 mm (LVEDd/LVEDs) (LVEDd <47 mm), EF 75%. IVS 14–15 mm, PW 11–12 mm, Ao 23/30 mm, LA 45 mm. AVA 0.47 cm² (<1 cm²), AVAi 0.29 cm²/m² (<0.6 cm²/m²), and also mild AR. MV showed calcification of the mitral annulus and cusps with mild MS and mild MR. LAVI 35 ml/m² (<34). LV outflow tract 16 mm (narrowed). LV was small, LVEDV index 20 ml/m² (<55 ml/m²), RWT 0.60 (>0.45). Stroke volume index 36 ml/m² (<35 ml/m²). Valvulo-arterial impedance 4.44 (>4.5). ELI (Energy loss index) 0.298 (<0.5 cm²/m²). Velocity ratio 0.26 (<0.25). Her GLS was –22% (<–16%) as a sign of subendocardial subclinical LV dysfunction. She has concentric LV hypertrophy and small aorta (Ao at STJ 26×28 mm). She was classified as symptomatic severe AS. A TAVI intervention was performed, after which she became asymptomatic, with normal echocardiographic findings.

Conclusions: Paradoxical aortic stenosis may be more prone to prosthesis–patient mismatch following surgical AVR, which is why TAVI is often the better option.

Key words: paradoxical severe aortic stenosis

THE CUT-OFF VALUE FOR NT-PROBNP IN VALVULAR AORTIC STENOSIS FOR OCCURRENCE OF SYMPTOMS

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Aim: We aimed to assess the cut-off value for NT-proBNP in a representative group of patients with severe valvular aortic stenosis (AS) in our country, and its predictive value for the occurrence of symptoms, compared with the most important echocardiographic parameters.

Material and methods: We analyzed 187 AS patients with normal LV function (EF >50%). Asymptomatic patients (ASAS): 61 (33%) monitored for 2–36 months, and symptomatic patients (SAS): 126 (67%) monitored for 3–88 months. When referred for aortic valve replacement, 142 severe AS patients underwent coronary angiography, of whom 41 had CAD and 101 had no significant CAD. We used NT-proBNP (from serum) and echocardiography to assess the severity of stenosis.

Results: ROC analysis for NT-proBNP (pg/ml) showed that the optimal cut-off value to identify the presence of symptoms was 460 pg/ml (sensitivity 85%, specificity 72%, positive predictive value 86%, negative predictive value 70%). The strongest predictive power for the occurrence of symptoms was observed with NT-proBNP 0.806 (95% CI 0.731–0.881, p=0.000), compared to aortic valve area 0.335 (95% CI 0.251–0.418, p=0.000) and maximal transvalvular velocity 0.687 (95% CI 0.606–0.767, p=0.000).

Average survival time was shorter in the group of severe AS patients with NT-proBNP values above 460 pg/ml (p<0.004) (n=187, whole group).

The group with NT-proBNP above the cut-off value of 460 pg/ml had a statistically significant higher risk of events, with HR 1.828 (95% CI 1.079–3.099) (n=101, AS patients without CAD).

Conclusion: NT-proBNP has incremental value as a predictor of future events (disease progression/death) in severe AS. Average survival time was shorter, and the risk of events was higher, in patients with elevated NT-proBNP values. Our cut-off value is comparable to that of other authors, supporting the use of this diagnostic tool in everyday clinical practice.

Key words: NT-proBNP cut-off, aortic stenosis

ACROMEGALY - case report

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Background:Acromegaly is an endocrine disease. It is associated with systemic complications such as cardiovascular, metabolic, type 2 diabetes mellitus, respiratory, tumors and bone diseases.The acromegalic cardiomyopathy is characterized with left and right ventricular hypertrophy, increased contractility, impaired diastolic ventricular filling, ventricular dilatation and systolic dysfunction. The aortic abnormalities are shown as larger dimensions of the aortic root and the ascending aorta in acromegaly patients than in healthy people. The aortic size index (ASI) (aortic diameter (cm)**/**BSA (m2)) is a predictor of adverse aortic events.

Case report: A 27-year old woman was admitted to hospital because of breathlessness. She had mild hypertension treated successfully. One year before, because of eyes problems and severe headaches, a magnetic resonance brain imaging revealed a pituitary macroadenoma, the blood tests showed acromegaly, so she underwent trans-sphenoidal resection of the pituitary tumour. On this admission, she complained of exertional dyspnea and swelling of the ankles. She denied chest pain, cough, hemoptysis, palpitations, or dizzy spells. Her family history was unremarkable. On physical examination there were bilateral ankle swelling, without obvious dysmorphic features. Echocardiography revealed a severely dilated aortic root with a maximum diameter of 10 cm at the level of the sinotubular junction. Dilatation of all four cardiac chambers was also observed. LV systolic function was globally and severely reduced, with LV ejection fraction of 18%. A concentric LV hypertrophy was present. All valves were structurally normal, with moderate aortic regurgitation, mild MR and TR. CT aortography confirmed aneurysmal dilatation of the aortic root and ascending aorta of 9.2 cm. The aortic arch and the descending aorta were of normal dimensions. She received beta blocker therapy as first-line antihypertensive drug therapy. She underwent aortic root replacement with a composite valve-graft conduit and reimplantation of her coronary arteries. Histological examination revealed myxoid degeneration of the resected aorta and aortic valve cusps.

Conclusion: Aortic aneurysms are common in patients with acromegaly. The aneurysms of the aortic root, ascending aorta, or both, are most common (60%) of all. They can occur in some genetic mutations or within syndromes, congenital heart or degenerative conditions, inflammatory and infectious aortitis, hypertension, atherosclerosis, previous aortic dissection or traumatic aortic injury.

The surgery in indicated with class **I** in: 1.patients who have symptoms, 2.asymptomatic patients who have a maximum diameter of ≥5.5 cm, and 3.patients

with an aneurysm of the aortic root or ascending aorta of <5.5 cm, whose growth rate confirmed by CT is ≥0.3 cm/y in 2 consecutive years, or ≥0.5 cm in 1 year.

Key words: Aortic Aneurysms, Acromegaly

For the educational purpose, the case is taken from the internet (Andrew Wiper et al., Exp Clin Cardiol,2012)

A CASE REPORT OF A LIPOLEIOMYOMA UTERI IN POSTMENOPAUSAL WOMAN

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ABSTRACT
Lipoleiomyomas are uncommon benign neoplasms of uterus and their reported incidence varies from 0.03 to 0.2%. Lipoleiomyoma consists of variable proportion of mature lipocytes and smooth muscle cells. These tumors generally occur in asymptomatic obese perimenopausal or menopausal women. We report this case of uterine lipoleiomyoma because of its rarity. A 69-year-old female patient was examined to the Clinic of Gynecology and Obstetrics Skopje with symptoms of pelvic pain. The patient was examined and then hospitalized at our Clinic. Laboratory-Blood analysis showed no signs of anemia, leukocytes 5.9 (4.00 - 10.00 x 10^9/L), erythrocytes 4.58 (4.00 - 6.00 x 10^12/L), hemoglobin 139 (120.0 - 180.0 g/L), 4.00 - 180.0 g/L 0.350 - 0.550 L/L), platelet count 275 (150.0 - 450.0 x 10^9/L). Urinalysis without abnormal findings. Tumor markers within normal limits, PAP smear without cytological abnormalities. Hemostasis factors and D dimers were within normal ranges. First ultrasound finding: ultrasonographic evaluation showed the presence of a tumor formation that was located in the anterior part of the uterus with dimensions 60x62 mm. There were also smaller miomas inside the whole uterus. Anteroposterior diameter of the uterus 60 mm endometrium 3.9 mm, right ovary with normal morphology and dimensions 29.6x15.1 mm, left ovary with morphology with dimensions 23.9 x 15.1 mm. An indication for surgical treatment was given and it was planned that the patient would be operated on as soon as possible. Intraoperative hysterectomy with bilateral salpingoo-ophorectomy was made. The postoperative period was without any complications. She was discharged for home treatment on the 5th day and was scheduled for a control examination after one month. The histopathological finding was lipoleiomyoma uteri. We suggested postoperative first control after 1 month.

Keywords: myomas, lipoleiomyoma, menopausal woman.

A CASE REPORT OF AN EXTRAMAMMARY PAGET DISEASE OF VULVA IN OLDER WOMAN

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Abstract

Paget's disease of the vulva is a rare malignant epithelial neoplasm that most often occurs in postmenopausal women. It is characterized by a clinical picture that often resembles benign dermatological diseases, resulting in delayed diagnosis and treatment. This paper presents a case of a 66-year-old patient, in menopause, with a previous history of excision of a vulvar lesion several years ago, who comes to the clinic due to an exophytic change of the left labia majora, accompanied by a feeling of itching and slight burning. From laboratory studies in addition to tumor markers: CEA=2.18 ng/mL, CA 125=11.33 U/mL, CA 19-9=14.30 U/mL. CA 15-3=11.1 U/mL, CA 72-4=1.6 IU/mL, HE 4.0 = 74.65 pmol/L. Biochemical laboratory analyses: in reference values. After preliminary preparation, a biopsy of the skin lesion was performed on the patient. The histopathological finding confirmed morbus Paget vulvae, with the presence of Paget cells, positive for PAS, CK7 and negative for S100, which confirms the diagnosis of an extramammary form. An MRI of the pelvis was performed: thickening of the skin of the vulva on the left, measuring 30x18mm, without lymphadenopathy and without aggressive infiltration into the surrounding tissue, was shown. Uterus with cervix with an orderly appearance. Hemostasis factors and d-dimers: within reference values. X-ray of the lungs: orderly finding. TVUS of the small pelvis: neat view of the uterus and endometrium, present cystic formation of the left adnexal region, with liquid content of 34 mm, without free fluid in c.Douglasi After preparation and presentation of the patient to the Oncology Council at the University Clinic for Gynecology and Obstetrics in Skopje, it was decided to treat the patient for surgical treatment: vulvectomy simplex, due to proven recurrent Morbus Paget (type 1). In the patient with clinical diagnosis: Morbus Paget genitalis (recurens) type 1, St post excision vulvae aa VIII, the following surgical procedure was performed: Vulvectomy simplex. The obtained materials were sent for HPA. From the sent material for histopathological analysis, the following diagnosis was obtained: VULVAR EXTRAMAMMARY PAGET'S DISEASE, with microscopic confirmation of Paget cells in the epithelium and upper dermis, without invasion of deep structures. The resection margins are negative. pT1b, pNx, pMx, R0 – FIGO Stage IB. The patient was referred to the Oncology Clinic for further therapy and treatment.

Keywords: Paget's disease, vulva, recurrence, histopathology, oncological treatment.

ATYPICAL NON-INFILTRATIVE GASTRIC ADENOCARCINOMA IN AN ELDERLY PATIENT: A Case Report

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Gastric adenocarcinoma frequently manifests with non-specific and subtle symptoms, particularly in elderly individuals, thereby complicating early diagnosis. Prompt endoscopic evaluation remains essential for early detection and improved clinical outcomes. A 75-year-old female presented with progressive dysphagia, epigastric discomfort, and a 10 kg weight loss over two months. Laboratory analyses showed anemia and renal impairment without systemic inflammation. Abdominal ultrasonography revealed a 1.8 × 2.2 cm cystic lesion in the pancreatic region, without solid components or biliary ductal dilation. Both kidneys were reduced in size with decreased parenchymal thickness, while cortico-medullary differentiation remained preserved. Upper gastrointestinal endoscopy demonstrated a non-infiltrative lesion in the proximal stomach, involving the fundus and greater curvature, characterized by irregular mucosa and areas of necrosis. Four biopsy samples were collected for histopathological (HP) examination . Findings from the lower gastrointestinal endoscopy were unremarkable. Histopathology revealed solid and cribriform structures with cells showing hyperchromatic, irregular nuclei and variable cytoplasm—some eosinophilic, others with mucin vacuoles. Signet-ring cells were present, along with inflammatory exudate and ulceration. Findings are consistent with poorly differentiated gastric adenocarcinoma. Further imaging with abdominal and thoracic computer tomography is underway. The patient is stable, with no major comorbidities, and is being assessed for surgical and oncological management. This case highlights the importance of endoscopy in elderly patients with non-specific GI symptoms. In the absence of clear lab markers, histopathology is crucial for diagnosis. A high index of suspicion and early endoscopic evaluation can significantly guide management.

Keywords:Gastric adenocarcinoma; endoscopy; dysphagia; signet-ring cells.

ENDOMETRIAL CANCER AND METABOLIC SYNDROME: A GROWING CHALLENGE FOR N. MACEDONIAN WOMEN

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Abstract

Endometrial cancer ranks as the second most common gynecologic malignancy in N. Macedonia, with an incidence rate of approximately 7.5 per 100,000 women annually (2008–2018 data). The majority (65%) of cases occur in women aged 50 years and older, with postmenopausal women being the most affected group. National and regional studies reveal that over 60% of affected women present with metabolic syndrome components such as obesity (BMI >30 in 58%), insulin resistance, and hypertension. Visceral adiposity promotes peripheral estrogen synthesis via aromatase activity, leading to chronic unopposed estrogen stimulation of the endometrium and increased risk of hyperplasia and carcinoma. Dietary factors, including high poultry consumption common in urban areas, may contribute to estrogenic exposure, while intake of flaxseed, rich in lignans, is linked to protective effects against endometrial proliferation. Though chia seed lacks significant phytoestrogens, it supports metabolic health by improving insulin sensitivity. Women with polycystic ovary syndrome (PCOS), a condition affecting an estimated 8–10% of reproductive-aged women in the region, are at 2–3 times higher risk of endometrial hyperplasia and cancer due to chronic anovulation and hormonal imbalances. Despite limited local data on PCOS-related endometrial pathology, the increasing prevalence of metabolic syndrome underscores an urgent need for focused prevention and early diagnostic strategies. Figures presented in this review are based on official national cancer registry data where available and, when not directly reported, are extrapolated from regional and international epidemiological studies to reflect the most plausible estimates for the Macedonian population. This approach integrates epidemiological and clinical data to highlight the multifactorial nature of endometrial carcinogenesis in North Macedonia, emphasizing metabolic and hormonal interplay and advocating for comprehensive public health interventions.

PHYLLODES TUMOR OF THE BREAST: A CASE REPORT ON SURGICAL MANAGEMENT AND MALIGNANT POTENTIAL

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Phyllodes tumors are infrequent fibroepithelial neoplasms of the breast, representing less than 1% of all breast tumors. These tumors exhibit a distinct biphasic histological structure, consisting of both epithelial and stromal elements, with the stromal component displaying a range of cellularity and levels of proliferative activity. Histologically, phyllodes tumors are categorized as benign, borderline, or malignant. Although benign variants constitute the majority, accounting for approximately 60–70% of cases, their unpredictable biological behavior, coupled with the potential for recurrence or malignant transformation, underscores the importance of detailed clinical, radiological, and histopathological assessment, followed by suitable surgical intervention.

We describe a case of a 42-year-old female who presented with a progressively enlarging left breast mass over five months. She had no significant past medical history, no prior radiation exposure, and no family history of breast cancer.The patient had previously undergone a lumpectomy of the same breast for a rapidly growing lesion, but histology at that time had not been conclusive. Since then, she reported continued growth in the same region. Given the tumor's size, rapid growth, and incomplete prior excision, a total left mastectomy was performed. The patient's postoperative recovery was uneventful, and histology confirmed a benign tumor with negative margins. The prognosis is excellent, with life expectancy unaffected; however, regular follow-up is warranted due to the recurrence risk.Imaging with bilateral breast ultrasound and mammography revealed postoperative changes in the left breast and a benign-appearing fibroadenoma in the right breast.

This case emphasizes the importance of accurate diagnosis, and. achieving complete surgical excision with adequate margins, and maintaining vigilance for recurrence or malignant transformation. Awareness of the malignant potential and strict adherence to margin-negative resection principles are critical for optimal patient outcomes. Long-term survival in benign cases is excellent, provided adequate surgical management and follow-up are ensured

Key word : Phyllodes tumor, breast cancer , malignant potential

MANAGEMENT OF STAGE IB ENDOMETRIAL ADENOCARCINOMA: A CASE STUDY OF ADENOCARCINOMA ENDOMETRII ENDOMETROIDES G2/NG2

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Introduction:

Endometrial adenocarcinoma, specifically Adenocarcinoma Endometrii Endometroides G2/NG2, is a common malignancy of the uterine lining, predominantly affecting postmenopausal women. This case study discusses the management of Stage IB disease, characterized by tumor confinement to the uterus with invasion of the outer half of the myometrium but no cervical involvement.

Case Presentation:

A 61-year-old female patient was diagnosed with Adenocarcinoma Endometrii Endometroides NG2, with no cervical invasion (TNM-8/FIGO pT1b). The diagnosis of Stage IB indicated early-stage disease with no evidence of lymphatic spread (pNO). The treatment plan focused on curative surgery and comprehensive staging, including a hysterectomy with bilateral salpingo-oophorectomy (HTA cum BSO) and pelvic lymphadenectomy. A Pfannenstiel incision was utilized for optimal access and postoperative outcomes.

Histopathological Findings:

Histopathological analysis confirmed the diagnosis of G2/NG2 adenocarcinoma with FIGO Stage IB. The absence of extrauterine disease suggests a favorable prognosis.

Management and Follow-up:

Postoperative management included referral to the Oncology Department for potential adjuvant therapy and regular follow-up to monitor for recurrence. The patient's treatment approach was guided by the stage and grade of the tumor, with an emphasis on early intervention and rigorous surveillance.

Conclusion:

Early-stage endometrial adenocarcinoma has an excellent prognosis with timely surgical intervention and proper postoperative care, especially when cervical invasion and lymphatic spread are absent. Regular follow-up is critical to detect any recurrence at the earliest stage for optimal patient outcomes.

SEROUS CYSTADENOFIBROMA IN A PERIMENOPAUSAL WOMAN WITH A PERSISTENT COMPLEX OVARIAN CYST: DIAGNOSTIC CHALLENGES AND SURGICAL MANAGEMENT

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Abstract:

Persistent ovarian cysts in perimenopausal women pose a significant diagnostic and therapeutic challenge due to an increased risk of malignancy and the limited reliability of imaging and serum biomarkers for accurate preoperative risk assessment. We present the case of a 46-year-old woman (born in 1978) with a history of irregular menstrual cycles and secondary amenorrhea for six months, with her last menstruation on February 25, 2025. The patient reported a known left ovarian cyst diagnosed six years earlier, which had been under conservative monitoring.

Recent transvaginal ultrasound revealed a normal anteverted, flexed, longitudinal uterus (AVFL) and a complex cystic formation in the left ovary measuring 62 mm in diameter, containing intraluminal proliferative elements. No free fluid was detected in the pouch of Douglas. The right ovary appeared morphologically normal. Tumor markers including CA 125, CA 19-9, CA 15-3, and carcinoembryonic antigen (CEA) were within reference ranges. A Pap smear performed in September 2024 showed inflammatory changes without cytological atypia.

Given the persistence and complexity of the lesion, surgical intervention was recommended. The patient underwent left adnexectomy via Pfannenstiel transverse laparotomy.Intraoperative findings showed no ascites, peritoneal implants, or evidence of malignancy. The uterus and contralateral adnexa appeared normal.

Histopathological analysis confirmed the diagnosis of serous cystadenofibroma, a rare benign ovarian tumor composed of serous epithelial and fibrous stromal components. Despite its benign nature, this tumor's solid-cystic morphology can mimic malignancy on imaging, complicating preoperative diagnosis.

This case underscores the importance of a comprehensive diagnostic workup—including imaging, biomarkers, clinical history, and timely surgery—in the management of persistent complex ovarian cysts in perimenopausal women. Histopathology remains the gold standard for definitive diagnosis and guiding appropriate treatment.

RUPTURED CORNUAL ECTOPIC PREGNANCY WITH PARTIAL HYDATIDIFORM MOLE AND LEIOMYOMA: CASE REPORT

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Key words: cornual ectopic pregnancy, partial hydatidiform mole

Background:

Cornual ectopic pregnancies are rare but pose significant risks due to potential catastrophic hemorrhage and complex surgical management. This report describes a 30-year-old female with a cornual ectopic pregnancy and a history of left adnexectomy, highlighting the need for timely intervention to prevent complications like hemorrhagic shock and uterine rupture.

Case Presentation:

A 30-year-old female, previously treated with left adnexectomy for ovarian fibroadenoma, presented with symptoms suggestive of ectopic pregnancy. Ultrasound confirmed a cornual ectopic pregnancy with hemoperitoneum and secondary anemia. Her β-hCG level was 99,576.8 mIU/mL, and a subserosal leiomyoma was incidentally found. Due to risks of uterine rupture and significant hemorrhage, urgent surgical intervention was planned.

Surgical Management:

An exploratory laparotomy via Pfannenstiel incision revealed 300 mL of partially coagulated blood in the peritoneal cavity. Peritoneal lavage was performed, and the ruptured cornual ectopic pregnancy in the left uterine horn was excised. A myomectomy removed the leiomyoma, hemostasis was achieved, and a drain was placed in the Douglas pouch. Re Curettage evacuated residual trophoblastic tissue.

Histopathological Findings:

Histopathology revealed a partial hydatidiform mole with necrotic decidual tissue, edematous chorionic villi, and multi-polar trophoblast. Positive p57 staining confirmed the diagnosis. The leiomyoma showed smooth muscle proliferation with apoplexy and microcalcifications. Decidualized endometrial tissue indicated gestational changes.

Postoperative Course:

The patient recovered well, receiving erythrocyte transfusions, antibiotics, thromboprophylaxis, rehydration, and uterotonics. Hemoglobin improved from 87 g/L to 101 g/L, and β-hCG decreased to 16,557.5 mIU/mL, indicating resolution.

Conclusion:

Cornual ectopic pregnancies, though rare, require prompt surgical intervention due to high hemorrhage risk. The presence of a partial hydatidiform mole necessitated careful histopathological analysis and β-hCG monitoring to manage potential persistent trophoblastic disease effectively.

HISTOPATHOLOGICAL FINDINGS IN PATIENTS WITH ULTRASONOGRAPHICALLY DETECTED ENDOMETRIAL POLYP

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Introduction. Endometrial polyps are defined as the excess hyperplastic growth of endometrial glands and stroma within the uterine cavity. They vary in size from a few millimeters to several centimeters. Polyps may be found as a single lesion or multiple lesions filling the entire endometrial cavity. Endometrial polyps may be diagnosed at all ages but the highest incidence is between 40 - 49 years of age. They are considered benign but there is a small risk of malignant transformation. The aim of this study is to determine the correlation between the ultrasound findings of endometrial polyp and the histopathological reports.

Material and methods. We analized a total of 140 histopathological reports from patients who underwent fractionated explorative curettage or hysteroscopy due to ultrasonographically diagnosed endometrial polyps. The histopathological findings showed that in 112 (80%) the diagnosis of endometrial polyp was confirmed and 78 of these were hyperplastic polyps (69.6% of the total number of endometrial polyps), 5 polyps with atypical hyperplasia (4.5%), 1 (0.9%) malignant polyp (adenocarcinoma), 5 senile polyps (4,5%). Endocervical or isthmicocervical polyp were diagnosed in 12 patients (8.6%). The remaining 28 patients (20%) had these findings: simplex endometrial hyperplasia without atypia (6 patients), complex endometrial hyperplasia without atypia (1), complex endometrial hyperplasia with atypia (1 patient), submucosal myoma (3), adenomyoma (1), prolonged and inadequate estrogen action (8), deficient secretory phase (3), chronic cervicitis (3), and normal endometrium in 2 patients.

Conclusion: Transvaginal ultrasound is the first line of investigation while evaluating the endometrium. Its accuracy is limited in the diagnosis of focal endometrial lesions, so the further investigation is needed. Hysteroscopy is the gold standard for accurate evaluation of intracavitary pathology like submucous fibroid, polyps or anomalies.

Key words: endometrial polyp, ultrasound, curettage, hysteroscopy, histopathological

UNUSUAL FINDING OF HYPERCOAGULABILITY IN A PREGNANT WOMAN WHO HAD 2 SPONTANEOUS ABORTIONS (8 WEEKS AND 13 WEEKS OF PREGNANCY)

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Introduction: This paper presents the monitoring of a pregnant woman with congenital thrombophilia, the medical treatment – from the first weeks of pregnancy until the end of the pregnancy.
Case Presentation: A 36-year-old pregnant woman, 8 weeks pregnant, came for a check-up with me on 19.07.2024, following the recommendation of her gynecologist to undergo laboratory tests at the STM-Kumanovo (hemostasis and D-dimers). Her medical history included 2 spontaneous abortions (at 8 weeks and 13 weeks of pregnancy). Genetic testing for thrombophilia was also conducted, which showed the following findings – heterozygosity in F13, FGB, MTRR, and homozygosity in ITGA2, MTHFR677, PAI-1.
The laboratory results were normal (hemostasis was normal, and D-dimers were 190 ngr/ml), but I prescribed LMWH (Amp. Clexane 0.4 ml 1x1).
She regularly visited every month for laboratory tests – on 13.08.2024 – D-dimers were 370 ngr/ml, on 03.09.2025 – 470, on 01.10.2025 – 510, on 29.10.2024 – 950, then on 26.11.2024 – 1110, on 10.12.2024 – 1050, on 27.12.2024 – 1140, and on 28.01.2025 – 1479. On 11.02.2025 – 1720, and on 13.02.2025, she delivered via Cesarean Section, and on 28.02.2025 – 1870.
Objective: The purpose of this paper is to demonstrate the importance of anticoagulant therapy, without which this pregnant woman would have hardly been able to have a successful pregnancy outcome.
Conclusion: Good communication between the transfusiologist and the gynecologist in such cases is crucial for successful thromboprophylaxis in pregnant women with congenital thrombophilic abnormalities.
Keywords: thrombophilia, anticoagulant therapy.

A CASE OF A LYME DISEASE IN THE SECOND TRIMESTER OF PREGNANCY

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Introduction: Lyme disease is the most common tick-borne disease in North America and Europe and it is caused by spirochetal bacteria Borelia burgdorferi. Early symptoms of infection include a characteristic rash (erythema migrans), fever, headache and lethargy. If untreated, the disease may affect the heart, nervous system and joints. Regardless of whether maternal exposure to B. burgdorferi occurs before conception or during pregnancy, it does not appear to be associated with fetal death, prematurity or risk of congenital malformations. Even documented infection of the placenta with B. burgdorferi has not been linked to adverse pregnancy outcomes. Also, there have been no reported cases of transmission of B. burgdorferi via breast milk. Antibiotics used during pregnancy are amoxicillin or cephalosporins, 14-21 days. **Case report:** A 24-year-old primigravida, at 23 weeks of gestation, reported that 3 weeks earlier she had been bitten by a tick that had not been removed by a surgeon. A change appeared as a red ring of about 10 cm in the gluteal region on the right, as well as joint pain, without fever. She was examined by an infectious disease specialist. Serological tests were performed and a high titer of IgG and IgM antibodies for Borelia burgdorferi sensu lato were detected. Antibiotic therapy Amp. Ceftriaxone 2gr/day was administered for 14 days, which prevented further complications in mother or fetus. **Conclusion**: With this case, we want to point out that Lyme borreliosis is present, that a tick bite is serious and requires an examination by a surgeon and an infectious disease specialist, in order to properly remove the tick and prevent the occurrence of this disease, which is possible even during pregnancy. It is also important to be aware of its symptoms, in order to start antibiotic therapy before more serious complications arise.

Key words: Lyme disease, tick-born disease, Borelia burgdorferi, erythema migrans

THE ROLE OF ELECTROOCULOGRAPHY IN OPHTHALMOLOGY: PRINCIPLES, APPLICATIONS AND DIAGNOSTIC VALUE

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The electrooculogram (EOG) is an electrophysiological test that assesses the function of the retinal pigment epithelium (RPE) and its interaction with photoreceptor cells. Although it is performed less frequently than the electroretinogram (ERG) and visual evoked potentials (VEP), it plays a unique and complementary role in the evaluation of certain retinal and systemic diseases.

The EOG records standing potentials between the cornea and retina during horizontal eye movements, in both dark and light conditions. The standard EOG includes dark and light adaptation phases lasting 15 minutes each. The main diagnostic parameter is the Arden ratio, calculated by dividing the light peak by the dark trough amplitude. The normal Arden ratio is typically ≥1.8; values between 1.65-1.79 are borderline, while values <1.65 indicate abnormal RPE function. In severe RPE dysfunction, the Arden ratio may fall below 1.2.

This test is particularly useful for diagnosing inherited and acquired RPE disorders. It is used when RPE dysfunction is suspected and the ERG is normal or inconclusive. Its main indication is Best-vitelliform macular dystrophy, where the EOG is significantly pathologically altered, while the ERG is almost normal. It is also used in pattern dystrophies, some variants of pigmentary retinopathy, paraneoplastic syndromes (e.g. cancer-associated retinopathy), and toxic retinopathies (e.g. chloroquine/hydroxychloroquine-induced retinopathy). In differential diagnosis, it helps distinguish Best's dystrophy from central serous chorioretinopathy or adult-onset vitelliform maculopathy.

Patient cooperation is essential, which makes it difficult to perform in uncooperative patients or young children. EOG does not localize lesions, i.e. it has limited spatial resolution.

Despite its reduced use in the era of modern ophthalmic imaging techniques, EOG remains an important, non-invasive tool in certain retinal and systemic diseases affecting the RPE, and can be a key element in establishing the diagnosis in complex clinical scenarios.

Keywords: electrophysiology, ophthalmology, electrooculogram, retinal pigment epithelium, retina.

DOUBLE CHALLENGE IDENTIFICATION PROCEDURE IN CARBONIZED BODY

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Abstract
The forensic identification of carbonized human remains presents significant challenges due to the thermal degradation of biological tissues. Forensic DNA analysis in such contexts, emphasizing strategic sampling from heat-resistant structures such as teeth, cortical bone, and the petrous portion of the temporal bone is essential for successful DNA recovery and identification. We present a case of a severe carbonized body, in which an autopsy determined that it was a male body. For DNA analysis, clotted boiled blood was taken from the abdominal part of the aorta. Extraction of DNA was done on AutoMate Express Forensic DNA Extraction System using PrepFiler BTA Forensic DNA Extraction Kit. Amplification was done with a GlobalFiler PCR Amplification Kit and the analyses were run on capillary electrophoresis on 3500 Genetic Analyzer. To determine the identity of the death body from the presumed sister of the deceased, biological material was taken. With the statistical program DNA View a percentage of probability for determining identity was obtained up to 99.99%. Our case demonstrates that, even in extensively burned remains, usable DNA can often be recovered and reliably interpreted through the application of robust statistical models and appropriate reference comparisons. This case underscores the necessity of integrating classic forensic identification procedure by performing an autopsy flowed by molecular techniques with statistical genetics to enhance the accuracy and reliability of forensic identification in fire-related accidents.

Key words: Identification, Forensic genetics, Kindship, Fire accident, Carbonized body

RE-EMERGING PENICILLIN-SENSITIVE STAPHYLOCOCCUS AUREUS IN ISOLATES FROM THE INSTITUTE OF MICROBIOLOGY

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Penicillin once was used as antibiotic of choice for *Staphylococcal* infections. Since 1960, over 80% of *Staphylococcus aureus* strains became resistant to penicillin, and later also to methicillin. MRSA became global problem as a cause of nosocomial outbreaks. This is a prospective study aimed at detecting re-emerged sensitivity to penicillin in the Macedonian population, with the goal of initiating a revision of existing rigid laboratory protocols for antimicrobial sensitivity testing. Isolates were collected during routine work at the Institute for microbiology and parasitology, UKIM. Conventional microbiological procedures for identification and disk diffusion method for antibiotic sensitivity were used to detect PSSA (penicillin-susceptible *S. aureus*) (with diameter .35mm). Confirmation was performed using the automated VITEK technique. As of December 2024, 21 strains of PSSA have been detected from various samples (sputum, ear, skin, canula, etc.). Trending detection of "re-emerging" PSSA - even pan susceptible PSSA strains in vitro – contradicts the dogma of existing stable lines of resistant phenotypes. A potential explanation for re-emergence of PSSA might be the reduced use of narrow spectrum antibiotics such as penicillin G, since 2000. The use of first-generation cephalosporins and oxacillin in hospitals may also have contributed to conditions favorable for PSSA selection. In conclusion, the observed trends in the isolation of MRSA, MSSA or PSSA on a strain level and the abandonment of previously mentioned dogmas could open opportunities for penicillin to be used in infection treatment once again.

OPHTHALMOMYIASIS EXTERNA – A REPORTH OF THREE CASES

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Abstract: Ophthalmomyiasis caused by Oestrus ovis was first documented in 1974. While human cases of myiasis are uncommon, they are more frequently observed in areas with inadequate hygiene and in regions where sheep and goat farming is widespread. The condition tends to occur more often during the spring and summer months. The larvae of the sheep fly, Oestrus ovis, are the primary cause of ophthalmomyiasis, a zoonotic disease. The women Oestrus ovis keeps her eggs inside her body until they hatch, after which she usually puts her larvae in sheep and goats. The condition is primarily caused by Oestrus ovis and presents in two forms: external and internal. Internal ophthalmomyiasis occurs when the larvae penetrate the eyeball, potentially reaching and damaging the retina. While the external form is self-limiting, the internal form may lead to severe vision loss. This study presents and analyzes three cases of external ophthalmomyiasis along with their management approaches. The skin, eye, nose, paranasal sinuses, throat, intestine, and urogenital tract are among the anatomical locations where it is known to occur. The most prevalent kind of ophthalmomyiasis is conjunctival myiasis, which is a benign, self-limiting condition that is comparatively mild. Roughly 5% of all human myiasis cases involve an ocular manifestation. Ophthalmomyiasis externa can present with a variety of clinical signs, including typical conjunctivitis, pseudomembranous conjunctivitis, blepharoconjunctivitis, punctate keratitis, and keratouveitis. Based on the symptoms, eye pain is typically preceded by itching (pruritus), conjunctival redness (hyperemia), a sensation of a foreign body in the eye, and excessive tearing (lacrimation). These early ophthalmomyiasis externa symptoms could be mistaken for conjunctivitis. Since the larva can be seen moving in all directions from the side, detection and diagnosis are made much easier. The foundation of the treatment is the manual extraction of every larva under local anesthesia, which is followed by eye washing or rinsing and local therapy. It's always better to prevent than to cure. Significant ophthalmomyiasis complications can be avoided with proper personal hygiene. Three cases of ophthalmomyiasis were identified and treated at the Shtip Clinical Hospital in the Republic of North Macedonia in 2025. It is typical that all of the patients are men from rural areas who work in agriculture and animal husbandry. For farmers and shepherds, myiasis should be regarded as an occupational disease.

Keywords: Ophthalmomyiasis, Oestrus ovis, pruritus, therapy.

MANAGEMENT OF FOLEY CATHETER RETENTION: A CASE REPORT

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Urinary catheterization is one of the most commonly performed bedside procedures worldwide. Mechanical complications during Foley catheter removal, while not rare in urological practice, can pose significant diagnostic and therapeutic challenges. We present a case of a retained Foley catheter in an 81-year-old male with a long-term history of benign prostatic hyperplasia and indwelling catheter changes on regular basis, often with encrustations. A resident doctor performed what was supposed to be regular balloon deflation, but failed to release the catheter. Subsequent attempts to remove the catheter were also unsuccessful and exacerbated the patient's condition, resulting in severe lower abdominal and perineal pain followed by blood at the meatus, after which a urologist was consulted. Fluid could neither be evacuated nor injected in the balloon port, with the catheter fully immobile. An X-ray with small amount of contrast injected in both catheter channels revealed an incompletely deflated balloon retained in the urethra, along with a completely obstructed catheter drainage channel. After cutting distal to the balloon valve proved unsuccessful, a tiny metal guidewire from a ureteral stent was slowly advanced through the balloon channel, successfully puncturing the balloon with instant catheter release and symptom resolution. Post-intervention retrograde urethrography revealed progressive urethral dilatation with a minor urethral rupture which was managed conservatively with a gentle placement of a Tiemann catheter. This case highlights the diagnostic and therapeutic challenges associated with a retained Foley catheter and demonstrates that alternative approaches, such as catheter balloon puncture with a ureteral stent metal guidewire, can prove as an effective, safe and least invasive solution.

Keywords: Foley catheter retention, ureteral stent metal guidewire, incomplete balloon deflation, catheter encrustations, urethral trauma,

SPONTANEOUS VAGINAL DELIVERY AT 38+6 GESTATIONAL WEEKS IN A PREGNANCY COMPLICATED BY VULVAR VARICES: A CASE REPORT

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Abstract
Background: Vulvar varices, though relatively rare in pregnancy, can pose a clinical challenge due to concerns over complications during delivery. While most cases are asymptomatic and resolve postpartum, extensive varices on vulvar region, raise questions regarding the type of delivery.
Case: We report the case of a 29-year-old multigravida (Gr2; P1) at 38 weeks and 6 days of gestation with one previous spontaneous vaginal delivery without complications. Extensive vulvar varices were diagnosed during the current pregnancy. Her medical history also includes lumbar disc hernia and chronic lumboischialgia. There was no history of venous thrombosis or coagulation disorders. The patient reported mild discomfort due to the varices but no bleeding or skin ulceration. Despite significant vulvar varices, she underwent successful spontaneous vaginal delivery without major complications. The newborn female weighed 3100 g, measured 50 cm, and had Apgar score of 8 / 9 at 1 and 5 minutes. The spontaneous delivery was accomplished without episiotomy; only a minor perineal tear occurred which was successfully sutured. No signs of hematoma or secondary bleeding from the varicosities were observed. The patient reported a noticeable decrease in vulvar swelling within the first 72 hours postpartum.
Conclusion: Patients with this kind of history deserve a chance for a spontaneous delivery, in order to avoid cesarean section. This case highlights that vulvar varices, even if prominent, are not an absolute contraindication for vaginal delivery. Proper antenatal surveillance and individualized delivery planning are crucial for optimal outcomes.

SOCIAL MEDICAL ASPECTS OF DIABETES IN THE REGION OF STRUMICA, 2020-2023

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Aim: To present the morbidity and mortality from diabetes in the region of Strumica for the period 2022-2023.

Material and metods: Data from the diabetes register were used, where family doctors register patients and deliver them to the Social Medicine Service at the Public Health Center - Strumica. A socio-medical and retrospective analytical descriptive method was used.

Results: The rate of total number of diagnosed cases (morbidity) was 33,1 per 1000 inhabitants in 2020, 29,2 per 1000 in 2021, 36,2 per 1000 in 2022 and 22,9 per 1000 in 2023. The rate of newly diagnosed patients (incidence) was 4,4 per 1000 inhabitants in 2020, 3,1 per 1000 in 2021, 2,9 per 1000 in 2022 and 2,6 per 1000 in 2023. A total of 27 patients with diabetes diagnosis died during the entire period.

Conclusion: The number of patients with diabetes has been increasing year by year, reaching epidemic proportions, but in 2023 a sharp decline was noted. Preventive measures that can be taken to reduce the number of diabetes cases largely involve changes in lifestyle towards healthier habits, as well as early detection and good diabetes control. Key words: diabetes, morbidity, mortality, prevention

A CASE REPORT OF BULIMIA NERVOSA DUE TO EXCESSIVE VOMITING, ACUTE PSYCHOSIS AND SLEEPING DISORDER IN 15-YEARS-OLD FEMALE MIDDLE ADOLESCENT

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Introduction: Eating disorders in the form of anorexia and bulimia nervosa are becoming increasingly common in young adults and children worldwide. Most of the chidlren and adolscents are initially seen by their general practitioner (GP) and, it may take several months, before the facts are pieced together and an underlying eating disorder is identified. However, other medical conditions, albeit rare, should be considered when assessing these young adults, as potentially missing them can lead to devastating consequences.

Case description: A 15-years-old female patient comes to the Urgent Pediatric Centre at the PHI "Acibadem Sistina", Clinical Hospital, with chief medical concerns of several vomiting, dehydration, lost appetite, hypoglycemia and excessive loosing gain. After initial clinical and physical exam and due to the symptoms, laboratory analyses were order. Due to the symptoms and general clinical condition, the child was immediately hospitalize at the Department of Pediatrics. CT scan of the head, showed normal anatomical and functional structures of the brain, without any morphological lesion. Due to intensive psychic and neurological problems, sleep deprivation and intensive vomiting, an urgent consultation with pediatric and adolescent psychiatrist was indicate. The pharmacotherapy was urgently include and the patient started to feel better, the clinical symptoms started to withdraw and in the next days the patients was discharge from the hospital with given recommendations for regularly checkup during outpatient exams.

Conclusion: Nowadays all of the specialists working in either primary care units or secondary/tertiary care units should be aware that neurological behaviors disorders and eating disorders can easily mimic the situation and could not be properly diagnose. Working as a team and practicing holistic approach to these specific symptoms in patients' means a lot towards appropriate treatment and better outcomes for our pediatric patients and adolescents in the near future.

Keywords: bulimia nervosa, acute psychosis, sleep deprivation, vomiting, psychopathology, child and adolescent psychiatry

A RARE CASE REPORT OF CONSECUTIVE CYST-DIVERTICULUM OF DUODENUM AFTER REDUCTION OF TWO DUODENAL CYSTS IN 1-YEAR-OLD MALE

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Introduction: Duodenal diverticulum (DD) is a commonly encountered entity in gastrointestinal pathology with a wide variety of appearances and in fact it represents a second most common location for a diverticulum to form, after the colon itself. These duodenal diverticula (DD) are often found incidentally and rarely require intervention. We present a rare case of duodenal duplication cyst after previous reduction of the duodenal cysts, located in the second portion of the duodenum necessitating surgical correction.

Case presentation: A 1-year-old boy, with CT and RTG previously confirmed, surgically treated and biopsied two duodenal cysts, was referred to our department via pediatrician, due to abdominal difficulties and general weakness. After the initial clinical exam and due to clinical and laboratory tests, imaging investigations such as ultrasound, and computer tomography were indicated. Ultrasound investigation was normal, while CT scan of the abdomen showed cyst mass (48 mm) in duodenum with clearly delineated wall itself. The mass pushed the duodenum medially and gallbladder laterally altogether with portal vein and retroperitoneal towards the liver. Immediate indication for surgical treatment was decide so the child has undergone surgical treatment. Using medial median laparotomy, with its exploration, a cystdiverticulum located in pylorus was find and a total resection of the cyst was make altogether with omentopexy. 5th postsurgical day an gastroduodenography showed no extravasation of the contrast outside of the alimentary tract. Post-operative checkups are regularly doing without any pathological findings.

Conclusion: In recent years, surgical management has been restricted to patients with significant complicated sequels, such as perforation, abscess, or fistula formation. The importance of imaging methods are essential towards the right and precise diagnose protocol of the pediatric patients. Adequate management and modern approach to the duplication cyst of the duodenum means multi-disciplinary approach and better outcome for the patients.

Keywords: cyst-diverticulum, duodenal cysts, pediatric surgery, management

PLACENTAL SITE NODULE : A RARE CASE REPORT

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Placental site nodule is a rare, benign non neoplastic lesion of intermediate trophoblastic origin which is thought to represent incomplete involution of the placental implantation site. It is often discovered incidentally in women in reproductive period during evaluation for abnormal uterine bleeding. Althought typically not harmful, they can sometimes mimic more serious condition,requiring careful diagnosis.It can be associated with recurrent pregnancy loss , infertility, history of prior intrauterine instrumentation and chronic endometritis.

We present a case, 30- year old women who developed abnormal uterine bleeding one year after a full term vaginal delivery. From obstetric history,one pregnancy ended with vaginal delivery of the fetus in term without complication.She had no other interventions on the uterus.Transvaginal ultrasound revealed an intrauterine lesion suspected to be an endometrial polyp. A diagnostic endometrial curettage was performed to evaluate for the endometrial pathology. The obtained tisssue was sent for histopathology analysis . According to the described morphology and immunohistochemical analysis during the histopathological examination of the endometrial tissue ,finding corresponds to a placental site noule : a small 4 mm nodule composed of intermediate trophoblastic cells of chorionic type embedded in markedly hyalinized stroma. The trophoblastic cells very in size, from relatively small with uniform nuclei to cells with abundant eosinophilic to ampholphilic cytoplasm (PLAP +,BHCG-) .At the next check-up immediately after curettage, the endometrium was 10 mm , without pathological lesions intracavitary. Serum B - human chorionic gonadotropin was negative. On follow - up, the patient had regular menstruation and serum B-human chorionic gonadotrpin was negative.

Placental site nodule should be considered in the differential diagnosis of intrauterine lesions, especially in women with recent pregnancy history .Timely and accurate diagnosis is essential to distinguish Placental Site nodule from malignant conditions,avoiding unnecessary interventions. Appropriate clinical management ensures optimal outcomes and reduces the risk of complication or misdiagnosis. Early recognition and follow - up are the key to minimizing long term consequences for women's reproductive health.

Key words: placental site nodule, abnormal uterine bleeding, curettage, histopathology

PERINATAL AND EARLY NEONATAL MORTALITY IN A FIVE-YEAR PERIOD IN SBGA – CHAIR

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Perinatal mortality (PM) is a rate that combines fetal and early neonatal mortality (ENM), and is an indicator of the socio-economic development of a particular country, indicating the efficiency of antenatal, perinatal and neonatal health care.

THE AIM of the paper is to analyze the rates of PM and ENM in SBGA-CHAIR in the five-year period from 2020 to 2024.

MATERIAL AND METHODS - A retrospective analysis of medical documentation was performed using the histories of the studied group as well as the database of the neonatal department. Stillbirth, early neonatal mortality, and perinatal mortality were calculated according to standardized formulas for each year separately.

RESULTS - During the five-year period, a total of 19,289 deliveries were realized in SBGA-Cair, resulting in 19,225 live births and 63 stillbirths. In the early neonatal period 8 newborns died, and including those transferred to a tertiary institution, the total number of deaths was 14. The paper tabulates the rates of stillbirth, early neonatal and perinatal mortality by year, with these indicators showing a decreasing trend. Analyzing the structure of PM, fetal mortality is maintained at the same level, unlike ENM, which shows a decreasing trend. Early neonatal mortality is most often due to extreme prematurity and congenital malformations.

CONCLUSION - In order to further reduce the rate of PM, it is crucial to reduce fetal mortality with improved antenatal care, take measures to reduce premature birth, timely detection of life-threatening congenital anomalies with the aim of planned delivery in a tertiary center. Overall engagement of the wider community and a long-term strategy is necessary to achieve a rate similar to more developed countries.

PULMONARY THROMBOEMBOLISM PROVOKED BY A HOLIDAY TRIP

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Background: The incidence of pulmonary embolism (PE) in apparently healthy individuals is estimated at 15–35 cases per 100,000 people per year. Sedentary behavior independently increases the risk of venous thromboembolism-VTE (deep vein thrombosis-DVT and PE). Prolonged immobility during travel is a recognized transient risk factor.

Case report: A 52-year-old female with a medical history of hypertension and rheumatoid arthritis presented with progressive dyspnea, chest tightness, fatigue, and swelling of the left calf, two days after returning from a one-day bus excursion to Greece. On admission, her oxygen saturation was 75%, BP 129/80mmHg, and HR 95 bpm. Physical examination revealed a tender, edematous left lower limb. Laboratory results showed elevated D-dimer (4,482µg/L), troponin I (589ng/L), and NT-proBNP (3,563pg/mL). CT pulmonary angiography demonstrated an extensive “saddle-type” thromboembolism extending from the bifurcation of the pulmonary trunk into both main pulmonary arteries, with additional segmental and subsegmental branch involvement bilaterally. Echocardiography revealed RV dilatation, RV/LV ratio > 1, D-shaped left ventricle, reduced RV systolic function (TAPSE 13mm, sTDI 9cm/s), and a suspected thrombus in the right pulmonary artery. Duplex ultrasound of the lower limbs confirmed acute DVT with non-compressible left popliteal and femoral veins. The Wells score was 7.5 and the simplified PESI (sPESI) score was 2. Treatment included unfractionated heparin, supplemental oxygen, and intravenous ceftriaxone. On hospital day two, oral apixaban (10 mg twice daily) was initiated for 7 days, followed by 5 mg twice daily for a minimum of 3 months. The patient experienced clinical improvement, stabilization of oxygenation, complete normalization of cardiac function, although the McConnell sign and pulmonary artery dilatation on echocardiography were still present.

Conclusion: This case highlights the potential for acute massive PE with right ventricular dysfunction following prolonged sitting during travel. Early recognition of travel-related thrombosis risk, prompt imaging-based diagnosis, and timely anticoagulation therapy, including early transition to a NOAC, are essential to prevent hemodynamic deterioration and optimize outcomes.

Keywords: pulmonary thromboembolism, deep vein thrombosis, travel-associated thrombosis, echocardiography, NOAC

FOLLOW UP OF A PATIENT WITH MULTIPLE PRIMARY MELANOMAS – CASE REPORT

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Abstract

Introduction: Melanoma of the skin accounts for about 10% of all skin cancers. Patients with single primary melanoma of the skin have an increased risk of developing other malignances (melanomas and non-melanoma skin cancers). Some of them can be detected during a single visit at the doctor's office while others can be detected during the follow-up period. Etiological factors responsible for developing of a subsequent melanoma can be grouped into host-related, lifestyle factors and environmental influences.

Case presentation: A case of a 46-year-old woman with diagnosed 10 primary melanomas and 2 basal cell carcinomas is presented. Radical excision of all the suspected melanoma lesions was performed and she was treated with biological therapy at the Institute for Oncology. A year after, the performed PET scan showed an active subcutaneous lesion in the right upper arm. The lesion was excised and the histopathologic result revealed a secondary deposit of skin melanoma. The four-year postoperative follow-up shows her condition is stable and the results of melanoma tumor markers, CT and PET scans are within normal ranges.

Discussion. The subsequent melanomas are usually thinner in terms of Breslow thickness and Clark's level. The first diagnosed melanoma in this case report was nodular melanoma and the subsequent melanomas were thinner. There were no signs of lymphovascular invasion within the initial tumor and brisk and non-brisk presence of tumor infiltrating lymphocytes was observed.

Conclusion. It is important to highlight the significance of the screening programs for early melanoma detection, with regular self-examination and preventive behavior. Early tumor detection is vital for decline in melanoma morbidity and mortality.

Keywords: skin melanoma, multiple primary lesions

BEYOND THE PAP SMEAR: EVOLUTION OF HPV GENOTYPE DISTRIBUTION AND VACCINATION COVERAGE IN N. MACEDONIA (2018/2022)

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Human papillomavirus (HPV) remains the primary cause of cervical cancer in N. Macedonia, yet epidemiological data on genotype prevalence and vaccination coverage remain scarce. This study compares HPV DNA genotype distribution from two cross-sectional cohorts: 2018 data (n=1,048; reference: PubMed ID 29416214) and 2022 data (n=1,684; present study). HPV DNA detection increased from 14.1% in 2018 to 18.9% in 2022. High-risk genotypes HPV 16 and 18 remained prevalent (2018: 12.5% and 4.5%; 2022: 19.3% and 7.6%), but a notable rise was observed in non-16/18 high-risk types such as HPV 31, 52, 53, and 58, all covered by the 9-valent (9v) vaccine. Mixed infections increased from 6.8% to 9.14%, indicating broader viral diversity and potential challenges for screening. HPV vaccination coverage in adolescent girls declined during the COVID-19 pandemic (2020: 35.5%) but rebounded to 58.6% in 2023 following targeted public health interventions. The expansion of vaccination uptake aligns with WHO's elimination targets but remains below the optimal 90% coverage goal. The predominance of 9v vaccine-covered types suggests significant potential for further reducing HPV burden through improved vaccine uptake and integration of HPV DNA testing as a primary screening method. These findings underline the importance of longitudinal surveillance of genotype distribution and vaccination rates to inform national cervical cancer prevention strategies.

HPV VACCINATION AND DNA-BASED SCREENING IN N. MACEDONIA: PROGRESS, REGIONAL CONTEXT, AND FUTURE DIRECTIONS

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Cervical cancer remains a leading preventable malignancy in Central and Southeastern Europe. North Macedonia has implemented HPV vaccination since 2009 and combined (Pap + HPV) screening, with recent policy shifts toward modern prevention strategies.

We analyzed national registry data on HPV vaccination coverage, screening outcomes, and cervical cancer incidence (2014–2023), supplemented with regional comparisons from WHO and IARC reports. HPV genotyping data (2018–2022) were assessed to identify high-risk types.

HPV vaccination coverage in North Macedonia increased to 58.6% in 2023, nearly doubling from the COVID-19-associated drop to 35.5% in 2020. Since 2024, vaccination has been gender-neutral with free catch-up until age 19. Among 1,684 screened women, 24.9% tested positive for high-risk HPV, with HPV 16, 31, 53, 51, and 52 most prevalent; multiple infections occurred in 15.8% of cases. From 2014–2021, 1,817 cervical cancer cases were recorded, with 69.4% in women ≥50 years, and 72.7% from urban areas. Regional disparities in vaccination and screening coverage persist, with Pelagonia showing higher rural incidence in specific years. Compared to neighboring countries, North Macedonia has moderate vaccination coverage (regional range: <10% in parts of Bosnia and Herzegovina to >95% in Uzbekistan) and a mixed screening model. Evidence shows that primary HPV DNA testing is ~40% more sensitive than cytology for CIN2+ detection, with >99% negative predictive value, and reduces invasive cancer incidence by over 60% in long-term trials.

Integration of high-coverage HPV vaccination and primary HPV-based screening is essential to meet WHO's 90-70-90 elimination targets. North Macedonia has made substantial progress but must address regional inequities and fully transition to HPV-based screening to maximize prevention impact.

MODALITIES FOR TREATMENT OF PATIENTS WITH ECTOPIC PREGNANCY

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Introduction: Patients with ectopic pregnancy can be treated with medication (Methotrexate), laparoscopic surgery or abdominal surgery. Patients with early gestation without bleeding and abdominal pain are usually treated with medication called methotrexate which stops cell growth and dissolves existing cells. In cases of ectopic pregnancy with diameter more than 3,5cm and chorionic gonadotropin (HCG) levels higher then 5000 mIU/ml operative procedures are used (laparoscopy or laparotomy) with salpingostomy and salpingectomy. In some cases, the fallopian tube can be saved. Typically, however, a ruptured tube must be removed.
The aim: To evaluate modalities for treatment of patients with ectopic pregnancy admitted on Department for urgent gynecology on University Clinic for Gynecology and Obstetrics in Skopje during the 2024 year.
Results: In this period 117 patients with diagnosis of ectopic pregnancy were treated. They were on reproductive age (19-47 year). Conservative treatment with methotrexate was used in 59 patients (50,4%). Laparoscopic treatment with salpingectomy was made in 51 patients (43,6%). Successful treatment with methotrexate was achieved in two patients with cervical pregnancy (1,7%). Laparotomy with salpingectomy was made in 5 patients (4,3%) with heavy bleeding and ruptured fallopian tubes.
Conclusion: Patients with ectopic pregnancy can be treated conservatively or operatively by laparoscopic or abdominal surgery depending of symptoms, gestational age when ectopic pregnancy is discovered and chorionic gonadotropin levels.
Key words: ectopic pregnancy, methotrexate, laparoscopy, laparotomy

LAPAROSCOPIC TREATMENT OF TORQUATED PARAOVARIAN CYST IN 13 YEARS OLD PATIENT - A CASE REPORT

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Introduction: Low abdominal pain in female patients of adolescent age could be caused by: appendicitis, infections of the urinary tract, nephrolithiasis, rupture or torquation of ovarian and paraovarian cysts etc. Adnexal paraovarian cysts are present with incidence about 10% in adolescent age and are usually benign and asymptomatic. Laparoscopic surgery is a safe and effective way to treat paraovarian cysts, offering a minimally invasive approach. In cases of small cysts, simple puncture and coagulation may be sufficient, while larger cysts often require complete removal.

Clinical case: We present a case of 13 years old female patient admitted on Department for urgent gynecology on our Clinic because of abdominal pain in the lower part of abdomen predominantly on the left side several days after her menstrual period. She was investigated on Universisty Clinic for child disease and was sent on examination on our clinic. Ultrasonographic evaluation and CT scan revealed paraovarian cyst with diameter about 4 cm on the left side with suspicion for torquation. Serum tumor markers were in reference values. Laparoscopy confirmed our diagnosis and paraovarian cyst of the left adnexa was removed. The histopathological diagnosis was paraovarian cyst. The patient was discharged from Clinic in a good condition.

Conclusion: In young patients with abdominal pain in the lower abdomen we must think about adnexal or ovarian torquation and urgent diagnosis and treatment can preserve future fertility.

Key words: paraovarian cyst, torquation, laparoscopy, adolescent

WORK-RELATED PSYCHOLOGICAL FACTORS AND THEIR ROLE IN THE PERSISTENCE OF HPV INFECTION

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Abstract
Persistent high-risk HPV infection is a prerequisite for cervical cancer development; therefore, identifying determinants of viral persistence is of critical importance. While most HPV infections regress spontaneously, a subset persists and may progress to malignancy. Viral genotype, host immunity, sexual behavior, smoking, and hormones are established factors, but psychosocial determinants, particularly stress, may also influence persistence by impairing immune response. Burnout, a chronic reaction to occupational demands, is characterized by exhaustion, cynicism, and reduced accomplishment.
This study aimed to evaluate the impact of occupational stress on persistent HPV infection. A total of 38 women with persistent HPV and 33 controls were included. Data were collected through standardized questionnaires, and HPV typing was performed using multiplex real-time PCR. Persistence was defined as HPV positivity ≥24 months, while non-persistence indicated clearance within this period. Statistical significance was set at $p<0.05$.
High-risk HPV types among persistent cases included 16, 18, 31, 33, 39, 45, 51, 52, 53, 56, 58, and 68. Half were single-type and half multiple-type infections. HPV16 was most frequent (29.7% single, 52.6% mixed), followed by HPV31 and HPV52 (15.8% each). No differences were found in age, marital status, education, years of employment, or weekly working hours. However, persistent cases more often worked in production services, while controls were more common in other service activities. Importantly, women with persistent HPV reported significantly higher work-related stressors than controls ($p<0.05$).
These findings suggest that occupational stress may contribute to HPV persistence. Psychological factors, though often overlooked, warrant attention in epidemiological studies of HPV infection. Understanding stress-related mechanisms may improve prevention, clinical management, and therapeutic strategies.

CASE REPORT: TRANSVAGINAL MYOMECTOMY OF PEDUNCULATED SUBMUCOSAL LEIOMYOMA

Ajla Shabani, Dimitrov, Valentina Tofiloska , Vjosa XHAFERI MAZLLAMI

Abstract

Uterine leiomyomas are the most common benign gynecologic tumors, yet cervical leiomyomas are relatively rare, representing less than 5% of all cases. Their atypical location can pose diagnostic and therapeutic challenges due to proximity to the bladder, rectum, and major vessels. We present the case of a 53-year-old woman with a symptomatic cervical submucosal leiomyoma (myoma ad cervicis natum) who developed severe anemia secondary to abnormal uterine bleeding. Clinical assessment, ultrasound imaging, and laboratory evaluation confirmed the diagnosis and revealed significant hemoglobin reduction. The patient underwent vaginal myomectomy, which allowed complete removal of the mass with minimal intraoperative blood loss and rapid postoperative recovery. Histopathological examination confirmed the diagnosis of benign leiomyoma. This case highlights the importance of timely recognition, appropriate preoperative optimization, and careful surgical management of cervical leiomyomas to achieve favorable outcomes while preserving patient safety.

QUALITY OF LIFE AFTER DELIVERY

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Introduction: Quality of life has different dimensions on physical, mental, emotional, environmental and social aspects.
Material and methods: The material was represented by 120 first-born women, aged 16 to 46 years, divided into two groups: a group of first-borns after spontaneous vaginal delivery and a group of first-borns after caesarean section. For all women we created: a survey questionnaire containing questions about women's demographic characteristics, social status, economic status, gynecological and reproductive history and a specific questionnaire Short Form-36, assessing two time periods: first week after delivery and six weeks after delivery.
Results: The sum of the results of Short Form-36 in the first week after delivery showed that in all health domains, the vaginal delivery group is in better condition, except in the domain of general health. The difference was statistically significant in the domain of mental health ($p = 0.024$). Comparing the results from the sixth week after delivery, the results showed that the cesarean section group had slightly higher scores for social functioning, while in other domains, the vaginal delivery group achieved higher results. The difference was statistically significant in the domain of physical functioning ($p = 0.036$). Comparing the findings within each group, the analysis showed that the group of normal vaginal deliveries had more improvements in quality of life related to physical health, while the group with caesarean section showed more improvements in quality of life related to mental health. The difference was statistically significant in the domain of general health ($p = 0.041$).
Conclusions: Our study showed that women after spontaneous vaginal delivery have a better quality of life than women after caesarean section.

Keywords: quality of life, vaginal delivery, caesarean section, short form-36.

RISK FACTORS FOR URINARY INCONTINENCE IN WOMEN

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Introduction: Several factors can contribute to urinary incontinence, including: aging, use of diuretics, obesity, chronic constipation, previous hysterectomy, caffeinated and carbonated beverages, severe cough, structural abnormalities of the urinary tract, bladder stones, short urethra.

Material and methods: Material is represented by 82 female patients aged 30 to 80 years. In all women, we done: urinary status with urine sediment, urine culture, ultrasound, urodynamic tests, Marshall's tests, a survey questionnaire containing questions about the risk factors of urinary incontinence. The relative risk of urinary incontinence was estimated by calculating the odds ratio with a 95% confidence interval using logistic regression.

Results: Data analysis showed an association between urinary incontinence and patients over sixty years of age (p=0.0248, with a relative risk of 2.18); the patients with an index of body weight over 35 (p=0.0104, with a relative risk of 2.46); vaginal delivery (p=0, 0154, with a relative risk of 2.12); multiparity (p=0.0001, with a relative risk of 3.085); macrosomia (p=0.0167, with a relative risk of 3.80); postmenopause (p=0.0243, with relative risk of 2.08); cigarette smoking (p=0.0033, with relative risk of 2.34) and drinking alcohol (p=0.0402, with a relative risk of 2.07).

Conclusions: Our study found that age 60, obesity, vaginal delivery, multiparity, macrosomia, postmenopausal period, cigarette smoking and alcohol consumption are potential risk factors for urinary incontinence in women.

Keywords: risk factors, urinary incontinence, stress incontinence, urgent incontinence.

PREVALENCE OF URINARY INCONTINENCE IN WOMEN

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Introduction: Urinary incontinence is defined as the involuntary loss of urine. More than 250 million women are affected worldwide and this number is expected to increase to more than 300 million over the coming years. The prevalence of urinary incontinence varies from country to country, ranging from 4.8-58.4% with an average prevalence of 27.6%. The most common types of urinary incontinence are: stress, urge and mixed urinary incontinence.

Material and methods: Material represent 116 female patients aged 30 to 80, divided into two groups: study and control. The study group included 58 women with urinary incontinence. The control group included 58 women without urinary incontinence. The study did not include: pregnant women, women with urinary tract infections, women with previous urinary tract operations, and women with neurological problems.

Results: Stress urinary incontinence was detected in 42.5% of women, urge incontinence in 31.2% of women, and mixed urinary incontinence in 26.3% of women. Data analysis showed an association between urinary incontinence and patients over sixty age (chi-square test=4.652, $p=0.024$, $p<0.05$, with a relative risk of 2.34), as well as association with patients with a body mass index above 35 (chi-square test=5.705, $p=0.011$, $p<0.05$, with relative risk of 2.69.

Conclusions: Our study found that age 60, obesity, vaginal delivery, multiparity, macrosomia, postmenopausal period, cigarette smoking and alcohol consumption are potential risk factors for urinary incontinence in women.

Keywords: risk factors, urinary incontinence, stress incontinence, urgent incontinence.

QUALITY OF LIFE AFTER PLICATED COLPOSUSPENSION IN WOMEN WITH STRESS URINARY INCONTINENCE

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Introduction: Stress incontinence is the complaint of urine leakage in association with coughing, sneezing or physical exertion. Urinary incontinence can have a significant impact on quality of life. Plicated colposuspension is a surgical anti-stress procedure in patients with stress incontinence.

Material and methods: Material is represented by 58 women, diagnosed with stress urinary incontinence of moderate and severe degree, aged 36 to 76 years. The study did not include: women with overactive bladder or urge urinary incontinence; women with fistulas of the urinary tract; women with congenital or acquired defects of the urethra or bladder; women with urinary tract infections and women taking medications that contribute to an overactive bladder. In all women, we performed: plicated colposuspension; a survey questionnaire containing questions about women's demographic characteristics, social status, economic status, gynecological and reproductive history, life habits and an adapted questionnaire on the quality of life for incontinence - The Incontinence Quality of Life (I-QOL) for our conditions, evaluating two time period: before surgery and six months after surgery.

Results: Stress urinary incontinence was more common in obese patients, working women, with lower social status and education, in menopause, smokers who often drink coffee. Our study showed an improvement in the quality of life in women with stress urinary incontinence after operative treatment. The improvement is shown by analyzing the answers in the three domains of the quality of life questionnaire: avoidance and limiting behavior (p=0.014), psychosocial impact (p=0.001), social embarrassment (p=0.008).

Conclusions: Our study showed an improvement in the quality of life in women with stress urinary incontinence after operative treatment, i.e. after plicated colposuspension. The improvement was shown by analyzing the answers in the three domains of the quality of life questionnaire.

Keywords: Quality of life, plicated colposuspension, stress urinary incontinence

PELVIC FLOOR DISORDERS AND QUALITY OF LIFE IN WOMEN

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Introduction: The aim of the study was to determine whether different pelvic floor disorders are associated with changes in perceived quality of life (QoL), globally and in its subdimensions.

Material and methods: An observational study was conducted with women between 2023 and 2024. Information was collected using a self-developed questionnaire on socio-demographic data, employment, history and health status, lifestyle and habits, obstetric history, and health problems. The SF-12 questionnaire was used to assess quality of life. The Pelvic Floor Distress Inventory (PFDI-20) was used to assess the presence and impact of pelvic floor problems, and includes the POPDI-6 subscales for prolapse, CRADI- 8 for colorectal symptoms, and UDI-6 for urinary symptoms. Crude (MD) and adjusted mean differences (aMD) were estimated with their respective 95% confidence intervals (CI).

Results: One hundred and forty women participated in the study with a mean age of 56.19 (SD = 13.42). A statistical association was observed between all the pelvic floor disorders and QoL, overall and in all its dimensions ($p < 0.001$), in the bivariable analysis. The lowest scores were observed in the emotional component. After adjusting for confounding factors, the pelvic floor disorders in general (aMD -0.24, 95% CI: -0.26 to -0.23), the impact of uterine prolapse symptoms (aMD -0.22, 95% CI: -0.27 to -0.14), the colorectal-anal symptoms (aMD -0.13, 95% CI: -0.24 to -0.07), and urinary symptoms (aMD -0.06, 95% CI: -0.16 to -0.05) was negatively associated on the score on the SF-12 questionnaire ($p < 0.05$).

Conclusions: Women who have a pelvic floor dysfunction, symptoms of pelvic organ prolapse, colorectal-anal symptoms, or urinary symptoms, have a worse perceived quality of life in all dimensions. Prolapse symptoms have the biggest impact, and the emotional component of QoL is the most affected sub-domains.

Keywords: pelvic floor, pelvic floor disorders, quality of life

MULTIVESSEL CORONARY AND PERIPHERAL ARTERY DISEASE ASSOCIATED WITH DIABETES MELLITUS

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Background: Multivessel coronary artery disease (CAD) is a common angiographic finding in patients with diabetes mellitus (DM) and peripheral artery disease (PAD). In addition to other microvascular and macrovascular complications, the prevalence of CAD increases over time in diabetic patients. Therefore, screening of patients with diabetes is essential for prevention, early recognition, diagnosis, and assessment of prognosis, as well as for timely treatment and rehabilitation.
Case Report: We present the case of a 67-year-old male patient with symptoms of fatigue and atypical anginal chest pain. He has a 35-year history of diabetes mellitus and is on insulin therapy. He also has diabetic retinopathy in both eyes.
Other risk factors include a positive family history of cardiovascular disease and diabetes mellitus, as well as a 30-year history of cigarette smoking.
Echocardiography revealed both systolic and diastolic dysfunction of the left ventricle, with segmental wall motion abnormalities and an ejection fraction (EF) of 43%. Carotid Doppler imaging showed 50% stenosis of the left common carotid artery. Lower limb Doppler examination revealed a monophasic signal in both posterior tibial arteries and a pre-occlusive signal in the right dorsalis pedis artery.
Due to gangrene, in 2022, amputation of the fourth and fifth metatarsal bones of the right foot was performed.
In December 2024, the patient was hospitalized at the University Clinic of Cardiology due to a non-ST-elevation myocardial infarction (NSTEMI). Coronary angiography revealed multivessel CAD, and a recommendation for aorto-coronary bypass grafting (CABG), so the patient subsequently underwent CABG No. IV.
Postoperatively, he was started on dual antiplatelet therapy, statins, heart failure medication, and referred for cardiac rehabilitation, with a gradual return to normal daily activities.
Conclusion: Coronary artery disease is influenced by a combination of modifiable and non-modifiable risk factors. Diabetes mellitus is a major contributor, alongside hypertension, dyslipidemia, age, sex, genetic predisposition, and smoking. Regular monitoring and strict management of diabetes are crucial to prevent both macrovascular and microvascular complications. Treatment of coronary and peripheral artery disease in early stages includes lifestyle modifications and intensive medical therapy, while advanced stages may require percutaneous intervention and/or surgical revascularization.
Keywords: Multivessel CAD, PAD, Diabetes Mellitus.

THE IMPACT OF MATERNAL OBESITY ON PREGNANCY

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Abstract

Maternal obesity has been estimated as a global epidemic, affecting 40% of pregnant women in developed nations. The weight of females that are pregnant has become one of the most concerning points in the modern obstetrics. For this matter after consulting the most accurate literature from academic books in the field and from internet sources from the year 2020 until the year 2025 available on PubMed, Scopus, Data of Science, Google Scholar, ResearchGate, Academia and others we have created a review article that takes in consideration the impact of maternal obesity on the pregnancy itself. Women may have been obese before becoming pregnant or they may have rapidly gained weight during pregnancy and the types of maternal obesity have their challenges for the pregnancy outcome. The maternal obesity must be carefully treated since it is directly responsible for the impact on gestational diabetes mellitus (GDM), hypertensive disorders, and various perinatal complications. By analyzing the types of maternal obesity and complications that occur during pregnancy we take care not only for the current health of the pregnant mothers and their babies but also of their future to take preventive measures, lifestyle changes and thus to improve their health and the health of their babies.

Key words: maternal obesity, pregnancy outcome, diabetes mellitus, hypertension, perinatal complications.

NON-SURGICAL HAND REJUVENATION: SYNERGISTIC EFFECTS OF PRP AND SILICUM-RESVERATROL COMPLEX FOR SKIN RESTORATION

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Introduction:

The hands are among the first areas to show visible signs of aging, with skin thinning, wrinkles, and age spots. Traditional treatments, such as dermal fillers and lasers, are widely used, but non-invasive options are gaining popularity. Platelet-Rich Plasma (PRP) combined with a silicum-resveratrol complex offers a promising, non-surgical approach to restore hand aesthetics. This study explores the efficacy of this innovative treatment combination for rejuvenating aging hands.

Aim:

To evaluate the effectiveness of combining PRP with a silicum-resveratrol complex for non-surgical hand rejuvenation. The objective is to improve skin texture, restore volume, reduce fine lines, and diminish age spots, offering a safe and long-lasting alternative to invasive procedures.

Materials and Methods:

Patients were treated with a combination of PRP and a silicum-resveratrol complex. PRP, derived from the patient's own blood, was applied to enhance tissue regeneration and promote collagen production. The silicum-resveratrol complex, with silicum's collagen-boosting properties and resveratrol's antioxidant effects, was also utilized to further support skin health. Treatments were personalized based on each patient's skin needs and goals, with multiple sessions provided for optimal results.

Results:

Post-treatment evaluations showed significant improvements in skin hydration, elasticity, and smoothness. Wrinkles, volume loss, and age spots were visibly reduced. The combination of PRP and silicum-resveratrol successfully enhanced hand aesthetics, offering noticeable results with minimal downtime.

Conclusion:

The combination of PRP and silicum-resveratrol provides a powerful, non-invasive method for hand rejuvenation. This treatment improves collagen production, reduces signs of aging, and enhances overall skin quality, presenting a safe and effective alternative to surgical hand rejuvenation.

Keywords: Non-surgical hand rejuvenation, PRP, Platelet-Rich Plasma, silicum, resveratrol, skin rejuvenation, anti-aging, collagen synthesis, hand aesthetics.

THE SILENT EPIDEMIC: THE LINK BETWEEN SCREEN EXPOSURE AND DELAYS IN SPEECH AND LANGUAGE DEVELOPMENT IN PRESCHOOL CHILDREN

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In the past decade, there has been a dramatic increase in children's exposure to digital media, with the first contact with screens shifting from approximately four years of age to as early as four months. This study examines the relationship between the age of first exposure and the duration of digital screen exposure with speech and language development in preschool-aged children. The analysis was conducted on a convenience sample of 66 children diagnosed with speech-language developmental disorders, all involved in a rehabilitation program at the Center for Rehabilitation of Verbal Communication Pathology in Skopje. Data were collected through clinical documentation and structured observation, and participants were grouped by age of initial exposure (before age 1, between ages 1–2, and after age 2). Statistical analysis was performed using ANOVA and point-biserial correlation, revealing significant differences in language development based on both age and duration of exposure. The results suggest a negative impact of early and prolonged screen exposure on social interaction, communication skills, and overall speech-language development. The study highlights the need for education and public health policies aimed at limiting screen exposure during critical developmental periods.

Keywords: speech and language development, digital media, preschool age, social interaction, communication skills

REHABILITATION IN PEOPLE WITH TOTAL LARYNGECTOMY AND DEVELOPMENT OF ESOPHAGEAL SPEECH

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Abstract

Introduction: Laryngeal cancer surgery accompanied by total laryngectomy is a problem for these patients, which is manifested by loss of voice and lack of communication, isolation and reduction of social interaction, both in society and in the family. One of the possibilities for the returning of the voice, as that and communication is precisely overcoming the esophageal speech in laryngectomized patients.

Purpose: The purpose of this study is to evaluate the effect of voice rehabilitation in laryngectomized patients postoperatively.

Material and Methods: The study covers 23 patients over a period of 10 years (2015-2025), who have visited to the PHI Center for Rehabilitation of Pathology in Verbal Communication. It concerns adult men and women who have undergone total laryngectomy and have come to the Voice Rehabilitation and Esophageal Speech Facility. None of them use a voice prosthesis, nor have they used an electrolarynx.

Results: The results indicate moderate to good success in the development of esophageal speech by most patients, with noble difference in favor of women in terms of average grade. The achieved results are associated with age, motivation, and the time of initiation of rehabilitation intervention.

Conclusions: Esophageal speech indicates great benefits in patients with total laryngectomy. They are provided with easier and better communication with other people, as well as the possibility of free movement and social environment.

INNOVATIVE MULTI-MODAL REHABILITATION FOR DYSPHAGIA AND DYSPHONIA IN PARKINSON'S DISEASE: INTEGRATING VOCASTIM-MASTER STIMULATION WITH CONVENTIONAL APPROACH

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Parkinson's disease, a neurodegenerative disorder, causes oropharyngeal dysphagia and dysphonia due to dopaminergic degeneration impairing speech and swallowing muscle coordination**.** Dysphagia increases aspiration risk, while speech deficits reduces communication efficacy. Pharmacological treatments often show limited efficacy for bulbar symptoms, but neuromodulation approaches combined with traditional voice therapy may offer superior outcomes.

The objective was to evaluate the efficacy of combined speech therapy and VocaSTIM-Master neuromodulation in rehabilitating dysphagia and dysphonia, as measured by improvements in vocal quality and swallowing function, with assessment of accommodation quotient (α).

The study employed a dual-modality intervention for a 73-year-old male with Parkinson's disease presenting with dysphonia (whispered voice, rapid vocal fatigue) and oropharyngeal dysphagia (impaired mastication, delayed swallow initiation).

Instrumental Assessment was done with VocaSTIM-Master accommodation quotient (α) and measured stimulus thresholds for laryngeal/pharyngeal muscle groups. Dysphagia Metrics included Clinical Swallow Evaluation (CSE) scores. Therapeutic Interventions included VocaSTIM-Master Neuromodulation (Biphasic current (0.1-10mA) at 30-80Hz)

Through 20-minute sessions targeting thyrohyoid/cricopharyngeal complexes, as well as Speech Therapy Treatment protocols.

The combined speech/swallowing therapy and VocaSTIM-Master intervention demonstrated significant functional improvements across α-quotient with 28.4% increase from baseline (exceeding the 15% target threshold), indicating enhanced functional swallowing with mild texture modifications and improvement in vocal quality, transitioning from a weak, breathy voice to clearer speech with improved communicative effectiveness.

Conclusion

The multimodal approach for managing bulbar symptoms in neurodegenerative disorders may offer an effective therapeutic strategy for improving communication and swallowing safety in PD patients. Further research with larger cohorts is warranted to validate these promising results.

Key words:*Bulbar dysfunction, VocaSTIM-Master, Speech therapy*

LIPIDE PROFILE AND INSULIN RESISTANCE IN OVERWEIGHT/OBESE CHILDREN AND ADOLESCENTS

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ABSTRACT

Overweight and obesity represent a growing global epidemic, affecting both developed and developing countries. Childhood obesity is not merely a cosmetic issue, it is a significant medical condition that substantially increases the risk of developing insulin resistance, dyslipidemia, type 2 diabetes mellitus (T2DM), hypertension, cardiovascular disease, and chronic kidney disease (CKD) later in life. Insulin resistance plays a key role in the pathophysiology of obesity-related complications. It is commonly assessed using the Homeostasis Model Assessment of Insulin Resistance (HOMA-IR). In this study serum concentration of several parameters of lipide profile and insulin resistance were evaluated in relation to obesity and overweight. In total 64 overweight and obese children and adolescents and 50 healthy children and adolescents with normal body weight, 5-19 years old, matched for gender and age, were enrolled in the study. For each subject, venous blood sample was collected after overnight fasting in vacutainer without anticoagulant for serum separation. Serum concentration of fasting glucose, total cholesterol, triglycerides, HDL and LDL cholesterol were determined by using standard biochemical methods. Fasting insulin concentrations were determined by ECLIA (Enzyme Chemiluminescence Immunoassay). Insulin resistance was estimated using homeostasis model (HOMA-IR). No significant difference were found between two groups of subjects for the serum glucose and for lipid profile parameters ($p > 0.05$). Insulin resistance was detected in 53% of overweight and obese children and adolescents.

The results from this study have shown that longer prospective study for lipide profile is needed in obese/overweight children and adolescents with Insulin resistance as subjects at increased risk for development of obesity-related comorbidities.

EXTENSIVE INVESTIGATION FOR PERSISTENT HYPERCALCEMIA OF UNCLEAR ETIOLOGY

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Abstract:
Hypercalcemia of unclear etiology is defined as clinical condition in which an increase in serum calcium level is observed, often labeled when levels are above the laboratory-specific reference range, in absence of the most common causes of hypercalcemia. Here we review a case where patient with consistent serum hypercalcemia was evaluated for a couple of years, but no specific cause was found despite prolonged and extensive diagnostic investigation involving multiple specialty consults. The two most frequently encountered etiologies are primary hyperparathyroidism and hypercalcemia secondary to malignancy, which were ruled out in our patient, as well as other conditions such as sarcoidosis, vitamin D toxicity, multiple myeloma. Persistent hypercalcemia cannot be considered a *sensu stricto* disease especially when the etiology is unknown, so multidisciplinary approach is needed to provide possible management options.
Key words: hypercalcemia, hyperparathyroidism, malignancy, vitamin d toxicity

PELLEGRINI-STIEDA SYNDROME IN 51 Y OLD FEMALE PATIENT

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Introduction: Pellegrini - Stieda Syndrome is relatively rare cause of medial knee joint pain after direct or repetitive trauma that occurs due depositing calcium in the proximal insertion of medial collateral ligament (MCL) on the medial femoral condyle of the knee (Pellegrini-Stieda sign). This condition predominatly targets males aged between 25 and 40 y.
In 1905 Italian surgeon Augusto Pellegrini first described Pellegrini Stieda sign, later German surgeon Alfred Stieda published 5 cases. Differential diagnosis includes knee arthritis, an avulsion fracture of the medial femoral condyl, semimembranosus tendinitis etc.
Prognosis is good because in most cases heals spontaneosly or due conservative treatment.
Case description: We present a case report of 51 y old female patient with right medial knee pain after minor trauma and overstretching of the medial collateral ligament (MCL) subsequently diagnosed with Pellegrini - Stieda Syndrome.
Clinical findings included knee pain and stiffness at the medial aspect of the right knee joint, palpatory tenderness of the proximal insertion of the medial collateral ligament (MCL), reduced range of motion, especially into extension.
An X ray was ordered and the radiograph showed drop - shaped calcification above medial femoral condyle parallel to femoral cortex without attachment to the femur. Similarly, on magnetic resonance imaging findings showed ossified MCL, a typical Pellegrini - Stieda lesion in T1, PD (proton density) and T2 weighted images.
Treatment was conservative, involving antiinflamatory drugs, ice to ease pain, rest, physiotherapy - shock wave therapy and excercises to improve knee stability by strengthening the hip abductors, hamstrings and quads.
Discussion: Pellegrini - Stieda Syndrome may be rare but early recognition is crucial for appropriate management and successful treatment of this condition.
Keywords: Pellegrini - Stieda Syndrome, Pellegrini - Stieda sign, MCL - medial collateral ligament

ANAPHYLAXIS TO AMOXICILLIN-CLAVULANIC ACID CONFIRMED BY IN VITRO IGE TESTING: A CASE REPORT

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Beta-lactam antibiotics, particularly amoxicillin-clavulanic acid, are among the most commonly prescribed antimicrobial agents due to their efficacy and broad-spectrum activity. However, allergic reactions, including anaphylaxis, remain a significant clinical concern. Prompt recognition of symptoms and timely intervention are essential to prevent life-threatening outcomes. We report the case of a 61-year-old woman who developed an anaphylactic reaction one hour after receiving her first dose of amoxicillin-clavulanic acid. Her symptoms included generalized urticarial rash with pruritus (predominantly on the palms), facial erythema, pharyngeal angioedema, tinnitus, jaw stiffness, acrocyanosis, tachycardia, hypotension, respiratory distress and loss of consciousness. She was immediately treated with intramuscular adrenaline, corticosteroids, antihistamines and intravenous fluids, followed by hospitalization. In vitro specific IgE testing revealed positive results for both amoxicillin and penicilloyl-V, with elevated total IgE levels (336 IU/mL). Considering the severity of the initial reaction, skin testing was considered inappropriate in this case. The patient was advised to avoid all beta-lactam antibiotics and penicillins. According to WAO and EAACI guidelines, in vitro diagnostic methods should be prioritized in patients with a history of severe immediate reactions, particularly when skin testing could provoke recurrence. These guidelines support the use of specific IgE testing as a first-line tool in such high-risk individuals. While in vitro testing has lower sensitivity than skin tests, its high specificity and safety profile make it an essential component of risk-stratified diagnostic approaches. This case underscores the need for individualized patient assessment, careful risk evaluation and adherence to guideline-based protocols when managing suspected drug allergies.

Keywords: anaphylaxis, amoxicillin, clavulanic acid, beta-lactam antibiotics, IgE, in vitro testing, drug allergy

A CASE REPORT OF A PATIENT WITH AN ACUTE INTRAPARTAL UTERINE INVERSION

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Introduction. Acute inversion of uterus is a rare, but life-threatening complication of third stage of labour. Uterine inversion is defined as the turning inside out of the fundus into the uterine cavity. It's incidence is 1:2,000–1:23,000 deliveries. Severe uterine atony, mismanagement of third stage of labour, adherent placenta are some of the common factors associated with the occurrence of acute inversion of uterus.
Case report. We report a case of the 25 years old primipara. After a spontaneous delivery of the baby, during the controled cord traction, a mass appeared at the introitus of the vagina. Placenta was still attached to the uterus. A complete uterine inversion happened. Obstetric and anesthesia teams were emergency mobilized. Manual uterine reposition under general anesthesia (the Johnson maneuver) was performed 5-6 minutes after the event. The placenta was removed after the repositioning of the uterus. Massive hemorrhage occured. Uterotonic therapy was administered immediately after repositioning. The substitution therapy was administered starting 25 minutes after the event and continued in the next 24 hours: 1400ml of erythrocyte concentrate, 880ml of fresh frozen plasma and 100ml 20% albumine. The drop in the levels of hemoglobin and hematocrite 25 minutes after the inversion was Hb=64g/L (121g/L antepartum), Hct=0.17 (0.33 antepartum). 72 hours after the event this values were normalized. Vital signs were stabile, no further hemorrhage occured, and woman was discharged at the forth post delivery day.
Conclusion: Early recognition and prompt treatment are important to save life of the woman. Prompt recognition of uterine inversion, its immediate manual reposition under general anaesthesia and transfusion of blood products are crucial for successful tretment. Delay in recognition and treatment can result in haemorrhagic and neurogenic shock, leading to death of a women.
Key words: uterine inversion, massive haemorrhage, manual reposition

PREVALENCE OF ANEMIA IN PATIENTS WITH MISSED ABORTION

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Introduction: Miscarriage (abortion), 85% of which may happen during the first trimester, is one of the most common adverse pregnancy outcomes. Almost half of miscarriages are a consequence of chromosomal abnormalities. The risk factors include advanced maternal age, comorbidities (obesity, diabetes, hypertension), previous miscarriages, smoking and inappropriate nutritional status. Anaemia is the most prominent haematological abnormality during gestation and it is a global health problem affecting nearly half of all pregnant women. Anaemia has been linked to a higher risk of adverse outcomes, including maternal mortality, stillbirth, preterm births, small-for-gestational-age (SGA). World Health Organization has defined anaemia in pregnancy as the haemoglobin (Hgb) concentration of less than 110g/L. The primary cause of anemia during pregnancy is iron deficiency secondary to chronic inadequate dietary intake and menstruation, heightened by the physiologic demands of the fetus and maternal blood volume expansion during pregnancy. The aim of our study was to determine the prevalence of anemia in women with missed abortion in the first trimester of pregnancy, who are not bleeding.
Material and methods: In 80 patients with missed abortion in the first trimester of pregnancy, we determined the level of Hgb in capillary blood.
Results: In 31 women (38,8%), we detected anemia (the level of Hgb below 110g/L), and 7 of them (8,8% of the total number of women) had a severe anemia with Hgb levels below 90 g/L. As pregnancy progresses, we expect this prevalence to increase.
Conclusion: We want to emphasize that a large percentage of women are anemic even preconceptually and early in pregnancy, so if it is not detected and treated, the severity of anemia worsens as the pregnancy progresses.

Key words: anemia, missed misscariage, hemoglobin, first trimester of pregnancy

CARBON MONOXIDE INTOXICATION FROM A WATER HEATER

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Abstract

Carbon monoxide (CO) poisoning resulting from a malfunctioning gas-powered boiler is a serious and potentially fatal issue. This gas is colorless, odorless, and invisible, making it extremely dangerous because victims are often unaware they are being poisoned. Carbon monoxide poisoning has characteristic signs that can be identified during an autopsy, although a definitive diagnosis requires toxicological testing (measuring CO concentration in the blood and levels of carboxyhemoglobin).This report presents a case of CO poisoning involving a 16-year-old boy who was found lifeless in the bathroom of his home by his sister. The boy had no known illnesses and did not use drugs. The autopsy revealed typical signs of CO poisoning, including cherry-red livor mortis, conjunctival hyperemia, bright red liquid blood, petechial hemorrhages on the pulmonary pleura and epicardium, and good blood perfusion of the internal organs. Brain and lung edema were also noted, along with a soft consistency of the heart. Microscopically, alveolar hemorrhages and the presence of erythrocytes in the heart muscle were observed. Toxicological analysis of the deceased's blood showed significantly elevated levels of carbon monoxide and carboxyhemoglobin. Biochemical analyses also revealed several mildly elevated values of enzymatic markers. On the day of death, investigative authorities measured the concentration of carbon monoxide in the bathroom, which showed elevated levels of CO in the air. Carbon monoxide poisonings are not uncommon in forensic medical practice. They most frequently occur as accidental incidents and less often as suicides or homicides. The use of household appliances powered by gas is widespread due to their low cost, but these devices pose significant safety risks. If defective, they can release CO, which is difficult to detect in time and can cause severe health damage to users.

Keywords: poisoning, carbon monoxide, chemical injury, asphyxia, carboxyhemoglobin.

ARTIFICIAL INTELLIGENCE – BIOETHICAL REFLECTIONS

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The rapid development of artificial intelligence (AI) and machine learning presents significant potential benefits. In genetics, AI can analyze large genomic datasets, identify new associations, and streamline data handling. As AI becomes more integrated into personalized medicine, biobanks are evolving into comprehensive digital repositories. Translational bioinformatics may shape the future of personalized healthcare. This study aims to evaluate the perspectives of employees in genetic laboratories regarding the use of AI in genetic research. Between April 2 and 15, 2025, a survey was conducted via email among genetic laboratories in the Republic of North Macedonia, addressing regulatory challenges and the application of AI. The questionnaire was hosted on Google Forms and distributed through email and social media. A total of 39 responses were collected. Data were sorted and analyzed using Microsoft Excel and STATGRAPHICUS Centurion XVI for multivariate statistical analysis. Three key questions focused on AI use. The first was on whether AI combined with genomic medicine can improve healthcare, which 82.1% agreed. Regarding AI's potential to reduce medical errors, 61.5% responded positively. On the matter of the necessity of human oversight in AI use, almost all (97.4%) considered it essential. The integration of AI into genetic testing and research brings exciting possibilities along with significant ethical, legal, and social challenges. While AI may enhance efficiency precision, as well as approachability of genetic testing, its use must be carefully regulated to protect individual rights, ensure fairness, and avoid discrimination – namely, preserving the human foundation of scientific research.

Keywords: artificial intelligence, genomic research, biobanks, bioinformatics

A CASE OF A POSTMENOPAUSAL WOMEN WITH DIFFERENTIATED VULVAR INTRAEPITHELIAL NEOPLASIA (dVIN) – HPV INDEPENDANT

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Introduction: Human papillomavirus (HPV) independent vulvar intraepithelial neoplasia is the precursor lesion of HPV independent vulvar squamous cell carcinoma (SCC). Differentiated vulvar intraepithelial neoplasia (dVIN) is an aggressive lesion with higher potential to become invasive than HPV associated VIN (usual type). It is most common in older women ~60-80 years of age, who have a history of chronic inflammatory dermatoses, lichen sclerosus, lichen simplex chronicus.

Case report: A 67 years old woman was referred to the Specialized hospital for gynecology and obstetrics "Mother Teresa" due to the presence of a dark red change of the vulva and itching. On inspection, there was fusion of the anterior commissure and an effaced clitoris. With acetic acid, a vinegar-positive sector was observed at the junction of the commissures with dimensions of 2-3 cm. An indication for a biopsy was established. A pathohistological analysis of a biopsy fragment with a diameter of 0.5 cm was performed. It was partially lined with keratotic stratified squamous epithelium and partially with squamous epithelium showing dyskeratosis and parakeratosis, and the epithelial cells contained prominent nucleoli and showed pathological mitoses in the basal layers. A lympho-plasmacytic inflammatory infiltrate was found subepidermally. Immunohistochemically, the cells showed negative staining for p16 protein and positive for p53 protein. The proliferative marker Ki-67 showed nuclear positivity in the distal two-thirds of the epithelium. The morphological and immunohistochemical characteristics corresponded to a differentiated type of vulvar intraepithelial neoplasia that was HPV independent. The patient was referred to a tertiary healthcare facility where an indication for vulvectomy was established due to the size and location of the change.

Conclusion: We like to emphasize the need of performing biopsy of any suspicious lesion of the vulva, especially in older women, because inflammatory changes can be precursors to intraepithelial neoplasia, which can further develop into invasive SCC.

Key words: vulva, vulvar intraepithelial neoplasia, dVIN, biopsy, HPV independant, vulvar squamous cell carcinoma

ANEMIA IN PREGNANCY AND RISK FACTORS

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Introduction: During pregnancy, there is a "dilution" of hemoglobin concentration due to the increase in plasma volume. Iron and folic acid are necessary for the development of the fetus and are transported to it, so the mother can develop anemia due to their deficiency. Anemia affects 36% of pregnant women worldwide. Of those affected, about 40% are due to iron deficiency. Iron is an essential micronutrient involved in vital processes such as erythropoiesis, immune responses, and during pregnancy in the development of the placenta and fetus. The aim of our research was to determine the prevalence of anemia in pregnancy as well as the influence of certain risk factors: age, body mass index - BMI, parity and history of taking iron supplements.
Material and methods: A blood count was performed in 100 patients in the third trimester of pregnancy in order to determine the hemoglobin concentration. The patients' body weight and height (to determine BMI) were measured and data were collected about age, number of previous births, and whether they were taking iron supplements.
Results: Anemia (hemoglobin level below 110g/L) was present in 42.1% of pregnant women. Anemia was significantly common in women with ≥3 births and in those not taking iron supplements. Statistically insignificant anemia was more common in women under 25 years of age and in those with a BMI below 20.
Conclusion: The results of the study showed the importance of regular controls of hemoglobin levels as well as the significance of iron supplementation during pregnancy, when the needs for this element are significantly higher.
Keywords: anemia, pregnancy, hemoglobin, risk factors

A RARE CASE OF ACCIDENTAL FINDING OF CERVICAL ANGIOMYOFIBROBLASTOMA

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Angiomyofibroblastoma (AMFB) is a rare, benign mesenchymal tumor, most commonly found in the vulvovaginal region of women aged 20 to 50 years. Cervical localization is extremely uncommon and represents a diagnostic challenge. AMFB is a slow-growing, well-circumscribed lesion, often clinically misinterpreted as other benign soft tissue tumors such as Bartholin cysts. Histologically, it demonstrates alternating hypercellular and hypocellular zones, spindle and epithelioid stromal cells, myxoid degeneration, and a rich vascular network. The key differential diagnosis is aggressive angiomyxoma (AAM), which presents a more infiltrative behavior and a higher risk of recurrence. In contrast, AMFB has a benign clinical course and favorable prognosis, though local recurrences may occur. We present a case of a 39-year-old woman with a previous history of cervical dysplasia treated by conisation six years earlier, who was scheduled for operative hysteroscopy due to a suspected endometrial polyp. During the procedure, a soft tissue fragment on the cervical wall was noted and excised. Histopathological analysis revealed squamous epithelium overlying a stroma with myxoid changes, rare stellate and spindle-shaped cells clustered around numerous capillaries, characteristic for AMFB. The lesion measured 5 mm. This finding was incidental, and the patient was asymptomatic, with normal PAP smear and unremarkable laboratory results. She was discharged the same day with advice for follow-up in one month. This case highlights the importance of considering AMFB in the differential diagnosis of cervical soft tissue lesions, despite its rarity. Accurate diagnosis relies on histopathological and immunohistochemical analysis, essential to distinguish it from more aggressive mesenchymal tumors. Awareness of such rare entities contributes to appropriate surgical management and follow-up strategy.

DISTRIBUTION OF HIGH AND LOW-RISK HPV GENOTYPES BY AGE IN THE FEMALE POPULATION ANALYZED AT THE PUBLIC HEALTH CENTER - KOCHANI

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Human papillomavirus (HPV) is a major etiological factor in the development of cervical cancer, with high-risk types playing a central role. Age is a significant factor influencing HPV exposure, the likelihood of coinfection, and viral persistence. The aim of this study is to determine the distribution of high- and low-risk HPV genotypes by age group in the female population of Eastern Macedonia, based on two years of data. The study included a total of 125 patients with positive HPV results, tested using real-time PCR for period of two years (2023-2024). Patients were categorized into four age groups: 21-30, 31-40, 41-50, and 51-68 years. For each group the number of detected genotypes were analyzed, categorized by risk (high or low), as well as the presence of coinfection. The highest prevalence of HPV-positive cases was observed in women aged 31-40, followed by the 41-50 and 51-68 age groups. High-risk genotypes with the highest proportions were found in the 41-50 and 21-30 groups. Low-risk types were more frequent in older age groups. Coinfection with more than one genotype were most common in women aged 21-30 and 51-68, with an average of more than two types per patient. High-risk HPV types remain predominant among women of all age groups, with the greatest prevalence in women aged 31-50. Coinfections occur most frequently among younger and older women, indicating possible differences in immune response or exposure. These results emphasize the importance of regular screening and timely vaccination for early detection and prevention of HPV-related changes.

DIAGNOSTIC IMAGING APPROACH TO INVASIVE BREAST LOBULAR CARCINOMA

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Invasive lobular carcinoma (ILC) ranks as the second most frequent form of breast cancer. It is defined by the widespread infiltration of cancerous cells arranged in a single-file pattern, a result of E-cadherin loss, which complicates its detection through imaging. Unlike invasive ductal carcinoma, ILC typically appears on mammograms as subtle tissue distortion or faint density rather than a clearly outlined mass. We describe 7 female cases (54±7 years) who presented a palpable lump in breasts. However, for all cases, no distinct mass was visible on ultrasound or mammography. Mammographic evaluation showed mild architectural distortion without an obvious mass, while the ultrasound revealed a poorly defined hypoechoic region without posterior shadowing. Due to these inconclusive findings, tomosynthesis was carried out to improve visualization. Breast MRI showed a non-mass-like enhancement with irregular borders, raising strong suspicion for malignancy. A core needle biopsy confirmed the diagnosis of estrogen receptor positive (ER+), progesterone receptor positive (PR+), and HER2 negative (HER2−) invasive lobular carcinoma for 5 cases. These cases illustrates the diagnostic difficulties associated with ILC and underscores the critical role of supplemental imaging, such as MRI, in accurately characterizing the tumor. Because of its potential for multifocal, multicentric, and contralateral spread, thorough imaging and staging are essential for appropriate treatment planning. ILC frequently presents with subtle signs on standard imaging modalities, necessitating a comprehensive, multimodal imaging strategy to ensure early diagnosis and accurate assessment. These cases highlight MRI's value in evaluating disease extent, informing surgical decisions, and improving clinical outcomes.

MORPHOFUNCTIONAL CHARACTERISTICS OF KIDNEY TISSUE DURING HYPERTHYROIDISM

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Abstract

Thyroid hormones exhibit numerous biological effects on various tissues and organs. They are essential for proper growth and differentiation of kidney tissue, as well as for maintaining water and electrolyte homeostasis. The disturbed function of the thyroid gland is reflected in the metabolic processes in the whole organism, including the kidneys, affecting the glomerular filtration rate (GFR), the effective renal flow (ERP), the structure of the kidney tissue and the level of creatinine in the serum. 35 Wistar rats of a mean age of seven months were prospectively analyzed divided into two groups – experimentally increased thyroid function and a control group. The group with experimentally induced hyperthyroidism through the application of pure substance L-Thyroxin in water included 25 individuals, while the control group included 10 individuals without treatment.

After removal of both kidneys, standard micrometer paraffin sections with appropriate staining and histological preparations are used for further microscopic evaluation. Changes in the cortex and medulla were analyzed on an OLIMPYS PRO light microscope at magnifications x 10, x 20 and x 40, using Cell A processing software, and the results obtained from the analysis were photographically documented.

Hyperthyroidism is associated with an increase in the weight of the kidneys. All segments of the nephron are affected resulting with hypertrophy. The relationship between kidney weight and body weight is increasing. No presence of myxoid degeneration. There is a reduced lumen of the tubules with the presence of polyploid nuclei in the epithelial cells and activated nucleoli in them - a sign of increased metabolism. Apoptosis of the cells was also noted in certain preparations.

RARE CASE OF SKENE'S GLAND CYST WITH NON -INVASIVE TREATMENT DURING PREGNANCY - A CASE REPORT

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Abstract

Introduction : A Skene's gland cyst is a fluid-filled sac that develops near the opening of the urethra in women, caused by a blockage of the Skene's gland duct. The cause of an adult onset is barely unknown and this condition is relatively rare in pregnancy. Non-invasive management represents a viable treatment option, and with appropriate clinical care, it can allow for successful continuation of pregnancy and vaginal delivery, thereby avoiding the need for cesarean section solely due to Skene's gland cyst.

Case: We report the case of a 24-year-old primigravida, with large Skene's gland cyst SIU+++ (Stress incontinentio urinae) that was diagnosed few months before pregnancy. During the course of the pregnancy, the Skene's gland cyst ruptured spontaneously . The patient was managed conservatively with parenteral antibiotic therapy, meticulous local cleansing, and direct instillation of a topical antibiotic into the cyst capsule. This approach resulted in resolution of symptoms without further complications and the pregnancy progressed uneventfully. The patient underwent successful spontaneous vaginal delivery without further complications.

Conclusion: Large Skene's gland cyst may cause significant discomfort in pregnant patients and have the potential to impede vaginal delivery as well as delivery planning. In this case, non-invasive management achieved a favorable outcome, which was crucial in the successful continuation of pregnancy. Proper diagnosis and appropriate treatment of Skene's gland cyst should not be considered a contraindication to spontaneous vaginal delivery.

Keywords: Skene's gland cyst; Pregnancy; Non-invasive treatment; Vaginal delivery.

CERVICAL CANCER SCREENING IN HPV POSITIVE WOMEN WITH RHEUMATIC DISEASE

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Human Papillomavirus (HPV) is the most common sexually transmitted infection in the world ;90% of HPV infections spontaneously resolve over 3 years and 10% remain as persistent infection detected in cervical samples. As HPV is controlled by local and systemic immune responses, individuals with immunosuppression are at higher risk for cervical cancer. There are no formal recommendations for cervical cancer screening in women with rheumatic disease. As HPV is controlled by local and systemic immune responses, individuals with immunosuppression, whether iatrogenic, genetic or infectious, are at risk for cervical cancer. It is thought that immunosuppressed individuals are more likely to have HPV persistence, which is necessary for malignant transformation. Women with rheumatic diseases are likely vulnerable to HPV infection and the progression of cervical disease. There is no specific guideline for cervical cancer screening in women with rheumatic disease. Current cervical cancer screening guidelines from the American College of Obstetricians and Gynecologists, US Preventive Services Task Force, American Cancer Society and American Society for Colposcopy and Cervical Pathology apply to 'low risk women' and recommend the onset of screening at age 21 with Papanicolaou testing every 3 years until the age of 30, at which point testing can be spaced out to every 5 years if Papanicolaou and HPV testing are performed together. If all results are normal, the patient remains 'low risk'. The definition of low risk generally excludes women who are immunosuppressed. However, 'immunosuppression' is not defined and alternative screening approaches are not provided, except for women infected with HIV. The HPV vaccine given as a series of vaccinations is safe and effective and can prevent infection and cervical cancer.There is no contraindications to HPV vaccinations for women to age 26 with rheumatic desease.

Keywords: HPV, rheumatic disease, women.

HIGH-RESOLUTION 4D ULTRASOUND AND ARTIFICIAL INTELLIGENCE IN FETAL ANOMALY DETECTION: A SYSTEMATIC REVIEW OF DIAGNOSTIC ACCURACY AND MATERNAL EXPERIENCE

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Abstract:
Recent advances in prenatal imaging and computer analysis, particularly high-resolution 4D ultrasound combined with artificial intelligence (AI) technologies, have revolutionized fetal anomaly detection. This systematic review synthesizes findings from 15 cohort and multicenter studies published between 2015 and 2025, identified through PubMed, Scopus, ScienceDirect, SpringerOpen, and Google Scholar databases. The pooled data demonstrate that high-resolution 4D ultrasound enhances detection rates of major congenital anomalies from approximately 78% with 2D imaging to 91%. AI-based applications—including machine learning algorithms, deep learning models, and automated image processing—have further improved diagnostic sensitivity (88–97%) and specificity (90–98%), particularly for complex cardiac and central nervous system defects. Importantly, over 65% of anomalies are detectable during the first trimester, enabling timely clinical decisions and improved perinatal outcomes. Maternal psychological benefits are notable, with more than 85% of women reporting reduced anxiety and greater satisfaction with prenatal care facilitated by AI-assisted imaging. Despite these advances, challenges persist, including operator dependency, cost, need for standardized protocols, and integration into routine clinical workflows. Preliminary data from technologically advanced hospitals in North Macedonia corroborate global trends, underscoring the value of integrating high-resolution 4D ultrasound and AI tools into obstetric practice. This review advocates for widespread adoption of these technologies to optimize fetal health monitoring and maternal wellbeing.

COMPLICATIONS AFTER MEDICAL ABORTION ON UNIVERSITY CLINIC FOR GYNECOLOGY AND OBSTETRICS IN SKOPJE, REPUBLIC OF NORTH MACEDONIA

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Introduction: Medical abortion is introduced on University Clinic for Gynecology and Obstetrics in Skopje since 2020. In the last 5 years about 4000 abortions in the first and second trimester of pregnancy with Myfegyne and Mysoprostole were made on our Clinic.

The aim: To evaluate complications and negative effects of medical abortions in the last 5 years. Data from medical documentation from our patients were used for analysis.

Results: On University Clinic for Gynecology and Obstetrics in Skopje **i**n the period from 01.01.2020 to 31.12.2024 about 3797 medical abortions were made: 2501 medical abortion In the first trimester of and 592 in the second trimester of pregnancy. From complications: one case with rupture of the womb after previous Caesarean section treated surgically with suture of the womb, several cases with heavy uterine bleeding treated with transfusion of blood, instrumental revision of the womb because of residual masses after medical abortion in about 2% of cases in the first trimester and about 15% of patients with second trimester medical abortion. From other rare complication there were several cases with allergic reactions on medications treated conservatively, patients with fever, diarrhea and vomiting.

Conclusions: Medical abortion in the first and second trimester of pregnancy in associated with a small percent of complications and negative effects and is safe option for interruption of pregnancy.

Key words: medical abortion, complications, first and second trimester of pregnancy

HPV GENOTYPE DISTRIBUTION IN HIGH-GRADE CERVICAL LESIONS (CIN3 AND CIS) AMONG WOMEN IN NORTH MACEDONIA: INSIGHTS FROM COMBINED NATIONAL AND REGIONAL DATA

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Background: Cervical intraepithelial neoplasia grade 3 (CIN3) and carcinoma in situ (CIS) represent high-grade precancerous lesions strongly associated with persistent infection by high-risk human papillomavirus (HPV). Understanding the genotype distribution is essential for tailoring vaccination, screening, and prevention strategies. While multiple studies in North Macedonia have reported HPV prevalence, data consolidation offers a clearer picture of the dominant genotypes driving CIN3 and related lesions.

Methods: We reviewed and combined findings from two recent studies on HPV prevalence in North Macedonia. One investigated HPV genotypes in women with cervical intraepithelial lesions and cancer (n≈260), while the other compared genotype distribution across Vojvodina (Serbia) and North Macedonia (n≈822). Both used molecular HPV DNA testing, and histopathological correlation with CIN grades was performed.

Results:

- HPV-16 was consistently the most frequent genotype in CIN3 and CIS, found in ~41–52% of women with CIN3 and up to 75% in invasive cancers.
- HPV-31 emerged as the second most common genotype across CIN1, CIN2, and CIN3.
- HPV-18 was particularly associated with carcinoma in situ (12–13%).
- HPV-35 and HPV-52 also appeared in high-grade lesions, though less frequently.
- Mixed infections were more often associated with LSIL/HSIL than CIS.
- Regional comparison showed similar dominance of HPV-16 but highlighted geographic variations, with HPV-31 and HPV-35 more prominent in North Macedonia compared to neighboring Serbia.

Conclusions: HPV-16 remains the principal driver of CIN3 and CIS in North Macedonian women, followed by HPV-31 and HPV-18. The presence of HPV-31 as a consistent second genotype underlines the importance of using vaccines that include both HPV-16 and HPV-31. Consolidating national and regional data reinforces the need for comprehensive HPV vaccination and optimized screening programs in North Macedonia.

THE IMPACT OF INCREASED AZITHROMYCIN USE DURING THE COVID-19 PANDEMIC ON REPORTED *CHLAMYDIA TRACHOMATIS* INFECTIONS: A POTENTIAL HIDDEN LINK

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4. PZU 'Medika Vera'

Background: *Chlamydia trachomatis* is a Gram-negative, obligate intracellular bacterium and the most commonly reported bacterial sexually transmitted infection (STI) worldwide. It primarily infects the urogenital tract, often presenting asymptomatically, particularly in women, which increases the risk of untreated infections leading to complications such as pelvic inflammatory disease, infertility, and ectopic pregnancy. Early detection and treatment—typically with macrolide antibiotics like azithromycin—are essential to control transmission and prevent long-term sequelae.

Aim of the Study: The aim of this study is to investigate the potential correlation between the widespread use of azithromycin—particularly during the COVID-19 pandemic—and the observed decrease in *Chlamydia trachomatis* positive cases. The study explores whether the broad administration of macrolide antibiotics may have temporarily suppressed *C. trachomatis* infections, affecting STI surveillance data during this period.

Materials and Methods: This retrospective study analyzed *Chlamydia trachomatis* detection data collected between 2020 and 2025. Cervical swab samples were tested using the DTprime Real-Time PCR System, a DNA-based technology designed for high-sensitivity and high-specificity qualitative and quantitative analysis of DNA and RNA targets. This method allowed accurate detection of *C. trachomatis* genetic material in urogenital samples.

Results: Over the six-year study period from 2020 to 15th of August 2025, the number of patients tested for *Chlamydia trachomatis* varied annually. In 2020, 2,073 individuals were tested, with 17 returning positive results, representing a positivity rate of 0.82%. The following year, in 2021, a further decline was observed with only 5 positive cases out of 1,886 tested patients, corresponding to a positivity rate of just 0.27%. However, from 2022 onward, the number of positive cases began to increase. In 2022, 45 out of 2,285 patients tested positive (1.97%), and in 2023, there were 52 positive cases among 2,951 tested (1.76%). A similar trend continued in 2024 with 48 positive cases out of 2,637 patients (1.82%), while in 2025, 31 cases were detected among 2,158 patients, resulting in a positivity rate of 1.44%.A notable decline in positivity was observed in 2020 and 2021, coinciding with peak COVID-19 treatment periods where azithromycin was widely prescribed. A subsequent increase in

positivity rates was seen from 2022 onwards, as azithromycin usage declined and sexual health services normalized.
Conclusion: The significant drop in *Chlamydia trachomatis* positive cases during the early COVID-19 years may be partially attributed to the increased use of azithromycin, a macrolide antibiotic with known efficacy against *C. trachomatis*. While public health restrictions and decreased STI testing also contributed, the antimicrobial effect of azithromycin likely played a role in temporarily suppressing infections. These findings underscore the importance of antibiotic stewardship and continuous STI surveillance to avoid misinterpretation of epidemiological trends.
Keywords: *Chlamydia trachomatis*, Azithromycin, COVID-19, Macrolide antibiotics, STI surveillance, PCR testing, Antimicrobial effect, Epidemiological trends, Sexual health

TREATMENT OF A 62-YEAR-OLD PATIENT WHO DEVELOPED DEEP VEIN THROMBOSIS (DVT) DUE TO IMMOBILIZATION OF THE LEFT LOWER EXTREMITY AS A RESULT OF A FRACTURE OF THE LATERAL MALLEOLUS OF THE FIBULA.

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Introduction: Deep vein thrombosis (DVT) is a serious condition characterized by the formation of clots in the deep veins, most commonly in the lower extremities. This condition is a major predisposing factor for pulmonary embolism.
DVT is best explained through Virchow's triad – venous stasis, endothelial damage, and hypercoagulability. Venous stasis occurs as a result of prolonged immobilization, heart failure, or venous insufficiency. Endothelial damage, caused by surgical interventions, trauma, or inflammation, leads to the activation of the coagulation cascade.
Case Presentation: A 62-year-old male patient came for a check-up on 16.04.2024 with complaints of pain, swelling, and fever in the left lower extremity.
According to his medical history, these symptoms started 4-5 days ago but became more intense in the last 24 hours. The patient had a fracture of the lateral malleolus of the left leg about 4-5 weeks prior, and had his left leg immobilized for 3 weeks.
Upon inspection and palpation, symptoms of an active thrombotic process were present. Laboratory tests (hemostasis and D-dimers) showed a mild hypercoagulable state and activated secondary fibrinolysis (D-dimers – 2950 ngr/ml).
Anticoagulant therapy was indicated (Tab. Rivaroxaban 20 mg 1x1) + (Tab. Diosmin 600 mg 1x1 and Gel. Lioton 100,000 i.e. 2x - locally), and the patient was referred for an arterial-venous Doppler of the lower extremities. The Doppler report clearly described the left great saphenous vein and the walls of the small saphenous vein as completely thrombosed.
Objective: The purpose of this paper is to present the dangers of DVT and the effect of anticoagulants when started as soon as possible.
Keywords: Deep vein thrombosis, anticoagulant therapy.

IS IT POSSIBLE TO PREVENT SARCOPENIA WITH PEDAL EXERCISE: A START-UP PROJECT

Prof. Dr. Hüseyin CAN, Dr. Abdullah DOĞAN, Begüm İPEK

The global population is aging rapidly, which increases the prevalence of chronic diseases, reduced musculoskeletal strength, and diminished cardiovascular endurance in older adults. Regular physical activity plays a critical role in promoting healthy aging, preventing disease, and supporting independent living. Pedal exercise, as a low-impact and accessible activity, has been shown to enhance cardiovascular health, muscle strength, metabolic regulation, cognitive performance, and overall quality of life in elderly populations.

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