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OF THE MINISTRY OF HEALTHCARE OF THE RUSSIAN FEDERATION

THE INTERNATIONAL SCIENTIFIC CONFERENCE FOR STUDENTS AND YOUNG RESEARCHERS IN ENGLISH «TOPICAL ISSUES OF MEDICINE»

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ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ
ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ ВЫСШЕГО ОБРАЗОВАНИЯ
«СТАВРОПОЛЬСКИЙ ГОСУДАРСТВЕННЫЙ МЕДИЦИНСКИЙ УНИВЕРСИТЕТ»
МИНИСТЕРСТВА ЗДРАВООХРАНЕНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ

МЕЖДУНАРОДНАЯ НАУЧНАЯ КОНФЕРЕНЦИЯ СТУДЕНТОВ И МОЛОДЫХ УЧЁНЫХ НА АНГЛИЙСКОМ ЯЗЫКЕ «АКТУАЛЬНЫЕ ВОПРОСЫ МЕДИЦИНЫ»

Сборник тезисов

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В сборнике представлены тезисы работ авторов из российских и зарубежных учебных заведений для Международной научной конференции студентов и молодых ученых по актуальным вопросам теоретической, практической медицины и медико-биологических наук на английском языке.

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Dear friends!

I am pleased to welcome the participants of the International Scientific Conference of Students and Young Researchers in English "Topical Issues of Medicine", which is being held at Stavropol State Medical University for the eighteenth time.

The Conference brings together young people who are engaged in research work from both Russian and foreign universities.

The problems raised in the research of students, graduate students, young scientists demonstrate the diversity of scientific interests of modern youth, give reason to say that medical science has a future, that a worthy change to today's scientists and practitioners is growing.

Research work of young people is one of the most important means of improving the quality of training of specialists with higher education; it is an effective method of formation and development of students' motivation to creativity, responsibility and independence, as well as a way to realize individual approach in teaching and education of students.

Modern science is developing rapidly, new scientific developments amaze with their surprise, depth of research, grandiose steps forward in this or that field of science, including medicine. Today scientific events are very popular and in demand. To learn about innovative projects, large-scale scientific developments, it is possible to learn about new research from their colleagues at various forums, in particular, at scientific conferences, which are held to generalize the experience of developers.

I hope the Conference will contribute to the creative activity of students, graduate students, young scientists and their involvement in solving the urgent problems of modern medical science.

I wish fruitful work, constructive dialogue and effective cooperation to all participants and organizers of the Conference!

Mazharov Victor Nikolaevich
Rector of Stavropol State Medical University, Russia

SCIENTIFIC ABSTRACTS OF STAVROPOL STATE MEDICAL UNIVERSITY STUDENTS AND YOUNG RESEARCHERS, RUSSIA

ABSTRACTS

ANAESTHESIA

K. Abdullah, K. Sameena, J. Gheebel
Stavropol State Medical University, Stavropol, Russia
Department of General Surgery
Scientific supervisor: D.M.Sc., Professor **O.V. Vladimirova**

Introduction: General anesthesia is defined as 'an induced state of unconsciousness accompanied by partial or complete loss of protective reflexes, including the ability to independently maintain an airway and respond purposefully to physical stimulation or verbal command.' Anesthetics are generally categorized into two classes according to their functions: local anesthetics and general anesthetics. Local anesthetics are composed of esters and amides and are administered to skin, subcutaneous tissues and intrathecal and epidural spaces to block pain sensations. General anesthetics are either gases or volatile liquids that evaporate when inhaled with oxygen or anesthetic agents that are administered intravenously to produce a state of unconsciousness.

Objectives:

- Define anesthesia, balanced anesthesia and pre-anesthetic medication.
- Distinguish between inhalation and intravenous anesthetics.
- Identify the pharmacokinetics, pharmacological actions, and side effects of inhalation anesthetics.
- Identify pharmacodynamics and side effects of intravenous anesthetics.

Materials and methods: Patients scheduled to undergo elective surgery in the age group of 18 to 65 years with the American Society of Anesthesiologists [ASA] grades 1 and 2, who are willing to participate and given written informed consent. Patient whose age is <18 years and more than 65 years, ASA health status class 3 and above were excluded. Statistical analysis was done by calculating percentages.

Results and discussion: Twenty percent of participants were illiterate and of the educated, none were graduates or postgraduates. Patients with higher level of education had better knowledge of anesthesiology and role of an anesthesiologist with $P<0.05$ than those with lesser education. Forty-eight percent of the participants had no idea about anesthesia despite the majority [62%] having previous surgery with no statistically significant difference [$P>0.05$] between those with previous surgery and those without previous surgery regarding the knowledge of anesthesiology and anesthesiologists. 90% did not know the complications, types of anesthesia and 44% did not know that anesthesiologists are doctors.

Conclusion: Most of the participants were not aware of the role of anesthesia and anesthesiologists inside and outside the operation theatre. Although this could be attributed to there lower level of education, the fraternity of anesthesiologists has to educate patients and surgeons about the role of anesthesia.

Keywords: Anesthesia, anesthesiologists, anesthetics.

COMPARISON OF THE LONGITUDINAL AND TRANSVERSE ARCHES OF THE FOOT: WHICH FOOT IS MORE ELASTIC AND PRONE TO FLATFOOT, AND WHICH IS MORE RIGID AND ADAPTED FOR PUSH-OFF?

S.A. Abramyan, A.A. Solodovnikova, A.V. Kanmurzaeva
Stavropol State Medical University, Stavropol, Russia
Department of Anatomy named after V.Yu. Pervushin
Scientific supervisor: Assistant **D.V. Bondarenko**

Background: The anatomical and functional organization of the foot is represented by two key structures – the longitudinal and transverse arches – which possess heterogeneous biomechanical properties. The longitudinal arch is characterized by high elasticity and shock-absorbing capacity, provided by passive tension of the ligamentous apparatus and active muscular regulation. The transverse arch, in contrast, is distinguished by rigidity and performs primarily a stabilizing function, forming a rigid support for the forefoot. Differences in viscoelastic properties, degree of mobility, and mechanisms of adaptation to load determine the varying predisposition of these arches to the development of flatfoot, necessitating a differentiated approach to assessing their pathobiomechanical changes.

Objective: Based on an analysis of a series of radiological observations, to evaluate the elasticity characteristics of the longitudinal and transverse arches of the foot and their role in the formation of flatfoot.

Materials and methods: In the course of this study, an analysis of 28 radiographs in the direct and lateral projection of the feet of patients who applied to the Department of Traumatology and Orthopedics of Stavropol City Clinical Hospital No. 2 in the period 2025–2026 was conducted. The inclusion criterion was the availability of complete radiological data allowing for the assessment of the angular parameters of the arches. The patients' ages ranged from 19 to 52 years. Ethical standards were observed; data were depersonalized. Radiograph evaluation was performed using standard methods: for the longitudinal arch – the talo-first metatarsal angle and the calcaneal inclination angle; for the transverse arch – the divergence angle of the metatarsal bones (I–V) and the hallux valgus angle.

Results and discussion: The presented series of 28 observations, despite its limited size, illustrates the key biomechanical patterns described in the literature. Signs of flattening of the longitudinal arch were diagnosed in 19 cases (67.8%). Among these: 18 patients showed predominant flattening of the medial longitudinal arch, with the talo-first metatarsal angle open inferiorly from 8° to 15°. All these patients were under 30 years of age, exhibited signs of joint hypermobility, and were not engaged in professional sports; 1 patient showed flattening of the lateral longitudinal arch with a reduction in the calcaneal inclination angle to 14°. This patient was a 22-year-old male professionally involved in sprinting. He also exhibited relative preservation of the medial arch. This aligns with data indicating that hypermobile individuals and patients with ligamentous hyper elasticity constitute the primary risk group. The lateral longitudinal arch, conversely, maintained rigidity in all

observations except one – in the sprinter athlete. This fact is consistent with the understanding that the lateral arch is anatomically more stable (calcaneus, cuboid, and fifth metatarsal bones) and rarely deforms in isolation; however, under extreme push-off loads, compensatory remodeling may occur. Signs of transverse flatfoot were identified in 9 cases (32.14%). All patients were women aged 44 and 52 years. In one of them, hallux valgus was 22°, in the other, 18°. In both cases, transverse flatfoot was associated with moderate flattening of the medial longitudinal arch. This confirms literature data regarding the age-related involution of the transverse arch and the significant role of hormonal factors (pregnancy, menopause). An important finding is the confirmation of the secondary nature of changes in the talus and calcaneus. In none of the 28 observations was pathology of these bones the underlying cause. The talus, acting as a "distributor" of weight, changes its position only after the ligamentous apparatus ceases to maintain normal biomechanics. Its head shifts inferiorly and medially.

Conclusion: The analysis of 28 radiological observations established that the medial longitudinal arch possesses the highest elasticity and constitutes the most frequent location of flatfoot, predominantly in young individuals with joint hypermobility. The lateral longitudinal arch, in contrast, is rigid; its flattening was observed in only one case – in a sprinter athlete – which likely reflects adaptation to push-off loads. The transverse arch is characterized by low elasticity; its deformation was observed exclusively in older women. In all observations, changes in the talus and calcaneus were secondary in nature and did not represent the primary cause of flatfoot development.

Keywords: Longitudinal arch of the foot, transverse arch of the foot, elasticity, rigidity, flatfoot, joint hypermobility, radiological diagnosis.

SEVERE BILATERAL DESTRUCTIVE PNEUMONIA IN A CHILD WITH DRAVET SYNDROME (SCN1A GENE MUTATION): CLINICAL OBSERVATION

A.A. Aje, S.V. Arutyunova, K.A. Arakelyan, O.E. Rubacheva, E.G. Zurnacheva
Stavropol State Medical University, Stavropol, Russia
Department of Polyclinic Pediatrics
Scientific supervisors: C.M.Sc., Associate Professor **O.E. Rubacheva**,
C.M.Sc., Associate Professor **E.N. Voronkina**

Background: Dravet syndrome (DS) is a severe form of genetic epileptic encephalopathy with onset in the first year of life, characterized by drug-resistant seizures and severe cognitive and motor impairment. Patients with this disorder require special attention when developing intercurrent illnesses due to the high risk of neurological impairment and systemic complications.

Objective: To present a clinical case of severe bilateral destructive pneumonia in a child with genetically confirmed Dravet syndrome.

Materials and methods: A retrospective analysis of the child's medical history, dynamic and follow-up observation of a patient with severe bilateral polysegmental pneumonia complicated by lung tissue destruction and pleural effusion with genetically confirmed Dravet syndrome.

Results and discussion: Patient A, 6 years old fell ill on January 4, 2026 (temperature 38.0°C, cough, seizures). The seizures were stopped by an ambulance crew physician (Sibazon), and the child was hospitalized in the intensive care unit of the Mozdok Central District Hospital, where repeated episodes of seizures were recorded. The mother refused hospitalization. Outpatient therapy (antiviral, antibacterial, symptomatic, and inhalation) yielded positive results. A week later, the patient developed a recurrence of fever, ear pain, restless sleep, a single episode of vomiting, and shortness of breath. The parents sought hospitalization, and were advised to continue treatment at home. On January 19, 2026, a patient presented to the Regional Children's Clinical Hospital complaining of a frequent, unproductive cough, a fever of 37.4°C (99.8°F), anxiety, nausea, a single episode of vomiting, drowsiness, swelling of the eyelids and face, and a decrease in SaO2 to 92%. The child was hospitalized in the Intensive Care Unit with clinical manifestations of severe respiratory failure secondary to bilateral polysegmental pneumonia and suspected encapsulated pleurisy/ atelectasis in S8 (based on chest X-ray). Respiratory support was initiated.

A chest X-ray (February 2, 2026) and CT scan (February 4, 2026) revealed an abscess in S5 of the left and right lungs. The development of acute bilateral purulent otitis media was confirmed by a head CT scan. Bronchoalveolar lavage was performed during therapeutic bronchoscopy. *Ps. aeruginosa* and *E. faecalis* were detected in bronchial surface washings and urine, while *Str. pneumoniae* was detected in discharge from the right ear during tympanotomy (January 19, 2026). An EEG revealed marked general cerebral changes without epileptiform activity (indicating ongoing encephalopathy).

Laboratory examination of the peripheral blood revealed neutrophilic leukocytosis, grade I-II anemia, elevated ESR, highly positive inflammatory markers (CRP, PCT, interleukin-6), an elevated lactic acid level of 2.4, persistent hypoproteinemia, albuminemia, and transient hyperenzymemia.

A comprehensive antibacterial, replacement, immunocorrective, antifungal, and symptomatic therapy, as well as nutritional support with therapeutic mixtures, were administered. Basic therapy for the underlying neurological condition was not interrupted. The patient was discharged with improvement under specialist observation. His condition at discharge was moderate. The acute infection was controlled, but a residual air cavity in the lung remained, requiring dynamic observation.

Conclusion: This clinical case demonstrates that neurological deficit can be a catalyst for the rapid deterioration of the patient's condition. The development of lung tissue destruction during intensive antibacterial therapy indicates the aggressiveness of hospital microflora and the depletion of the body's compensatory reserves. Despite the severity of the patient's somatic condition, epileptic activity was maintained under control, indicating adequately selected basic antiepileptic therapy in a critical condition.

Keywords: Children, Dravet syndrome, genetic epileptic encephalopathy, monogenic epilepsy, SCN1A gene mutation, destructive pneumonia.

CARDIORENAL SYNDROME IN PATIENTS WITH ACCESSORY RENAL ARTERIES

A.A. Aje, E.D. Malima, H.N. Aloyve, M.C. Uzomah
Stavropol State Medical University, Stavropol, Russia
Department of Hospital Therapy
Scientific supervisor: D.M.Sc., Professor **N.N. Gladkikh**

Background: Cardiorenal syndrome is a complex pathophysiological condition characterized by the interdependent dysfunction of the heart and kidneys, where impairment of one organ leads to dysfunction of the other. Accessory renal arteries are anatomical variants arising from the aorta or its branches, entering the renal hilum or penetrating the renal parenchyma, often at the poles. Their clinical significance in relation to cardiovascular and renal function remains insufficiently explored.

Objective: To determine the relationship between pathological left ventricular remodeling and changes in glomerular filtration rate (GFR) in patients with accessory renal arteries, considering the presence or absence of arterial hypertension.

Materials and methods: A total of 30 patients with accessory renal arteries (25 men and 5 women; mean age 26.00±9.66 years) were examined. Diagnosis was confirmed using multislice computed tomography and retrograde transfemoral aortography. Patients were divided into two groups: Group 1 (n=15) with arterial hypertension and Group 2 (n=15) without hypertension. GFR was calculated using the CKD-EPI formula. Left ventricular remodeling was assessed using left ventricular mass index and relative wall thickness. Statistical analysis was performed to evaluate correlations.

Results: Pathological left ventricular remodeling, including eccentric hypertrophy and concentric remodeling, was observed in 47% of hypertensive patients with accessory renal arteries. No cases of concentric hypertrophy were identified. Patients without hypertension demonstrated normal left ventricular geometry. Remodeling was not associated with gender, family history, anatomical location of accessory arteries, renal structural anomalies, or circadian blood pressure variations ($p > 0.05$). However, significant correlations were found between left ventricular remodeling and duration of hypertension ($r=+0.34$, $p=0.02$), severity of hypertension ($r=+0.41$, $p=0.001$), and decreased GFR ($r=-0.27$, $p=0.015$).

Conclusion: Pathological left ventricular remodeling is present in nearly half of patients with accessory renal arteries and hypertension. It is moderately associated with the duration and severity of hypertension and correlates with reduced renal function.

Keywords: Cardiorenal syndrome, accessory renal arteries, arterial hypertension, left ventricular remodeling.

THE STUDY OF PUBLIC INFORMATION ABOUT BOTULISM

S.Y. Aleev
Essentuki Branch of Stavropol State Medical University, Essentuki, Russia
Scientific supervisors: **A.S. Akulshina, L.N. Alatortseva**

Background: Nowadays, the number of reported cases of botulism in Russia has increased. The dynamics of the epidemic process of this disease rises constantly. In Stavropol, all cases of botulism infection in three years were

associated with the consumption of homemade canned food. The analysis of the conducted research will make possible the developing practical recommendations for the preventive activities of medical professionals in relation to the prevention of the incidence of botulism.

Objective: Surveying of the population about the risks of botulism and the definition of the role of medical staff in the primary prevention of the disease.

Materials and methods: The survey was conducted among visitors to medical institutions in Essentuki by random sampling. The questionnaire was anonymous and consisted of 16 questions.

Results: 100 people were surveying, including 84% of women and 16% of men. Women were more active. The numerous parts of the respondents were people of working age. People of this age are most often infected with botulism. The largest number of respondents has secondary and vocational education. The study revealed the following data: 80% of respondents preserve food at home, having no information of the threat of infection with botulism; 72% are not ready to abandon this method of harvesting.

Conclusion: 1. The majority of respondents don't know enough about the existence of this disease and the possibility of contracting it. 2. The less number of respondents do not have information about the signs, course and outcome of this infection. 3. The significant part of the respondents are not ready to give up home canning, even considering the risks of infection with botulism. 4. Most of those tested are ready to receive additional information on this disease. The data public information about «Botulism». It is necessary to pay attention to the fact that medical staff carry out sanitary and educational work among the people. These initiatives should be implemented on a systematic and regular basis as primary prevention of the disease is particularly important.

Keywords: Botulism, prevention, disease, information, survey.

COMPARATIVE ANALYSIS OF THE PREVALENCE OF THE CARIOUS PROCESS AND IDENTIFICATION OF THE RELATIONSHIP BETWEEN ORTHODONTIC PATHOLOGY AND CARIOUS LESIONS IN 2ND-4TH YEAR STUDENTS OF THE FACULTY OF FOREIGN STUDENTS

I.L. Anastasova, A.K. Meretukov, A.E. Elbyakova
Stavropol State Medical University, Stavropol, Russia
Department of Pediatric Dentistry
Scientific supervisors: C.M.Sc. Assosiate Professor **A.M. Ugrimova,**
C.M.Sc., Assosiate Professor **A.V. Balandina**

Background: Based on our research conducted last year, we can conclude that international students studying at the Faculty of Dentistry frequently present with both dental caries and dentoalveolar anomalies and deformities. Currently, dental caries is the most common disease of the dental system. The prevalence of this pathology is 98-99%. If untimely or improperly treated, caries can lead to the development of inflammatory diseases of the pulp and periodontium, tooth loss, and the development of purulent-inflammatory diseases of the maxillofacial region. Dentoalveolar anomalies and deformities, such as dental dystopia and

bite changes, can also significantly influence the development and spread of caries.

Objective: Studying the relationship between these pathologies is necessary to substantiate the influence of dentoalveolar anomalies and deformities on caries progression, which will allow us to develop preventive measures and more effective treatment approaches for this patient population.

Materials and methods: This study was conducted at the Departments of Pediatric Dentistry and Orthodontics of Stavropol State Medical University in the City Clinical Children's Dentistry Polyclinic. At the first stage, a survey, questionnaire, and examination of 40 international students of three years were conducted. At the second stage, the data obtained as a result of the examination were analyzed, summarized, and presented in the form of diagrams/graphs. During this study, students from Uzbekistan, Algeria, Jordan, Tajikistan, Azerbaijan, Abkhazia, Syria, Palestine, Lebanon, Morocco, and China were examined. It was found that out of 100% of the examined students, 29% (12 people) have a KPU index below 6, which corresponds to a compensated form of caries, 50% (20 people) have a KPU index from 7 to 9, which corresponds to a subcompensated form of caries, and 21% (8 people) of students have a KPU index greater than or equal to 10, which indicates the presence of a decompensated form of caries. At the same time, 79% (32 people) of students were found to have some kind of dental anomaly or deformation, most often in the form of a pathological bite or crowding. It should be noted that this group of students examined predominantly had decompensated and subcompensated forms of caries.

Results and discussion: We also conducted a questionnaire and survey, which revealed that 2% (1) of students in years 2-4 had undergone therapeutic treatment this year, while the rest showed no changes. Of all the students examined, 21% (8) had undergone orthodontic treatment. 57% (23) of those surveyed planned to undergo orthodontic and therapeutic treatment, and 22% (9) believed they did not need or did not plan to undergo orthodontic treatment. We were also interested in learning whether the attitudes toward oral health of international students had changed after entering the Faculty of Dentistry. 77% (31) of those surveyed responded positively.

Conclusion:

1. Most second- to fourth-year students have subcompensated caries (KPU index from 7 to 9).

2. Among second- to fourth-year students, only 2% underwent therapeutic treatment after our examination last year.

3. We have identified a relationship between dental anomalies and deformations and the carious process, namely, in the presence of any orthodontic pathology, the carious process begins to progress, its intensity increases, and patients experience sub- and decompensated forms of caries. We associate this with the appearance of "dead zones", difficulty cleaning these areas of the teeth, and difficulties with hygiene. Under these conditions, the carious process spreads more rapidly, but with timely diagnosis and prevention, as well as with timely orthodontic treatment, it is possible to avoid these pathologies.

Keywords: Dental caries, dentoalveolar, subcompensated, orthodontic treatment, deformities.

THE DIAGNOSTIC CAMOUFLAGE: STRATEGIES FOR EARLY RECOGNITION AND AGGRESSIVE MANAGEMENT OF MATERNAL SEPSIS

M. Anjali Kumar, T. Sivasankari, G. Rajeshwari
Stavropol State Medical University, Stavropol, Russia
Department of Obstetrics and Gynaecology #1
with the Advanced Training Course
Scientific supervisor: Assistant **M.G. Gasparyan**

Background: Maternal sepsis remains a largely preventable cause of maternal mortality and severe morbidity worldwide, accounting for about 11% of global maternal deaths. The condition affects approximately 1 in 760 pregnant women, with a cumulative incidence of 13.16 per 10,000 pregnancies based on an analysis of over 141 million pregnancies across 24 countries. Early recognition in the peripartum period remains difficult because normal physiological changes of pregnancy, such as increased heart rate and reduced systemic vascular resistance, can mimic or mask signs of infection.

Objective: This study examines the diagnostic camouflage of maternal sepsis and evaluates Modified Obstetric Early Warning Systems compared with standard systemic inflammatory response syndrome criteria for early detection.

Materials and methods: The online data is from PubMed, WHO, Centre for Disease Control (CDC), International Federation of Gynaecology and Obstetrics, PubMed Central (PMC).

Results and discussion: Standard sepsis screening tools often lack specificity in pregnancy, contributing to delayed diagnosis and poorer outcomes. MOEWS appears more useful than traditional SIRS criteria in identifying deterioration in obstetric patients.

Conclusion: Reducing maternal deaths from sepsis requires proactive screening rather than reactive treatment. Routine use of obstetric-specific physiological parameters may improve early recognition and enable life-saving intervention.

Keywords: Maternal Sepsis; maternal mortality; Obstetric Early Warning Systems (MOEWS); peripartum care; sepsis bundles; multidisciplinary management.

ARTIFICIAL INTELLIGENCE IN HEMATOLOGY: FROM MORPHOLOGY TO MULTIMODAL INTEGRATION

M. Anjali Kumar, T. Sivasankar, G. Rajeshwari
Stavropol State Medical University, Stavropol, Russia
Department of Hospital Therapy
Scientific supervisor: C.M.Sc., Assosiate Professor **Ya.M. Marchenko**

Background: Artificial intelligence (AI) is transforming haematology through integration into diagnostic workflows, genomic interpretation, and clinical decision support, enabling automated analysis and prediction of treatment outcomes.

Objective: To provide a structured overview of AI applications in haematology, highlighting key domains, challenges, and future directions.

Methods and materials: The online data is from PubMed, FDA and CE Mark, CellaVision, Scorpio Labs, PathAI, TCGA.

Results and discussion: The diagnostic accuracy shows that the AI achieves 95–98% sensitivity in detection in peripheral blood and predicts key genetic mutations (NPM1, IDH1/2) from bone marrow images with AUCs of 0.85–0.92, which ensures agreement between pathologists and expert morphologists and improves the prediction of 2-year survival in Myelodysplastic syndromes by 15–20% compared with online estimates, and federated learning improves the diagnostic accuracy for rare lymphomas by 12–18% across institutions.

Conclusion: AI is evolving into a foundational tool in haematology. Future directions include foundation models, digital twins for treatment simulation, and federated learning to address data limitations, advancing precision and personalized care.

Keywords: Artificial intelligence, haematology, lymphomas, myelodysplastic syndromes, genetic mutations.

PREVALENCE OF VISCERAL LEISHMANIASIS IN INDIA

Aryan Puniya, Mahi Puniya, T.S. Nikolenko
Stavropol State Medical University, Stavropol, Russia
Department of Biology
Scientific supervisor: Assistant **T.S. Shepeleva**

Background: Visceral leishmaniasis (kala-azar) is a vector-borne parasitic disease endemic in 75 countries across Asia, Africa, and the Americas. It causes estimated 20,000-30,000 deaths annually. In 2020, India accounted for 18% of the global VL burden. Four states are endemic: Bihar, Jharkhand, Uttar Pradesh, and West Bengal. All endemic states report cases monthly to the National Vector Borne Disease Control Programme (NVBDCP).

Objective: To analyze the spatial distribution and temporal trends of visceral leishmaniasis in India during 2020-2025 to inform planning and evaluation of control activities.

Materials and methods: Visceral leishmaniasis data for India (2020-2025) were extracted from NVBDCP reports, WHO regional surveillance updates, and peer-reviewed literature. Descriptive analysis assessed temporal trends in case incidence, mortality, and geographic distribution at district and block levels. Elimination status was evaluated against the WHO target of less than one case per 10,000 population at block level for two consecutive years.

Results and discussion: Kala-azar is caused by Leishmania donovani and transmitted by the sand fly Phlebotomus argentipes. No confirmed animal reservoirs exist in India. Endemicity is concentrated in 54 districts across four states: Bihar, Jharkhand, Uttar Pradesh, and West Bengal, comprising 633 endemic blocks.

During 2020-2025, cases declined from 524 in 2023 to 429 in 2025, with deaths falling to 4 in 2023. Geographic contraction is evident: in Uttar Pradesh, VL is now limited to three districts (Deoria, Kushinagar, Ballia), with only seven cases since January 2025.

India sustained the WHO elimination target of less than one case per 10,000 population at block level for two consecutive years (2024-2025), positioning the country for elimination certification. The Regional Kala-azar Elimination Initiative has driven a 95% case reduction across South Asia.

Conclusion: India has achieved the WHO elimination target. However, sustained efforts are critical to prevent resurgence. Key priorities include integrating VL control into primary health care, maintaining surveillance for post-kala-azar dermal leishmaniasis (PKDL), implementing integrated vector management, and ensuring continued resource mobilization. Evidence-based policy and long-term commitment will be essential to sustain elimination gains.

Keywords: Visceral Leishmaniasis, Kala-Azar, disease elimination, India.

RATIONALE FOR THE EFFECTIVENESS OF 3D DIGITAL ANALYSIS METHODS FOR THE CRANIOFACIAL COMPLEX IN CHILDREN WITH OCCLUSAL PATHOLOGY DURING THE MIXED DENTITION PERIOD

G.E. Bragin, E.A. Vakushina
Stavropol State Medical University, Stavropol, Russia
Department of Pediatric Dentistry
Scientific supervisor: D.M.Sc., Professor **E.A. Vakushina**

Introduction: Treating of patients with occlusal pathology in mixed dentition is a pressing issue in clinical practice and necessitates further study.

Objective: To improve the diagnostic efficiency for patients with occlusal pathology in mixed dentition by applying digital analysis methods to cone-beam computed tomography (CBCT) data.

Materials and methods: The study involved analyzing diagnostic 3D jaw models, as well as 2D and radiological 3D scans of the craniofacial complex derived from CBCT.

Results and discussion: The study involved analyzing diagnostic 3D jaw models, as well as 2D and radiological 3D scans of the craniofacial complex derived from CBCT. Results and discussion: During clinical studies, the prevalence of pathologies was differentiated as follows: distal occlusion in 59% of cases, including: deep overbite in 37% of cases; deep bite in 23% of cases; crossbite in 24% of cases, including: crossbite in the lateral segments in 15% of cases; reverse overjet in the anterior region in 10% of cases; mesial occlusion in 17% of cases, including: sagittal overjet in 10% of cases; vertical overjet in 7% of cases. In addition, the following skull and dental arch types were identified: mesognathic type in 63% of cases; brachygnathic type in 21% of cases; dolichognathic type in 15% of cases.

Conclusion: Analysis of the obtained morphometric parameters of the craniomandibular complex in children with occlusal pathology during mixed dentition, based on virtual extended CBCT data, reveals their pronounced variability. The calculated correlations provide highly informative data. The results obtained are effective for creating conditions to shape occlusion during

orthodontic treatment, taking into account the individual characteristics of the individual's maxillofacial region.

Keywords: Orthodontics, children, pathological occlusion, mixed dentition, craniofacial complex, 3D scan, cone-beam computed tomography.

PREVALENCE OF PLASMODIUM VIVAX IN INDIA

Chimata Jahnavi, I.V. Klimanovich
Stavropol State Medical University, Stavropol, Russia
Department of Biology
Scientific supervisor: Assistant **T.S. Nikolenko**

Background: Malaria in India is a complex public health challenge driven by diverse ecological settings and the circulation of multiple Plasmodium species. While historically a massive burden with 75 million annual cases in the 1950s, India has achieved an 80.5% reduction in cases and a 78.3% decline in deaths between 2015 and 2023. Despite this, India still accounts for approximately 73.3% of all malaria cases in South Asia.

Objective: Focus on ways to strengthen epidemiological surveillance to ensure effective malaria control.

Materials and methods: Analysis of research results from the National Center for Vector-Borne Disease Control (NCVBDC), supported by the Intensifying Malaria Eradication Project-3 (IMEP-3). This project targets 159 high-burden districts across 12 states using real-time surveillance.

Results and discussion: Approximately 88% of cases are now concentrated in eight specific high-burden states: Odisha (36%), Chhattisgarh (12%), Jharkhand (9%), Madhya Pradesh (9%), and Maharashtra (5%), which together account for approximately 71% of India's total case. While P. falciparum causes more severe complications, P. vivax remains persistent in urban and eastern districts. A major finding in recent research is that 70–80% of infections are asymptomatic, and up to 45% are "sub-patent" (too low-density to be detected by standard microscopy), acting as a hidden reservoir for transmission. Elimination efforts face "roadblocks" including HRP2/3 gene deletions in parasites (which make rapid diagnostic tests fail), multi-insecticide resistance in mosquitoes, and climate-driven transmission that extends the breeding season of vectors.

Conclusion: Targeted public health interventions, such as the Intensified Malaria Elimination Project (IMEP-2) and the distribution of over 40 million Long-Lasting Insecticide-Treated Nets (LLINs), have led to a significant decline in malaria cases and deaths in India. However, the path to a Malaria-Free India by 2030 faces critical hurdles. While states like Odisha (36%) and Chhattisgarh (12%) have seen improvements, they remain concentrated reservoirs. Furthermore, the persistent nature of P. vivax hypnozoites requires a more aggressive focus on radical cure and G6PD testing. Future management must prioritize high-sensitivity diagnostics for sub-microscopic infections, strengthened epidemiological surveillance in tribal "hotspots", and increased private sector reporting to ensure no case goes unrecorded.

Keywords: Malaria, prevention, India.

PREDOMINANCE OF FAMILIAL ANEURYSMS AND THEIR ENDOVASCULAR SURGERY AMONG POPULATIONS OF RUSSIAN FEDERATION AND INDIA: A COMPARATIVE ANALYSIS

R. Deepika
Stavropol State Medical University, Stavropol, Russia
Department of Neurology, Neurosurgery and Medical Genetics
Scientific supervisor: Assistant **A.S. Deryabin**

Background: Aneurysm is a bulge or swelling in a blood vessel most commonly in brain or aorta due to weakening in the structural components of the atrial wall. Familial intracranial aneurysms have high significant risks, with genetic and environmental factors influencing prevalence. Comparing familial intracranial aneurysm patterns between Russia and India can guide regional health care strategies.

Objective: To analyze and compare the predominance of familial aneurysms in Russia and India and their treatment modalities.

Materials and methods: A comparative analysis of published literature (2010-2025) on familial aneurysms prevalence, risk factors and genetic studies in Russia and India was made. The data from Deccan Herald, Google scholar and National Institute of health were reviewed. A comparative study between hospitals in Melmaruvathur Adhiparasakthi Institute of Medical Science and Research, Tamil Nadu, India, July and August 2025 and in Semeshko no # 3, Stavropol clinical regional hospital, Russia, department of Neurosurgery in December 2025 and January 2026 was made.

Results and discussion: Limited direct comparative exist. In Russia, FIAs are associated with genetic syndromes and hypertension. India's studies highlight familial clustering, with high rupture risks in affected families. Prevalence estimates vary: Russia (1.5-3% general population), India (0.5-2%). First degree relatives show 4-7 multiply higher risk in both populations. Endovascular surgery is more common and frequently used in Russia. India still prefer craniotomy rarely endovascular clipping.

Conclusion: Familial aneurysm predominance shows similarities, with genetic predisposition and hypertension as key factors. Russia and India need tailored screening strategies for high-risk families.

Keywords: FIAs, aneurysm, comparative analysis, predisposition, genetic syndromes, hypertension.

CLINICAL AND MORPHOLOGICAL CHARACTERISTICS OF BASAL CELL CARCINOMA: CLINICAL CASE

D.E. Dzhabarova, V.M. Vasilenko, N.A. Statnik
Stavropol State Medical University, Stavropol, Russia
Department of Pathological Anatomy
Scientific supervisor: C.M.Sc., Associate Professor **N.A. Statnik**

Background: The incidence of malignant neoplasms among the population in 2024 in the Stavropol Region was 2,789 people per 100,000 population. The mortality rate from malignant neoplasms was 149.8 cases per 100,000 population

in 2024, which is 1.5% less than in 2023 (151.9 cases per 100,000 population). Over the past five years, the performance of cancer services in our region has improved significantly: early detection has increased from 56.0% to 62%, which has significantly reduced one-year mortality from 21% to 16.5%. Five-year survival has increased from 49.2% to 57.2%.

Objective: To examine morphologically a case of basal cell carcinoma.

Materials and methods: The description of the clinical case.

Results and discussion: A 70-year-old patient complained to the oncologist-dermatologist about a small tumor on his cheek. During the examination, a tumor was found in the form of an exophytic (growing under the skin surface) neoplasm, up to 1.0 cm in size, pink in color, round in shape, with smooth, well-defined edges. The neoplasm was mobile, and pressing on it did not cause pain.

The tissue taken during the biopsy was sent for histological examination to the pathological anatomy department of the clinic. To verify the diagnosis, a histological examination of the biopsy specimen stained with hematoxylin and eosin was performed using the high-tech Aperio ScanScope Console histological analyzer.

The examination of the histological specimen stained with hematoxylin and eosin revealed basal cell carcinoma. The micro-preparation showed basaloid aggregates of various shapes and sizes, forming strands and nodes, most of which were angular in appearance, with a decrease in size from the surface of the neoplasm to its depth. The tumor cells were characterized by intense basophilia, large nuclei, and sparse cytoplasm. Peritumoral microspaces, apoptotic cells, and extensive foci of necrosis with lymphocytic infiltration were noted. The diagnosis was confirmed by histological examination; surgical treatment was recommended. Recovery proceeded without complications.

A distinctive feature of this clinical case is the deposition of calcium salts in the epithelial cells, as well as the presence of extensive necrosis with a large number of lymphocytes.

Conclusion: The absence of metastases in this pathology is explained by the inability of tumor cells that have entered the bloodstream to proliferate in other organs due to the absence of a growth factor produced by the tumor stroma.

Keywords: Malignant neoplasms, basal cell carcinoma.

ASSOCIATION OF BODY MASS INDEX WITH SEVERITY OF ACUTE PANCREATITIS (RANSON/ATLANTA CLASSIFICATION)

D.E. Dzhabarova, V.M. Vasilenko
Stavropol State Medical University, Stavropol, Russia
Department of Propaedeutics of Internal Diseases
Scientific supervisor: Assistant **M.P. Dubyansky**

Background: Acute pancreatitis is an acute surgical condition characterized by aseptic necrosis of pancreatic tissue with systemic inflammatory response. It is one of the leading causes of hospitalization among gastrointestinal diseases. In the Russian Federation, the proportion of patients with acute pancreatitis rose from 13.5% in 2000 to 23.6% in 2019. Severe disease develops in approximately 20% of patients, with mortality reaching 15% and exceeding 35% in cases of infected necrotizing pancreatitis. Early severity assessment and identification

of high-risk patients is crucial. According to the Atlanta Classification of 1992, mild pancreatitis occurs in 80% of cases with mortality below 1%, while severe pancreatitis in 20% of patients carries mortality up to 30% in infected forms.

Objective: To evaluate the relationship between body mass index and severity of acute pancreatitis using Ranson/Atlanta classification.

Materials and methods: Literature review analyzing clinical studies on obesity as a prognostic factor in acute pancreatitis. Data from studies examining body mass index and disease severity were evaluated.

Results and discussion: The Ranson score includes 11 criteria assessed at admission and at 48 hours, with fewer than three signs indicating mild disease and more than seven indicating severe disease with mortality exceeding 50%. Analysis of clinical studies revealed that obesity is a significant risk factor. In one study of 384 patients, severe disease was identified in 23.7%, local complications in 16.7%, and systemic complications in 13.3%. Obesity was recognized as a significant risk factor for both local and systemic complications. Another study of 739 patients confirmed that severe disease occurs more frequently in obese patients with higher complication and mortality rates. Pathogenetically, this is explained by lipotoxicity – high adipose tissue content leads to release of unsaturated fatty acids and proinflammatory mediators that enhance systemic inflammation and may contribute to multiple organ failure. Adipose tissue necrosis releases massive amounts of inflammatory mediators, worsening the disease course.

Conclusion: Obesity is a significant adverse prognostic factor in acute pancreatitis. Body mass index assessment should be considered an important additional criterion for risk stratification alongside existing prognostic scales, enabling more accurate identification of high-risk patients.

Keywords: Acute pancreatitis, body mass index, obesity, Ranson score, severity.

CHOICE OF GENERAL ANESTHESIA METHOD FOR PROVIDING DENTAL CARE TO CHILDREN WITH DISABILITIES IN AN INPATIENT SETTING

A.A. Ebzeeva, A.A. Ebzeev, A.K. Karakov, S.M. Tumanyan, E.A. Vakushina
Stavropol State Medical University, Stavropol, Russia
Department of Pediatric Dentistry
Scientific supervisor: D.M.Sc., Head of the Department **E.A. Vakushina**

Background: A significant portion of surgical and dental procedures performed on children with disabilities in an inpatient setting requires the use of general anesthesia. This article presents current data on various sedation methods, as well as the mechanisms of their impact on the psycho-emotional state of patients and the effectiveness of dental treatment.

Objective: Enhancing the efficacy of therapeutic interventions provided to children with disabilities using various types of anesthesia in an inpatient setting, and to assess the safety and feasibility of their use.

Materials and methods: The study was conducted in the operating unit of the Regional Children's Clinical Hospital, Stavropol. Various sedation methods

were employed for the study, including inhalation sedation with sevoflurane and intravenous sedation with propofol. The primary focus was on the efficacy and safety of these methods, as well as their impact on the level of anxiety, patient comfort, and parental satisfaction.

Results and discussion: A comparative analysis revealed that inhalation sedation with sevoflurane is the safest technique for children with moderate and low anxiety levels, ensuring rapid recovery and a minimal risk of complications. Intravenous sedation with propofol provided the necessary depth of sedation for performing prolonged and complex procedures. This method was preferable for children with a high level of anxiety.

Conclusion: The choice of sedation method should be individualized, taking into account the child's age, psychological profile, general condition, and the nature of the dental pathology. The primary criteria for selection are the presence of concomitant pathologies, the child's age, and the extent of the dental intervention.

Keywords: General anesthesia, sevoflurane, propofol, children, dental care.

BEYOND THE WHITE COAT; STRESS AND RESILIENCE AMONG RUSSIAN, INDIAN AND NIGERIAN MEDICAL STUDENTS

E.I. Ehimi, N. Lilhare
Stavropol State Medical University, Stavropol, Russia
Department of Normal and Pathological Physiology
Scientific supervisor: C.M.Sc., Associate Professor **E.V. Eliseeva**

Background: Culture profoundly shapes an individual's worldview, value system, social support structures, and coping mechanisms all of which are critical in navigating stress. Medical students face immense pressure from academic demands, clinical responsibilities, and future career uncertainties Students from collectivist cultures (like India and Nigeria) may rely more on family and community, while those from more individualist contexts (like Russia) might prioritize self- reliance. Understanding these nuances is essential for developing effective, culturally sensitive mental health support.

Objective: The rigorous journey of medical education is a universally acknowledged source of significant stress. While the high rates of burnout and mental health challenges among medical students are well documented, there is a gap in understanding how specific cultural backgrounds influence both the perception of stressors and the development of resilience. The aim of this study is to qualitatively explore and compare the culturally informed stressors and resilience strategies among Russian, Indian and Nigerian in the same international medical program.

Materials and methods: This study employed a qualitative approach, in-depth. Semi-structured interviews were conducted with a purposive sample of 30 medical students 10 Russians, 10 Indians, and 10 Nigerians enrolled in the same international medical university. Interviews explored their perceived sources of stress, their coping strategies, and the role of their cultural background in shaping these experiences. Data were analyzed using questionnaire analysis to identify recurring patterns and themes within and across the three cultural groups.

Results and discussion: Based on a 20-item Likert scale experience (31 respondents across 3 nationalities) with stress classification of low, moderate and high stress; Indian students have 9.1% of low stress, 90.9% of moderate stress and 0% of high stress; Nigerian students had 10% of low stress, 70% of moderate stress and 20% of high stress; Russian students had 0% of low stress, 90% of moderate stress and 10% of high stress. Overall, these students experienced6.5% of low, 83.9% of moderate and 9.7% of high stress. This survey shows that moderate stress dominates across all nationalities.

Conclusion: This study demonstrates that while the white coat of a medical student symbolizes a shared professional journey, the experiences beneath it is profoundly colored by culture. Culturally informed interventions such as facilitating peer-support networks for students from collectivist backgrounds or offering skills-based workshops for those with individualist approaches could be more effective in promoting medical student well-being globally. Further research is needed to explore how these cultural patterns evolve as students' progress through their clinical training.

Keywords: Nigerian, Indian, Russian, medical students, medical education, stress, resilience.

THE EFFECT OF VESTIBULAR STIMULATION (ROTATIONAL TEST) ON VISUAL ACUITY INDICATORS AND THE SPEED OF ITS RECOVERY IN MEDICAL STUDENTS

M.R. Gaibov, D.A. Tegaeva, A.R. Kozlov
Stavropol State Medical University, Stavropol, Russia
Department of Normal and Pathological Physiology
Scientific supervisors: D.M.Sc., Professor **L.D. Tsaturyan**,
Assistant **L.O. Knyazhetskaya**

Background: The vestibulo-ocular reflex (VOR) is a key mechanism ensuring gaze stabilization during head movements. Impairment of its function leads to a deterioration in the quality of vision in dynamics, which is important for understanding the processes of sensory integration in healthy individuals and in the clinical setting of vestibular disorders.

Objective: To study the dynamics of changes in visual acuity (VA) after a dosed vestibular load (rotational test) and to determine its full recovery time in healthy young individuals.

Materials and methods: The study involved 20 practically healthy students (1st-2nd year) aged 18-21 years. Visual acuity was determined using the Sivtsev table before the test, immediately after rotation in the Bárány chair, and then every 15 seconds until complete recovery to the initial values. Statistical analysis of the obtained data was performed using the SPSS software.

Results and discussion: A significant decrease in visual acuity immediately after vestibular stimulation was revealed, averaging 0.15-0.2 conventional units ($p = 0.0015$). The average recovery time of VA to the initial level was 45.2±5.3 seconds. A correlation was found between the recovery time and the subjective severity of autonomic reactions.

Conclusions: Vestibular load leads to a reversible decrease in the functions of the visual analyzer. The method of dynamic assessment of VA after a rotational

test can be recommended for the integrative assessment of the interaction of sensory systems in the practical course of normal physiology.

Keywords: Vision, rotational test, Sivtsev chart, visual acuity, medical students.

COLOR VISION: ANALYSIS OF THE FREQUENCY OF COLOR PERCEPTION ANOMALIES AMONG MEDICAL STUDENTS

M.R. Gaibov, D.A. Tegaeva, A.R. Kozlov
Stavropol State Medical University, Stavropol, Russia
Department of Normal and Pathological Physiology
Scientific supervisors: D.M.Sc., Professor **L.D. Tsaturyan**,
Assistant **L.O. Knyazhetskaya**

Background: Color vision deficiencies (color blindness) are common hereditary conditions that often remain undiagnosed but can affect professional aptitude, particularly in medicine. According to research data, up to 8-9% of males in European populations have some form of color perception anomaly.

Objective: To determine the frequency and structure of color vision anomalies (protanomaly, deuteranomaly, tritanomaly) among 1st and 2nd-year medical students using Rabkin's polychromatic tables.

Materials and methods: 100 students (50 boys, 50 girls) aged 18-21 years were examined. Standard Rabkin's polychromatic charts were used to study color perception. The ability to distinguish numbers and figures against a colored background was assessed. Results were recorded in protocols followed by statistical processing.

Results and discussion: Color vision disorders were detected in 5% of those examined (5 individuals). Among boys, the frequency was 10% (5 out of 50), among girls – 0%. In the structure of anomalies, deuteranomaly (impaired green perception) predominated – 60% of cases, protanomaly (impaired red perception) accounted for 40%. Tritanomaly (impaired blue perception) was not detected.

Conclusions: The obtained data correspond to the literature data on the prevalence of color vision disorders. The identified anomalies require consideration in the professional guidance of students. Rabkin's tables remain an effective screening method for diagnosing color anomalies.

Keywords: Color vision, medical students, Rabkin charts, deuteranomaly, protanomaly, tritanomaly, color perception.

A VARIETY OF DEVELOPMENTAL MALFORMATIONS IN CHROMOSOME 22q11.2 DELETION SYNDROME

A.V. Golubeva, A.M. Potupchik, S.M. Topkaya
Stavropol State Medical University, Stavropol, Russia
Department of Anatomy named after V.Yu. Pervushin
Scientific supervisor: Senior Lecturer **E.V. Alysheva**

Background: 22q11.2 deletion syndrome is one of the most common microdeletion disorders, caused by the loss of a segment in the 22q11.2 locus. The clinical picture includes congenital heart defects, facial dysmorphism,

immunodeficiency, and hypoparathyroidism; however, the high variability of symptoms complicates timely diagnosis.

Objective: To assess the prevalence of del 22q11 syndrome in the Stavropol Region (SR) in comparison with the Russian Federation (RF) and the world, and to present clinical cases with a description of diagnostic features.

Materials and methods: An analysis was conducted of data from the RF population register and medical records of patients in the SR for the period 2023–2024. Three clinical cases were studied, assessing genealogical history, phenotype, and cardiac, immunological, and genetic disorders.

Results and discussion: By 2023, 196 cases (1:734,000 population) were registered in the Russian Federation; by 2024, 5 patients (1:577,000) were identified in the Stavropol Region. This is comparable to all-Russian data but significantly lower than rates in countries with neonatal screening. Analysis of three cases (two girls aged 4, a boy aged 5) confirmed the heterogeneity of manifestations. All patients exhibited facial dysmorphism (ocular hypertelorism, micrognathia, low-set ears, nasal anomalies) and congenital heart defects of varying severity: from an atrial septal defect (2 mm) to complex combined defects (double outlet right ventricle combined with VSD and pulmonary stenosis). Immunological disorders were recorded in all cases: thymic hypoplasia, decreased T-lymphocytes to 44.2%, and decreased T-cytotoxic lymphocytes to 16.4%. Two patients experienced hypocalcemic seizures due to hypoparathyroidism. Genetic testing confirmed a 22q11.2 microdeletion ranging in size from 1.8 to 2.1 million base pairs, involving the TBX1 gene. A high frequency of concomitant pathology is noteworthy: delayed psycho-speech development (3 cases), recurrent infections (bronchitis, pneumonia, otitis, intestinal infections), multiple caries, hearing loss, and anomalies of the trachea and bronchopulmonary system. The absence of a direct correlation between deletion size and phenotype severity confirms the difficulty of predicting the disease course.

Conclusion: The prevalence of del 22q11 syndrome in the Stavropol Region is 0.17 per 100,000 population. Clinical polymorphism includes a mandatory triad: facial dysmorphism, heart defects, and immunodeficiency with variable severity. Timely diagnosis requires interdisciplinary awareness among physicians, primarily cardiologists and pediatricians.

Keywords: 22q11.2 deletion syndrome, DiGeorge syndrome, congenital heart defects, immunodeficiency, facial dysmorphism.

CLINICAL AND MORPHOLOGICAL CORRELATIONS IN MYOCARDIAL INFARCTION DEPENDING ON THE TIMING OF IN-HOSPITAL MORTALITY

A.V. Golubeva, M.Yu. Ovsyannikova, S.M. Topkaya
Stavropol State Medical University, Stavropol, Russia
Department of Histology
Scientific supervisor: D.M.Sc., Professor **A.G. Sirak,** Assistant **M.O. Zheurova**

Background: Myocardial infarction (MI) remains the leading cause of death from cardiovascular pathology. Histological examination remains a key method for diagnosis verification; however, modern high-tech medical care may alter the classical morphological picture.

Objective: To conduct a histological analysis of autopsy cases of myocardial infarction depending on the timing of death in the hospital.

Materials and methods: We analyzed 105 autopsy cases of MI (2024–2025). Groups were identified: 24-hour mortality (first 24 hours), early (2–14 days), and late (>14 days) mortality. Histological assessment and statistical analysis (χ^2) were performed.

Results and discussion: 24-hour mortality accounted for 34.3% (7.0±1.2 hours), early mortality – 59.0% (5.0±0.4 days), late mortality – 6.7% (28.6±4.0 days). In individuals under 60 years of age, 24-hour mortality was registered more frequently (61.5%). Large-focal MI was detected in 81.0% of cases. Underdiagnosis of recurrent MI was revealed: during life – 26.7%, at morphological examination – 58.1% ($p<0.001$). At autopsy, endocrine (7.5 times), gastrointestinal (2 times), and urological (2.5 times) diseases were diagnosed more frequently ($p<0.001$). Histologically, cardiosclerosis was found in 95.2% of the deceased. Signs of different MI stages were often combined. Significant differences between groups were obtained only for the frequency of thrombosis (8.3% in 24-hour mortality vs 38.7% in early mortality, $p<0.05$).

Conclusion: The histological picture of MI in hospitalized patients is characterized by polymorphism due to background cardiosclerosis and high-tech interventions. Autopsy remains an important tool for diagnostic clarification. Mortality from primary MI is only 4.8%.

Keywords: Myocardial infarction, histological examination, mortality, autopsy, pathomorphology.

MATERNAL HYPOTHYROIDISM AS A CAUSE OF OBSTETRIC AND PERINATAL PATHOLOGY

Z.O. Gradinar
Stavropol State Medical University, Stavropol, Russia
Department of Normal and Pathological Physiology
Scientific supervisors: C.M.Sc., Associate Professor **N.G. Radzievskaya,**
C.M.Sc., Associate Professor **L.D. Erkenova**

Background: Stavropol Territory is a region where iodine deficiency is declining, but the incidence of thyroid disease among pregnant women remains consistently high. Maternal hypothyroidism is associated with poorer obstetric and perinatal outcomes. Therefore, it is crucial to conduct campaigns to inform pregnant women about their health status before conception and implement hormonal monitoring to detect thyroid dysfunction during pregnancy registration in the first trimester.

Objective: To assess the impact of maternal hypothyroidism during the pregnancy and childbirth, to determine patterns of congenital malformations and other abnormalities in newborns from hypothyroidism due to maternal gland function, which are the most common obstetric and perinatal indicators, associated with hypothyroidism in iodine deficiency.

Materials and methods: A retrospective analysis was conducted at Stavropol Regional Clinical Perinatal Center. The medical records of registered pregnant women during the study period were reviewed. The study included women

diagnosed with hypothyroidism. Any form of hypothyroidism was compensated for, which is a limitation of the study.

Results and discussion: Of the 100 birth histories studied, 42 were diagnosed with hypothyroidism. The most common complications of pregnancy and childbirth were: anemia (33.3%), placental insufficiency (30.9%), gestational diabetes mellitus (23.8%), gestational arterial hypertension (21.4%), polyhydramnios (16.6%), preeclampsia (16.6%), impaired uteroplacental-fetal blood flow (11.9%), fetal distress (11.9%), risk of premature labor (9.5%), and weakness of labor (9.5%). The most common perinatal complications include: prematurity (11.9%), transient tachypnea (11.9%), grade 2 respiratory failure (11.9%), hypoglycemia (9.5%), small for gestational age (9.5%), and hip dysposasia (7.1%)**.**

Conclusion: The obtained results make it possible to reduce the level of thyroid hormones in pregnant women when registering in the first trimester, which is extremely important for the early development and timely correction of thyroid dysfunction in order to reduce low obstetric and perinatal outcomes in endemic regions.

Keywords: Pregnancy, congenital, maternal hypothyroidism, obstetric pathology, perinatal pathology.

THE PREVALENCE OF LASSA FEVER IN NIGERIA

Ifemeni E.D., Kumar P.R., Sarkar P., Yusuf C.M., Okoh E.C.
Stavropol State Medical University, Stavropol, Russia
Department of Infectious Diseases
and Phthisiology with the Advanced Training Course
Scientific supervisor: C.M.Sc., Assistant Professor **T.F. Kiseleva**

Introduction: Lassa fever is endemic in Nigeria, with annual outbreaks peaking during the dry season (December-April). As of early 2026, the country is experiencing a high number of cases, with over 80% of infections reported in Bauchi, Ondo, Taraba, Edo, and Benue states. The virus is primarily transmitted through contact with infected rodents, with a case-fatality rate frequently exceeding 15%. As of week, 8 of 2026, cases are rising, with high infection rates among healthcare workers and cases have been reported across multiple states. The 2026 season has shown high fatality rates, often exceeding 20% in some reports, highlighting the severity. The outbreak shows a predictable seasonal pattern, spiking in the dry months. The Rodent Vectors: The Mastomys natalensis (multimammate rat) carries the virus and transmission occurs via food or household items contaminated with rodent urine or feces, or person-to-person through direct contact with infected bodily fluids.

Objective: To evaluate the availability and consistent use of Infection Prevention and Control (IPC) materials among frontline workers in referral centers and identify reasons for high infection rates among doctors and nurses.

Materials and methods: This narrative review utilized a comprehensive search of electronic databases and official public health repositories. We prioritized the NCDC 2026 Situation Reports to ensure the most current epidemiological data. Information was extracted based on its relevance to the 2026 peak season, with a specific focus on the five high-burden states (Bauchi, Ondo, Taraba, Benue, and

Edo). The collected evidence was then synthesized to provide a critical overview of the current outbreak's trajectory and response gaps.

Results: Analysis of the 2026 surveillance data reveals a significant intensification of Lassa fever transmission compared to the previous five-year average. According to the Nigeria Center for Disease Control and Prevention (NCDC) situational reports for Weeks 1-11, a total of 582 confirmed cases were recorded out of over 3,200 suspected cases across 21 states. A critical finding of this review is the unusually high Case Fatality Rate (CFR) of 25.1%, resulting in 146 recorded deaths during the first quarter of the year. Geographically, the outbreak remained highly focal with 85% of the total disease burden concentrated in five states: Bauchi, Ondo, Taraba, Benue, and Edo. Furthermore, demographic data indicates that young adults aged 21-30 years constitute the most affected cohort, suggesting a correlation between age-related behavioral patterns and increased exposure to the Mastomys rodent vector.

Conclusion: The 2026 Lassa fever outbreak is more severe than previous years, marked by a 25.1% death rate when compared to last year 18.7% and high infections among healthcare workers. Success depends on early hospital reporting, better safety protocols in clinics, and aggressive rodent control in high-burden states.

Keywords: Lassa fever, Nigeria 2026, Viral Hemorrhagic Fever (VHF), NCDC, CFR.

EVALUATION OF PHYSCAL REHABILITATION OF COGNITIVE IMPAIRMENTS IN CHILDREN WITH CEREBRAL PALSY

Ifemeni E.D., Ruashan K.P., Sarkar P., Mohd Z.
Stavropol State Medical University, Stavropol, Russia
Department of Neurology, Neurosurgery and Medical Genetics
Scientific supervisors: D.M.Sc., Professor **S.M. Karpov**
C.M.Sc., Assistant **E.V. Kolesnikova**

Background: Cerebral palsy (CP) is the most common motor disability in children, causing permanent, non-progressive difficulties in movement, posture, and coordination due to damage to the developing brain. While the initial injury does not worsen, symptoms can evolve, ranging from mild motor delays to severe spasticity or involuntary movements requiring mobility aids (e.g., braces, walkers, wheelchairs). There is no cure, but early intervention including physical, occupational, and speech therapies can significantly improve function.

Objective: To evaluate the effectiveness of physical rehabilitation for movement disorders in children with spastic forms of cerebral palsy, through physical rehabilitation.

Materials and methods: A retrospective analysis of 46 medical records of preschool-aged children with spastic forms of cerebral palsy was conducted.

Results and discussions: The analysis of the obtained data showed the following results. Of the 46 children with cerebral palsy, the following clinical forms were established: spastic diplegia was detected in 19 patients (41.3%), hemiparetic – in 3 patients (6.5%), double hemiplegia – in 24 patients (52.2%). Age distribution: 2-3 years – 23 patients (50.0%), 4-5 years – 14 (30.4%),

6-7 years – 4 patients (8.7%), 8-9 years – 5 patients (.10.9%). Gender distribution: boys – 29 (63.1%), girls – 17 (36.9%). By the severity of movement disorders: GMFCS II level – 12 (26.0%), GMFCS III level – 20 (43.5%), GMFCS I M level – 14 (30.5%).

Rehabilitation activities were conducted over 21 days. Physical rehabilitation included exercise therapy with elements of Bobath and Vojta therapy, mechanotherapy (Galileo vibration platform, balance bike), hydrokinesitherapy and relaxation massage.

After completion of the complex, improvements were noted in the motor sphere in the form of an increase in the range of motion, the formation of a correct gait, and a decrease in the intensity of pathological tonic reflexes. Also increased performance, decreased fatigue, and increased tolerance to physical activity.

Conclusion: These results show that the rehabilitation complex is an effective therapeutic intervention to improve motor and functional capacity in children with cerebral palsy.

Keywords: Physical rehabilitation, cerebral palsy, spastic diplegia, hemiparetic, double hemiplegia.

INFLUENCE OF ATHEROSCLEROSIS RISK FACTORS ON THE EXTENT OF CORONARY ARTERY DAMAGE IN YOUNG MEN WITH TYPE 1 MYOCARDIAL INFARCTION

Irfana
Stavropol State Medical University, Stavropol, Russia
Department of Hospital Therapy
Scientific supervisor: D.M.Sc., Professor **N.N. Gladkikh**

Background: Type 1 myocardial infarction (MI) is an infarction that develops as a result of rupture or erosion of an atherosclerotic plaque in a coronary artery, followed by the formation of an intracoronary thrombus (atherothrombosis). One of the key explanations for the development of type 1 MI in young adults is the high prevalence of cardiovascular risk factors.

Objective: To evaluate the influence of atherosclerosis risk factors on the extent of coronary artery disease in young men with type 1 myocardial infarction.

Materials and methods: A total of 25 men (median age 41.0 [38.0; 44.0] years) with type 1 MI were examined. The following risk factors for atherosclerosis were assessed: smoking; arterial hypertension (AH); type 2 diabetes mellitus; a positive family history of early coronary heart disease; familial hyperlipidaemia (based on medical history); obesity (based on body mass index, kg/m2); abdominal obesity (waist circumference ≥ 94 cm); and chronic kidney disease (glomerular filtration rate < 60 ml/min). Coronary artery disease was assessed using the SYNTAX Score. Statistical analysis of the data was performed.

Results and discussion: Most men with type 1 MI had risk factors for atherosclerosis, including smoking (52%), hypertension (72%), type 2 diabetes mellitus (8%), a family history of early coronary heart disease (12%), and abdominal obesity and obesity (44%). Young men with type 1 MI were diagnosed with all 3 variants of coronary artery disease complexity: low (56%), moderate (24%), and high (20%). It was found that multiple (≥2) risk factors for atherosclerosis

increased the likelihood of severe coronary artery disease in young men with type 1 MI by almost 3 times (OR 2.87, 95% CI 1.01-8.21), and low-density lipoprotein (LDL) levels ≥3.31 mmol/L increased it by 6 times (OR 5.92, 95% CI 1.91-18.42).

Conclusion: 1) The severity of coronary artery disease in type 1 myocardial infarction at a young age is determined by multiple atherosclerosis risk factors, including type 2 diabetes mellitus and a family history of early coronary heart disease, as well as elevated total cholesterol and LDL levels. 2) Multiple atherosclerosis risk factors and LDL levels are the most significant predictors of severe coronary artery disease in type 1 myocardial infarction at a young age, both in combination and independently.

Keywords: Type 1 myocardial infarction, young age, atherosclerosis risk factors, coronary arteries.

POLYCISTIC OVARY SYNDROME (PCOS)

Irfana
Stavropol State Medical University**,** Stavropol, Russia
Department of Obstetrics
and Gynaecology #1 with the Advanced Training Course
Scientific supervisor: C.M.Sc., Associate Professor **K.K. Kuyumcheva**

Background: Polycystic Ovary Syndrome (PCOS) is a complex, multifactorial endocrine disorder affecting 8–13% of reproductive-aged women worldwide. It is characterized by hyperandrogenism, ovulatory dysfunction, and polycystic ovarian morphology. Beyond reproductive sequelae, PCOS is strongly associated with metabolic dysfunctions, including insulin resistance, type 2 diabetes mellitus, and an increased risk of cardiovascular disease. The heterogeneity of its presentation and the lack of consensus on optimal long-term management strategies continue to pose significant challenges in clinical practice.

Objective: To evaluate the efficacy of a combined lifestyle intervention and pharmacological management strategy on improving clinical, hormonal, and metabolic outcomes in women diagnosed with PCOS over a 12-month period. The secondary objective is to identify key predictors of treatment response based on phenotypic subtypes.

Materials and methods: A prospective cohort study was conducted involving 240 women diagnosed with PCOS according to the Rotterdam criteria. Participants were stratified into four phenotypic groups (A-D) and assigned to a 12-month structured intervention comprising a hypocaloric diet, a moderate-intensity exercise regimen (150 minutes/week), and metformin (1500 mg/day) for those with a BMI >25 kg/m² or confirmed insulin resistance. Primary outcomes included menstrual cycle regularity, hirsutism (modified Ferriman-Gallwey score), and serum total testosterone levels. Secondary outcomes included Homeostatic Model Assessment for Insulin Resistance (HOMA-IR), lipid profile, and quality of life (PCOSQ) scores. Data were analyzed using intention-to-treat analysis with repeated measures ANOVA.

Results and discussion: Of the 240 participants, 212 completed the 12-month follow-up. The intervention led to a significant reduction in mean BMI and total testosterone, with improvements in menstrual cyclicity for 78% of previously

oligomenorrheic participants. HOMA-IR decreased by 34%, indicating improved insulin sensitivity. The classic PCOS group showed the greatest metabolic improvements but less in hirsutism. Adverse events were mild, with only 4% discontinuation due to gastrointestinal issues. The study suggests that while lifestyle changes and metformin address metabolic and ovulatory dysfunction, additional anti-androgenic therapies may be required for dermatologic issues in specific PCOS phenotypes. Early magnesium sulfate administration and timely delivery improved maternal and fetal outcomes, whereas delayed diagnosis and poor antenatal monitoring increased complications.

Conclusion: A structured, 12-month combined lifestyle and metformin intervention significantly improves metabolic, hormonal, and reproductive outcomes in women with PCOS. The differential response across phenotypic subgroups highlights the necessity for personalized treatment approaches. Early intervention targeting insulin resistance remains a cornerstone of PCOS management, with potential long-term benefits for reducing cardiometabolic risk.

Keywords: Polycystic Ovary Syndrome (PCOS), insulin resistance, metformin, lifestyle intervention, hyperandrogenism, Rotterdam criteria, phenotypes, reproductive endocrinology.

CAN WE REVERSE OVARIAN AGING? GENETIC MECHANISMS, GENOMIC EDITING AND THE FUTURE OF FEMALE FERTILITY

Jatin
Stavropol State Medical University, Stavropol, Russia
Department of Obstetrics and Gynaecology #1 with the Advanced Training Course
Scientific supervisor: C.M.Sc., Associate Professor **K.K. Kuyumcheva**

Background: Ovarian aging is characterized by progressive depletion of the primordial follicle pool, declining oocyte quality, mitochondrial dysfunction, and cumulative DNA damage. It determines female reproductive lifespan and is a major cause of infertility worldwide. With declining global fertility rates, understanding and potentially modifying ovarian aging has become a key focus in reproductive medicine.

Objective: To examine molecular mechanisms of ovarian aging and evaluate emerging genetic, regenerative, and pharmacological strategies that may delay or partially restore ovarian function.

Materials and methods: A review of scientific literature and reproductive medicine guidelines was conducted. Key mechanisms including telomere shortening, oxidative stress, mitochondrial dysfunction, DNA damage, epigenetic alterations, and genetic determinants (FOXL2, NOBOX, BMP-15, GDF-9, FMR1, BRCA mutations) were analyzed. Emerging approaches such as CRISPR gene editing, mesenchymal stem cell therapy, platelet-rich plasma (PRP), mTOR modulation, NAD+ supplementation, artificial ovary scaffolds, and in vitro gametogenesis were evaluated.

Results and discussion: Ovarian reserve declines rapidly after age 35, with quality deterioration preceding follicle loss. Premature Ovarian Insufficiency (POI) affects about 1% of women under 40, with genetic factors

accounting for nearly 25% of cases. Biomarkers such as Anti-Müllerian Hormone (AMH), antral follicle count (AFC), inhibin-B, and FSH are used to assess ovarian reserve. Mitochondrial dysfunction and oxidative stress impair ATP production and increase aneuploidy risk. Epigenetic clock theory suggests that biological ovarian age may differ from chronological age. CRISPR gene editing offers potential correction of pathogenic mutations, although ethical concerns remain. Stem cell therapy, PRP, and pharmacological modulation of mTOR and NAD+/sirtuin pathways show promising results but require further clinical validation.

Conclusion: Ovarian aging may become partially modifiable through advances in genetics, regenerative medicine, and precision fertility technologies. However, most interventions remain experimental and require strict ethical oversight and long-term safety evaluation.

Keywords: Ovarian aging, ovarian reserve, CRISPR, stem cell therapy, PRP, mitochondrial dysfunction, premature ovarian insufficiency, precision fertility medicine.

PEDIATRIC CARDIOLOGY AND RARE DISEASES: EPIDEMIOLOGY, PROBLEMS AND DEVELOPMENT PROSPECTS

Jatin
Stavropol State Medical University, Stavropol, Russia
Department of Policlinic Pediatrics
Scientific supervisor: C.M.Sc., Assosiate Professor **E.N. Voronkina**

Background: Childhood cardiovascular diseases, particularly congenital heart defects (CHDs) and rare complex cardiac anomalies, remain a major cause of morbidity and mortality worldwide. Every year, millions of children under five die, many from preventable or treatable conditions including undiagnosed heart defects. Congenital CHDs affect approximately nine per 1,000 new-borns worldwide, with significant regional differences in early diagnosis, access to specialist care, and surgical outcomes.

Objective: The aim of this presentation is to analyse the classification, epidemiology, clinical presentation, diagnostic approaches, treatment strategies, and development prospects in pediatric cardiology, with an emphasis on rare and complex heart diseases in India, Russia, and worldwide.

Materials and methods: A comprehensive review of epidemiological data, international guidelines on pediatric cardiology, and clinical studies from India and Russia was conducted. Congenital (cyanotic and acyanotic) and acquired heart diseases disorders were assessed. Rare conditions including hypoplastic left ventricle syndrome (HLVS), truncus arteriosus, total anomalous pulmonary vein connection (TAPC), Ebstein anomaly, double outlet right ventricle (DORV), and single ventricle physiology were analysed. Diagnostic methods such as echocardiography, MRI/CT angiography, and cardiac catheterization were reviewed as well as modern medical, interventional, and surgical treatment strategies.

Results and discussion: Congenital heart defects remain the most common birth defect in the world. In both India and Russia, the prevalence is approximately nine

cases per 1,000 live births. In Russia, mortality rates have fallen in recent decades thanks to the expansion of high- tech surgical care, while India continues to face challenges such as staff shortages, inequality, disparities, and delays in diagnosis. Clinical manifestations include cyanosis, growth retardation, tachypnea, feeding difficulties, hepatomegaly, arrhythmias, and heart murmurs. Genetic syndromes such as Down syndrome, Noonan syndrome, and DiGeorge syndrome are closely associated with structural heart defects. Treatment includes drug therapy (diuretics, ACE inhibitors, and beta-blockers), catheter interventions (balloon angioplasty, device closure of the defect) and complex staged surgical interventions. Advances such as 3D printing for surgical planning, minimally invasive procedures, stem cell research, genomic screening, artificial intelligence – based diagnostics, and telemedicine are transforming pediatric cardiac care. Despite progress, significant challenges remain limited access to pediatric cardiologists, high infrastructure costs, late presentation to care, and socioeconomic factors. Strengthening early screening programs and rural telemedicine networks is essential to improve survival rates.

Conclusion: Pediatric cardiology continues to advance rapidly thanks to the integration of advanced imaging techniques, surgical innovations, genomic medicine, and artificial intelligence. Early diagnosis, equal access to specialist care and international collaboration are critical to reducing mortality and improving long-term outcomes in children with rare and complex heart diseases. The future of pediatric cardiology lies in precision medicine, global healthcare collaboration, and access to care with technology.

Keywords: Pediatric cardiology, congenital heart disease, rare cardiac anomalies, HLHS, DORV, TAPVC, echocardiography, pediatric cardiac surgery, India, Russia, precision medicine.

PREDICTORS OF MODERATE AND HIGH HISTOLOGICAL ACTIVITY IN CHRONIC LIVER DISEASES

Jatin
Stavropol State Medical University, Stavropol, Russia
Department of Hospital Therapy
Scientific supervisor: C.M.Sc., Assistant **T.R. Dudov**

Background: Chronic liver diseases (CLD) represent a relevant socio-economic and medical healthcare problem, which is associated with high prevalence, morbidity, and mortality of the working-age population. The prognostic significance of the severity of inflammation in CLD has been established, which serves as a basis for studying predictors of its development.

Objective: To investigate the relationship of laboratory parameters in liver pathology with the risk of developing moderate and high histological activity.

Material and methods: A total of 76 patients with CLD of alcoholic or viral etiology (27women, 49 men) aged 18 to 64 years were examined. A histological activity index (HAI) ≥9 points was diagnosed in 23 patients. The comparative analysis included aspartate aminotransferase (AST), alanine aminotransferase (ALT), gamma-glutamyl transpeptidase (GGT), alkaline phosphatase (ALP), total bilirubin, direct bilirubin, erythrocyte sedimentation rate (ESR),

C-reactive protein (CRP), fibrinogen, albumin, prothrombin time (PT), prothrombin index (PI), international normalized ratio (INR), total cholesterol, platelets.

Results and discussion: Patients with moderate and high histological activity were characterized by higher levels of aminotransferases, GGT, total bilirubin, ESR, INR, and lower platelet levels in the blood. An increased likelihood of HAI ≥9 points was associated with the following values: ALT ≥70.5 U/L, AST ≥53 U/L, GGT ≥53.8 U/L, total bilirubin ≥20.5 umol/L, ESR ≥8 mm/hour, INR≥1.11, platelets <187x109/L. The largest area under the curve was identified for GGT (0.81±0.05) and INR (0.73±0.06). Sensitivity and specificity were, respectively, for GGT 91.3% and 69.8%, and for INR 87.0% and 54.7%.

Conclusion: An increased risk of HAI ≥9 points in patients with CLD is associated with higher serum levels of aminotransferases, GGT, total bilirubin, ESR, INR, and lower platelet levels in the blood.

Keywords: Liver cirrhosis, histological activity, chronic liver diseases.

ASSESSMENT OF THE HUMAN CONNECTOME PROJECT AND MODERN BRAIN MAPPING

K. Jothika, K. Elakiya
Stavropol State Medical University, Stavropol, Russia
Department of Neurology, Neurosurgery and Medical Genetics
Scientific supervisor: Assistant **A.S. Deryabin**

Background: Currently there is currently a steady trend towards an increasing proportion of mapping the complex network of neural connection in the human brain. It is a fundamental goal of contemporary neuroscience using advanced neuroimaging technologies including diffusion magnetic resonance imaging (dMRI), functional magnetic resonance imaging (fMRI), and high-resolution structural MRI- the project which enables in a vivo visualization of white-matter tracts and functional network across the entire brain.

Objective: To evaluate medical students' knowledge, the contribution of the connectome project in mapping neural network and assist the impacts on understanding brain functions, cognitive variability, and neurological disorders, AI applications.

Methods and materials: The study included 300 students from the 1st to 4th years of study at the Foreign Student`s Faculty of Stavropol State Medical University, who voluntarily characterized their year demographics, knowledge and awareness, applications and ethics, attitudes and perceptions. Techniques analyzed included high-resolution structural MRI, diffusion tensor imaging (DTI), and functional MRI (fMRI). Advanced computational modeling reconstructed structural and functional network, enabling analysis of inter-regional connectivity, network Hubs, and modular organization. Comparative studies examined normal connectivity patterns versus alteration associated with neurological and psychiatric disorder.

Results and discussion: The survey of 300 medical students at Stavropol State Medical University revealed moderate to high awareness of brain mapping and the connectome project. While awareness of advanced concepts like network

hubs and functional connectivity was lower approximately by 40%. Most students 78% agreed that brain mapping is essential for understanding cognition and neurological disorders. Students recognized the potential of AI in analyzing brain connectivity, although 55% expressed concerns about ethical implications, data privacy and algorithmic bias.

Conclusion: These advances have revealed consistent large scale neural circuits underlying cognition behavior and consciousness, while also highlighting interindividual variability. Importantly, connectome-based approaches hold strong potential for clinical translation, enabling early detections of neurological and psychiatric disorder, personalized treatment strategies, and improved neurosurgical planning.

Keywords: Connectome project, brain mapping, neural connectivity, neuroimaging, AI in neuroscience.

PTSD AMONG MEDICAL WORKERS IN THE ZONE OF SPECIAL MILITARY OPERATION

S.S. Kapran, D.A. Kurnosova
Stavropol State Medical University, Stavropol, Russia
Department of Neurology, Neurosurgery and Medical Genetics
Scientific supervisors: C.M.Sc., Assistant **E.V. Kolesnikova**,
C.M.Sc., Associate Professor **O.A. Minaeva**

Background: Post-traumatic stress disorder (PTSD) is a mental disorder that develops as a result of a powerful traumatic effect of a threatening or catastrophic nature, accompanied by extreme stress.

Objective: Assessment of the frequency and severity of PTSD symptoms among medical personnel in combat situations.

Materials and methods; In the course of the study, a survey was conducted among medical professionals staying in the free zone using the self-assessment scale of PTSD (PLT-5), the Mississippi scale, an analysis of the results obtained and their systematization.

Results and discussion: The survey (PLT-5) was attended by 50 medical workers located in the CW area. It was revealed that 74% (37 people) have a tendency to develop PTSD, while 26% (13 people) had no predisposition. Among the respondents with a tendency to develop PTSD, Mississippi scale testing was also conducted. 37 people took part in the survey, and we found out that 96% (35 people) of them had primary manifestations of PTSD, and 5% (2 people) were more likely to be diagnosed with PTSD, i.e. the severity was higher.

Conclusions: Thus, there is a significant prevalence of symptoms of post-traumatic stress disorder among medical workers located in the zone of a special military operation. Untimely diagnosis of PTSD can lead to deterioration of mental health, social problems, and also negatively affect the work of medical staff, which becomes a big problem, especially in a war zone. The findings highlight the need for further research in this area and the importance of following recommendations to reduce post-traumatic stress disorder.

Keywords: Post-traumatic stress disorder, stress, traumatic factor.

MODERN CONCEPT OF TREATMENT IN OSTEOMYELITIS

Keerti Pal, Muthu Meghaa
Stavropol State Medical University, Stavropol, Russia
Department of General Surgery
Scientific supervisor: D.M.Sc., Professor **O.V. Vladimirova**

Background: Osteomyelitis remains a challenging bone infection requiring timely diagnosis and effective management. Modern concepts emphasize a multidisciplinary approach integrating advanced imaging, targeted antimicrobial therapy, and improved surgical techniques.

Objective: To evaluate contemporary strategies in the diagnosis and management of osteomyelitis, focusing on improving outcomes and reducing recurrence.

Materials and methods: A review of recent clinical practices including imaging modalities (MRI, CT), microbiological culture-guided antibiotic therapy, surgical debridement, and adjunctive therapies such as negative pressure wound therapy and biostimulation.

Results and discussion: Early diagnosis using MRI improves treatment success. Culture-directed antibiotics enhance efficacy and reduce resistance. Radical debridement combined with modern adjuncts promotes faster healing and decreases chronicity and relapse rates.

Conclusion: Modern management of osteomyelitis is holistic and patient-centered, combining early detection, precise antimicrobial therapy, and advanced surgical care to optimize outcomes.

Keywords: Osteomyelitis, modern treatment, debridement, MRI, antibiotic therapy, negative pressure wound therapy, bone infection.

REHABILITATION OF PATIENTS AFTER ACUTE MYOCARDIAL INFARCTION DEPENDING ON THE CARDIAC REHABILITATION PROGRAM

P.A. Kharchenko
Yessentuki Branch of Stavropol State Medical University, Yessentuki, Russia
Scientific supervisors: **O.A. Chuguevskaya, M.V. Limarenko**

Background: Currently, there is a low level of participation in physical rehabilitation programs for patients who have suffered acute coronary syndrome.

Objective: To study the effectiveness of various rehabilitation methods for patients with acute myocardial infarction.

Materials and methods: The study was conducted at the Centrosoyuz RF Sanatorium, specializing in the cardiovascular system, located in Kislovodsk. The study period was February to April 2025. Twenty patients with myocardial infarction admitted to the sanatorium rehabilitation stage after inpatient treatment participated in the study. They were divided into two groups, matched by gender, age, disease duration, and comorbidities. The research methods used: laboratory and instrumental research methods, stress testing, echocardiography, 24-hour ECG and blood pressure monitoring, quality of life assessment.

Patients in Group I exercised in the exercise room on a treadmill or bicycle ergometer. Patients in Group II practiced Nordic walking outdoors in a park near the medical facility. Blood pressure and heart rate were measured and assessed at the beginning and end of each session.

Results and discussion: The evidence-based advantage of rehabilitation programs using Nordic walking over programs using cardiovascular equipment resulted in increased cardiac efficiency (due to a significantly increased stroke volume and decreased heart rate), indicating a reduction in energy expenditure and, consequently, the heart muscle's need for nutrients and oxygen per unit of muscle work performed. This accelerates adaptation and improves cardiovascular fitness, suggesting an anti-ischemic effect in patients. A comparative analysis revealed several advantages of Nordic walking training for patients after acute myocardial infarction compared to cardio training. A more significant reduction in triglycerides and total cholesterol levels was observed. The compared physical rehabilitation methods significantly improved patients' quality of life, measured by both physical and mental health scales.

Conclusion: Based on the above, it can be concluded that it is advisable to include Nordic walking as an alternative and accessible form of aerobic training in the rehabilitation process.

Keywords: Myocardial infarction, Nordic walking, rehabilitation, patient, cardio equipment.

CLINICAL CASE OF ADVANCED CERVICAL CANCER: MULTIMODAL MANAGEMENT AND TREATMENT RESPONSE

Koodalingam Reshmadevi, Jalaldeen Tasneem
Stavropol State Medical University, Stavropol, Russia
Department of Obstetrics
and Gynaecology #1 with the Advanced Training Course
Scientific supervisor: Assistant **E.B. Lavrinenko**

Background: Cervical cancer remains a global health challenge, often diagnosed at advanced stages due to limited screening access and low symptom awareness. This case describes management of stage IIIB cervical cancer, highlighting real-world oncology challenges.

Objective: To describe the diagnostic workup and multimodal treatment of advanced cervical cancer, evaluate treatment response, and identify lessons to inform clinical practice and public health strategies.

Materials and methods: A 48-year-old woman presenting with a 3-month history of post-coital bleeding and pelvic pain was diagnosed with stage IIIB (T2bN1M0) cervical cancer; she was HPV 16-positive and had no prior Pap smears. Diagnosis was confirmed through a combination of gynecological examination, colposcopy with biopsy, pelvic MRI, PET-CT scan, and laboratory tests. Treatment consisted of concurrent chemoradiation – external beam radiotherapy (50.4 Gy delivered in 28 fractions) alongside brachytherapy (8 Gy × 3 fractions) – and weekly administration of cisplatin (40 mg/m²). Following detection of residual metabolic activity on PET-CT, the patient received adjuvant chemotherapy comprising 4 cycles of carboplatin and paclitaxel. Follow-up assessments,

including pelvic examination, MRI, and PET-CT, were conducted at 3, 6, and 12 months' post-treatment.

Results and discussion: The patient achieved complete remission: a complete clinical response was confirmed at 3 months via pelvic examination and MRI, no evidence of disease was detected at 6 months on PET-CT, and at 12 months the patient maintained sustained remission with a good quality of life. Adverse events, including grade 2 dermatitis and fatigue, resolved without long-term toxicity. The initial hemoglobin level of 105 g/L normalized after treatment, while renal and liver function remained within normal limits throughout. Key insights from this case include the fact that the patient's late presentation underscores the critical need for increased public awareness and accessible screening programmes; the success of multimodal therapy in achieving remission despite advanced disease; the pivotal role of PET-CT in guiding adjuvant therapy decisions; the good tolerability of the treatment regimen; the importance of multidisciplinary care in ensuring optimal outcomes; and the clear gaps in prevention highlighted by the lack of prior screening and HPV vaccination.

Conclusion: Complete remission was achieved despite the advanced stage of the disease, thanks to a tailored multimodal treatment approach. This case underscores the importance of accessible screening programmes for early detection of cervical cancer, HPV vaccination as a key prevention strategy, multidisciplinary collaboration in managing complex cases, and long-term surveillance to ensure sustained remission and preserve the patient's quality of life. These findings can serve as a valuable guide for improving clinical practice and shaping public health policies aimed at reducing the overall burden of cervical cancer.

Keywords: Cervical cancer, squamous cell carcinoma, chemoradiation, HPV 16, clinical case, oncology.

A CLINICAL CASE OF INVASIVE MYCOSIS IN A CHILD WITH ACUTE MYELOBLASTIC LEUKEMIA AT THE CONSOLIDATION STAGE OF REMISSION-3

Koodalingam Reshma Devi, A.A. Obozny, M.E. Ushakova, O.E. Rubacheva, G.V. Bykova
Stavropol State Medical University, Stavropol, Russia
Department of Polyclinic Pediatrics
Regional Children's Clinical Hospital, Hematology and Pediatric Oncology Department, Stavropol, Russia
Scientific supervisors: C.M.Sc., Associate Professor **O.E. Rubacheva**, C.M.Sc., Head of the Department **G.V. Bykova**

Background: Acute myeloid leukemia (AML) accounts for approximately 14-19% of all acute leukemias in children and is characterized by an aggressive course requiring intensive chemotherapy, which increases the risk of infectious complications, including invasive fungal infections. Invasive mycoses are a common complication in patients with hematological malignancies (20%). The most common pathogen is *Aspergillus fumigatus*.

Objective: To present a clinical case of successful treatment of invasive mycosis in an immunocompromised child with acute myeloid leukemia.

Materials and methods: a retrospective analysis of the medical history, data from dynamic and catamnestic observation of a patient with AML

Results and discussion: Patient K, 14 years old, was first diagnosed with AML on May 19, 2025, and confirmed by cytological, cytogenetic, and cytochemical bone marrow examinations.

May 20, 2025. A course of induction therapy (AML-MRD-2018) and supportive therapy (antiemetic, antibacterial, antihistamine, antifungal drugs, enterosorbents, and analgesics) was initiated. She received three courses of remission consolidation. Infusion and transfusion therapy were administered repeatedly. Palliative chemotherapy was administered at the highest possible doses and was aggressive.

During the third stage of remission consolidation, deterioration in her clinical condition was noted, manifested by persistent fever of 38.7°C (100.4°F) for more than 4 days, refractory to antibacterial therapy. According to the AML-MRD-2018 protocol, a chest CT scan (standard and contrast-enhanced) was performed, revealing changes suggestive of invasive mycosis.

During a therapeutic bronchoscopy, a bronchoalveolar lavage (BAL) was performed. Fungi of the genus *Aspergillus fumigatus* and *Trichosporon mucoides* were detected in bronchial surface washings, and a four-fold increase in galactomannan was detected in BAL samples.

A child with acute myeloid leukemia (AML) was diagnosed with bacterial-fungal sepsis: bilateral nosocomial pneumonia of bacterial-fungal etiology (*Senotrophomonas maltophilia*, *Pseudomonas aeruginosa, Aspergillus fumigates*, *Trichosporon mucoides*), complicated by left-sided hydrothorax and soft tissue abscess of the fourth finger of the right hand. The diagnosis was confirmed by a series of radiographs, chest CT imaging data, and ultrasound scanning of the pleural cavities. Progressive accumulation of fluid in the pleural cavities was noted over time, leading to drainage of the left pleural cavity, and evacuation of 1 liter of hemorrhagic fluid. Multiple telemedicine consultations were held via videoconference with members of the multicenter scientific and clinical team at the D. Rogachev National Medical Research Center for Pediatric Hematology, Oncology, and Immunology, and their recommendations were used to escalate antibacterial therapy and adjust systemic antifungal therapy. On October 4, 2025, amphotericin B was added to the regimen. Adverse reactions (swelling of the face and eyelids, nausea, vomiting, and hypokalemia) led to its discontinuation on October 24, 2025. Isavuconazole was prescribed on October 20, 2025.

The treatment was accompanied by positive dynamics: clinical improvement, normalization of laboratory parameters, and positive changes in instrumental examination methods. On November 14, 2025, the child was discharged in a stable condition under the supervision of a pediatrician at his place of residence, with recommendations for clinical and biochemical blood testing, as well as monthly monitoring of chest CT scan parameters.

Conclusion: This clinical case highlights the importance of early diagnosis of invasive fungal infections and timely antifungal therapy in patients with hematological malignancies, which can significantly improve the prognosis even in cases of severe infectious complications.

Keywords: Children, immunosuppression, hematological malignancies, acute myeloid leukemia, invasive mycosis, aspergillosis, invasive fungal infections.

ANATOMICAL FEATURES OF THE OPTIC NERVE HEAD AND THEIR SIGNIFICANCE IN THE DIAGNOSIS OF GLAUCOMA

A.R. Kozlov, M.R. Gaibov, D.A. Tegaeva
Stavropol State Medical University, Stavropol, Russia
Department of Anatomy named after V.Yu. Pervushin,
Scientific supervisor: Senior Lecturer **E.I. Monastyrskaya**

Background: Glaucoma is the second leading cause of irreversible blindness worldwide. Pathological changes in the optic nerve head (ONH) occur 5–6 years before the appearance of clinically significant visual field defects, making the study of ONH anatomy critically important for early diagnosis.

Objective: To study the anatomical features of the ONH in normal conditions and in glaucoma, and to analyze the diagnostic criteria of glaucomatous changes based on data from modern imaging methods.

Materials and methods: An analysis of literature data was performed, along with an analysis of 10 optical coherence tomography (OCT) protocols (macula, ONH, and anterior segment) and computer perimetry obtained at the Regional Clinical Consultative and Diagnostic Center.

Results and discussion: The study established the following:

1. Normal ONH anatomy. The ONH is a round structure with a diameter of 1.5–2.0 mm; its area ranges from 0.80 to 5.54 mm². Normally, the neuroretinal rim (NRR) shows a characteristic width distribution (ISNT rule: Inferior > Superior > Nasal > Temporal).

2. Parameter variability. Analysis of OCT protocols revealed a significant variation in ONH area (OD 2.56–2.90 mm², OS 2.47–2.59 mm²), confirming the need for an individualized approach to assessment.

3. The greatest diagnostic significance was found for: neuroretinal rim area (Rim Area), macular ganglion cell complex (GCC) thickness, and functional perimetry parameters – mean deviation (MD) and visual field index (VFI).

4. Staging of changes. Structural changes (GCC thinning, cup enlargement) predominate in the early stages, while functional deficit progresses faster in advanced stages. In the analyzed case, rapid progression was documented (VFI decline from 100% to 47% during the observation period).

5. Impact of vitreopapillary traction. Posterior hyaloid membrane detachment, inner limiting membrane thickening/disruption, and streak like hypertransmission were documented, leading to imaging artifacts, masking of progression, and additional mechanical damage to the ONH.

Conclusion: Anatomical parameters of the ONH (NRR area, GCC thickness) are reliable markers of glaucomatous optic neuropathy. Modern imaging techniques (OCT, HRT) enable detection of pathological changes at a preclinical stage. The diagnostic value of these parameters increases when disc size variability and the influence of vitreopapillary traction are taken into account, justifying the need for a personalized monitoring approach.

Keywords: Optic nerve head, glaucoma, cupping, neuroretinal rim, optical coherence tomography, vitreopapillary traction.

CLINICAL EVALUATION OF A PERSONALIZED 3D-PRINTED REMINERALIZATION TRAY IN PATIENTS WITH FIXED ORTHODONTIC APPLIANCES

P.S. Kravchenko, M.P. Grigorenko, E.A. Vakushina, S.N. Kravchenko, L.V. Arzumanyan
Stavropol State Medical University, Stavropol, Russia
Department of Pediatric Dentistry
Scientific supervisor: D.M.Sc., Professor **E.A. Vakushina**

Background: Patients with fixed orthodontic appliances are at increased risk of focal enamel demineralization. One of the promising ways to improve the effectiveness of local therapy is the use of personalized remineralization trays manufactured with digital technologies.

Objective: To evaluate the clinical effectiveness of a personalized 3D-printed remineralization tray in patients with fixed orthodontic appliances.

Materials and methods: The study included 32 patients aged 18–35 years with initial signs of enamel demineralization during active treatment with fixed orthodontic appliances. After intraoral scanning, a personalized tray was digitally designed in EXOCAD and fabricated by 3D printing from a biocompatible photopolymer. The tray was used for local delivery of a remineralizing agent. The remineralization index, OHI-S, and clinical changes in demineralization lesions were assessed.

Results and discussion: After treatment, complete resolution of demineralization lesions was observed in 93.5% of patients, while the remaining patients showed a reduction in lesion severity. The remineralization index decreased from 2.15±0.25 to 1.03±0.18, and OHI-S decreased from 2.35±0.41 to 0.85±0.29 ($p < 0.001$). The tray did not interfere with bracket fixation and was convenient to use.

Conclusion: The personalized 3D-printed remineralization tray is effective in the management of initial enamel demineralization in patients with fixed orthodontic appliances and may be used as part of comprehensive orthodontic care to prevent treatment-related complications.

Keywords: Orthodontics, enamel demineralization, personalized tray, 3D printing.

COMPLETE ATRIOVENTRICULAR BLOCK IN CHILDREN

R. Krishnamoorthi, E.G. Zurnacheva, O.E. Rubacheva, N.A. Fedko, M.R. Stupina
Stavropol State Medical University, Stavropol, Russia
Department of Polyclinic Pediatrics
Scientific supervisor: C.M.Sc., Assistant E.G. Zurnacheva

Background: Complete atrioventricular (AV) block in young children is rare and may lead to severe bradycardia, syncope, heart failure symptoms, and arrhythmic remodeling of the myocardium. Permanent pacemaker implantation is the definitive treatment in symptomatic cases or when high-degree AV block is documented.

Objective: To describe the clinical presentation, diagnostic findings, surgical intervention, and short-term follow-up in a preschool child with symptomatic complete AV block treated with permanent epicardial dual- chamber pacemaker implantation.

Materials and methods: Retrospective analysis of clinical, laboratory, electrocardiographic (ECG) , 24-hour Holter monitoring, echocardiographic, and surgical data of a 3-year-4-month-old girl hospitalized in January–February 2024 at a national pediatric cardiac center. Diagnostic work-up included serial ECG, Holter, echocardiography, blood tests, and virology (CMV, HHV-6). Implantation was performed via median sternotomy with epicardial bipolar leads connected to a dual-chamber device.

Results: The patient presented with fatigue, exertional dyspnea, presyncope/ syncope episodes (including one documented heart rate of 25 bpm), and progressive left ventricular dilation (LVEDD z-score +2.3, EF initially ↓ to 53–55%). Serial Holter monitoring confirmed persistent complete AV block with junctional escape rhythm (mean daytime HR 38–53 bpm, nighttime 33 –52 bpm). Echocardiography showed mild-to-moderate mitral and tricuspid regurgitation and dilated cardiomyopathy features. NT-proBNP was mildly elevated; transient CRP elevation and mild leukocytosis were noted. No clear infectious, autoimmune or genetic cause was identified. On February 2, 2024, a permanent epicardial DDD pacemaker was implanted without complications. Post-implant programming adjustments reduced diaphragmatic stimulation episodes. Follow-up echocardiography demonstrated reverse remodeling.

Conclusion: Permanent epicardial dual-chamber pacemaker implantation effectively resolved symptomatic bradycardia and facilitated reverse remodeling of arrhythmic cardiomyopathy in this young child with complete AV block. Epicardial approach remains preferable in very small children to preserve future transvenous options. Close outpatient follow-up is mandatory.

Keywords: Complete atrioventricular block, pediatric bradycardia, permanent pacemaker, epicardial leads, arrhythmic ardiomyopathy, reverse remodeling, child, DDD pacing.

MORPHOLOGICAL VARIATIONS OF THE TEMPOROMANDIBULAR JOINT AND THEIR ASSOCIATION WITH TEMPOROMANDIBULAR DISORDERS IN INDIAN ADULTS

Kumar Arpit, Mani Vaibhav
Stavropol State Medical University, Stavropol, Russia
Department of Anatomy named after V.Yu. Pervushin
Scientific supervisor: C.M.Sc., Associate Professor **O.N. Mingalieva**

Background: The temporomandibular joint (TMJ) is a complex synovial joint that plays a vital role in mastication, speech, and facial movements. Temporomandibular disorders (TMDs) represent a group of conditions affecting the TMJ, associated muscles, and surrounding structures, often presenting with pain, restricted jaw movement, and joint sounds. Morphological variations in TMJ anatomy have been suggested as potential contributing factors to the development of TMD. Since craniofacial structures may differ across populations due to genetic

and environmental influences, studying TMJ variations specifically in Indian adults is important for improving diagnostic and therapeutic approaches.

Objective: To evaluate morphological variations of the temporomandibular joint in Indian adults and analyse their association with temporomandibular disorders. The study also aims to assess the influence of age and gender on TMJ structural variations.

Materials and methods: This cross-sectional observational study includes Indian adults aged 18–50 years undergoing routine dental or radiological evaluation. Clinical assessment of temporomandibular disorders is performed using standardized diagnostic criteria, including evaluation of pain, joint sounds, and mandibular movement. Radiological examination is conducted using orthopantomogram (OPG) and cone beam computed tomography (CBCT), where available, to assess condylar morphology, joint space measurements, and structural symmetry. Data obtained is analysed statistically to determine the correlation between TMJ morphology and TMD occurrence.

Results and discussion: Preliminary findings indicate the presence of significant morphological variations in TMJ structures among Indian adults, including differences in condylar shape, size, and joint space distribution. Certain condylar configurations appear to show increased association with symptoms of temporomandibular disorders. Gender based and age-related differences in TMJ morphology are also observed. These findings highlight the importance of considering population specific anatomical variations in clinical diagnosis and management of TMD.

Conclusion: Understanding morphological variations of the temporomandibular joint in Indian adults can contribute to early diagnosis, improved treatment planning, and prevention of temporomandibular disorders. The study emphasizes the need for population based anatomical data to support personalized dental and maxillofacial care. Further large-scale research may enhance understanding of structural and functional relationships within the TMJ.

Keywords: Temporomandibular joint, temporomandibular disorders, TMJ morphology, Indian population, condylar variation.

FUNCTIONAL STATE OF THE VASCULAR SYSTEM IN STUDENTS DURING ADAPTATION TO THE EDUCATIONAL PROCESS

P.I. Kunpan, D.E. Dzhabarova, V.M. Vasilenko
Stavropol State Medical University, Stavropol, Russia
Department of Normal and Pathological Physiology
Scientific supervisors: C.M.Sc., Associate Professor **N.G. Radzievskaya**,
C.M.Sc., Associate Professor **L.D. Erkenova**

Background: Adaptation of students to academic workload is accompanied by increased stress levels and decreased performance. According to a survey (n=472), only 32% of students reported low stress levels during the first week of studies compared to 68% during summer holidays. Photoplethysmography allows objective assessment of the functional state of blood vessels through pulse wave velocity (PWV), augmentation index (AIx), and vascular age (VA). These parameters reflect arterial stiffness and can serve as markers of adaptation disorders.

Objective: To assess the dynamics of the functional state of the vascular system in medical university students under the influence of academic and psycho-emotional stress during the adaptation period.

Materials and methods: A study was conducted with dynamic observation of 30 students of Stavropol State Medical University aged 19 to 21 years. Inclusion criteria: normal BMI, absence of harmful habits. Photoplethysmography was performed using AngioScan-01 device at two time points: after holidays and during the period of high academic workload. Parameters studied: pulse wave velocity (PWV, m/s), augmentation index (AIx, %), vascular age (VA, years), stress index. Statistical analysis included paired t-test and Pearson correlation.

Results and discussion: In 30% of students, deterioration of the functional state was revealed (stress index increase >20), accompanied by PWV increase of 0.34 m/s and VA increase of 4.7 years. A very strong correlation was found between AIx and subjective stress assessment ($r=0.90$; $p<0.05$). In 67% of students, VA exceeded chronological age, reflecting the negative impact of academic stress on the vascular system. Based on the obtained data, a digital model for predicting the risk of disadaptation was developed.

Conclusion: A strong correlation between vascular stiffness parameters and subjective stress assessment was revealed ($r=0.90$; $p<0.05$). In 67% of students, vascular age exceeds chronological age. The developed digital model can be used for screening students at risk.

Keywords: Student adaptation, photoplethysmography, arterial stiffness, pulse wave velocity, stress.

CARDIOVASCULAR RISK FACTORS IN PATIENTS WITH TYPE 1 MYOCARDIAL INFARCTION OF YOUNG AND MIDDLE AGE: A MODERN DIAGNOSTIC PARADIGM

P.I. Kunpan
Stavropol State Medical University, Stavropol, Russia
Department of Hospital Therapy
Scientific supervisor: D.M.Sc., Professor **N.N. Gladkikh**

Background: One of the key explanations for the development of type 1 myocardial infarction at young and middle age is the high prevalence of cardiovascular risk factors. Obviously, their combination significantly increases the cumulative risk of cardiovascular complications.

Objective: To evaluate the frequency and pattern of cardiovascular risk factors and their combinations in young and middle-aged men with type 1 myocardial infarction.

Materials and methods: 66 men with acute type 1 myocardial infarction aged 25 to 59 years were examined. Of these, 6 men were of young age (25–44 years) and 60 were of middle age (45–59 years). Choice of men in our study is justified by the fact that men's gender is at risk of developing coronary heart disease, especially in the age group under 45 years. Type 1 myocardial infarction with ST-segment elevation was diagnosed in 51 patients, without ST-segment elevation – in 15 patients. Cardiovascular risk factors and their combinations were evaluated. Statistical analysis was performed.

Results and discussion: Cardiovascular risk factors were identified in all men with type 1 myocardial infarction, including: smoking (48%), arterial hypertension (90%), dyslipidemia (85%), type 2 diabetes mellitus (20%), carbohydrate metabolism disorders (76%), pre-obesity/obesity (85%), chronic kidney disease (4%), family history of premature coronary artery disease (44%). Lipitension (combination of arterial hypertension and dyslipidemia) was verified in 77% of patients, metabolic syndrome (combination of obesity with two or more features: arterial hypertension, elevated triglycerides and low-density lipoproteins, decreased high-density lipoproteins, fasting hyperglycemia or impaired glucose tolerance) – in 80%.

Conclusion: 1) Young and middle-aged men with acute type 1 myocardial infarction have high incidence of cardiovascular risk factors, dominated by dyslipidemia, arterial hypertension, pre-obesity/ obesity and smoking. 2) The combination of several cardiovascular risk factors made it possible to verify metabolic syndrome in 80% of cases and lipitension in 77% of cases. 3) Identification and control of cardiovascular risk factors in young and middle-aged men with acute type 1 myocardial infarction are necessary to improve treatment and secondary prevention.

Keywords: Type 1 myocardial infarction, young and middle age, cardiovascular risk factors, lipitension, metabolic syndrome.

EMBRYO GENE EDITING VS PREIMPLANTATION GENETIC DIAGNOSIS: FUTURE OF GENETIC DISEASE PREVENTIONE

Kuttikkara Anusree
Stavropol State Medical University, Stavropol, Russia
Department of Obstetrics
and Gynaecology #1 with the Advanced Training Course
Scientific supervisor: Assistant **E.B. Lavrinenko**

Background: Genetic diseases affect millions worldwide and represent a major burden on healthcare systems and quality of life. Advances in reproductive medicine have introduced techniques such as Preimplantation Genetic Diagnosis (PGD) and embryo gene editing as potential strategies for preventing inherited disorders. These approaches differ fundamentally in principle: PGD focuses on selection of healthy embryos, while gene editing aims at direct correction of genetic defects.

Objective: To compare PGD and embryo gene editing in terms of mechanisms, clinical applications, advantages, limitations, and ethical considerations, and to evaluate their future role in genetic disease prevention.

Materials and methods: A review of current literature, clinical guidelines, and recent research studies was conducted. PGD, based on in vitro fertilization (IVF) and genetic screening of embryos prior to implantation, was analyzed alongside CRISPR-based gene editing technologies that enable targeted modification of DNA sequences. Clinical scenarios, indications, and ethical frameworks were examined.

Results and discussion: PGD is a well-established and widely used clinical technique that allows selection of embryos free from specific genetic disorders.

It is particularly useful in cases of carrier parents and has high clinical acceptance. However, PGD does not correct mutations and requires the availability of multiple embryos, raising ethical and practical limitations. In contrast, embryo gene editing offers the potential to directly correct pathogenic mutations, making it especially relevant in cases of homozygous genetic disorders where all embryos may be affected. CRISPR technology enables precise DNA modification but carries risks of off-target effects, mosaicism, and long-term safety concerns. Additionally, ethical issues such as germline modification and the possibility of "designer babies" remain significant barriers to clinical implementation.

Conclusion: PGD remains the current standard for genetic disease prevention in reproductive medicine due to its established safety and ethical acceptance. Embryo gene editing represents a promising future approach with the potential to transform treatment by correcting genetic defects at their source. However, further research, strict regulation, and ethical oversight are essential before widespread clinical application.

Keywords: Preimplantation genetic diagnosis, embryo gene editing, CRISPR, genetic diseases, IVF, germline modification, reproductive medicine.

THE ROLE OF VITAMIN D SUPPLEMENTATION IN THE CONTEXT OF STANDARD STEP-DOWN THERAPY FOR BRONCHIAL ASTHMA IN CHILDREN IN THE STAVROPOL TERRITORY

M.S. Makarova, V.R. Ponamareva, A.A. Tolkunova, S.V. Dolbnya
Stavropol State Medical University, Stavropol, Russia
N.I. Pirogov Russian National Research Medical University, Moscow, Russia
Regional Children's Clinical Hospital, Stavropol, Russia
Scientific supervisor: C.M.Sc., Associate Professor **S.V. Dolbnya**

Background: Hypovitaminosis D in children with bronchial asthma (BA) is associated with impaired lung function, disease severity, and a reduced response to therapy, which determines the relevance of its correction within the framework of the GINA step-down therapy approach.

Objective: To evaluate the effectiveness of hypovitaminosis D correction and the dynamics of clinical and functional parameters when vitamin D is included in step-down therapy for BA in children.

Material and methods: 53 children (5–18 years old, median 13.3 years) with BA were examined. Pulmonary function (FEV_1) and asthma control (Asthma Control Test, ACT) were assessed. 25(OH)D levels were determined before and after 3 months of cholecalciferol administration (1000 IU/day). Statistical analysis was performed using STATISTICA V.10.0.

Results and discussion: Vitamin D deficiency (below 20 ng/ml) was detected in 60.4% of children at baseline. After treatment, 25(OH)D levels increased from 17.80 to 32.99 ng/ml ($p<0.001$), while the deficiency rate decreased to 3.8% ($p<0.001$). No clear correlation was observed between the stage of asthma therapy and calcidiol levels. In patients with normalized vitamin D status, FEV_1 was higher than in those with insufficiency and deficiency (90.0% vs. 58.5%, respectively; $p=0.01$). An increase in ACT scores (from 16.0 to 20.0; $p=0.015$) and an increase in the proportion of children with controlled asthma (from 30.2% to 52.8%; $p<0.001$) were noted.

Conclusion: A three-month course of cholecalciferol (1000 IU/day) effectively corrects vitamin D deficiency in children with asthma, resulting in improved pulmonary function and better disease control. The findings support the inclusion of vitamin D in standard step therapy for asthma.

Keywords: Asthma, children, vitamin D, cholecalciferol, step-down therapy, 25(OH)D, asthma control, FEV.

OUTCOMES OF MICROSURGICAL TREATMENT FOR LIMB LYMPHEDEMA

E.D. Malima, A.A. Aje, H.N. Aloyce, M.C. Uzomah
Stavropol State Medical University, Stavropol, Russia
Department of Hospital Surgery
Scientific supervisor: C.M.Sc., Assistant **A.M. Shakhnazarian**

Background: Lymphedema remains a severe progressive condition that significantly impacts quality of life. While Complex Decongestive Therapy (CDT) focuses on symptom management, supermicrosurgical methods – specifically Lymphovenous Anastomosis (LVA) – offer a physiological restoration of lymphatic drainage.

Objective: To evaluate the efficacy of different LVA techniques (end-to-end vs end-to-side) in treating secondary breast cancer-related lymphedema (BCRL) and lower limb lymphedema of various etiologies.

Materials and methods: The study included 156 patients from The Phleboland Clinic, Stavropol, Russian Federation treated between 2022 and 2025. Group A (n=84): patients with BCRL. Group B (n=72): patients with lower limb lymphedema (secondary post-oncological surgery – 75%, primary – 25%). All patients had ISL stages I-II and underwent preoperative ICG-lymphography to map functioning lymphatic vessels. Supermicrosurgical techniques were employed (vessel diameters 0.3–0.8 mm) under 20-40x magnification. Configurations compared included "end-to-end" (n=92) and "end-to-side" (invagination and parachute techniques, n=64).

Results and discussion: The average number of anastomoses per limb was 3.2 (range 2–6). Volume Reduction: at 12 months, the average reduction in excess limb volume was 42%±8.5% in Group A and 31%±6.2% in Group B. Infection Status: the frequency of cellulitis (erysipelas) episodes decreased by an average of 4.5 times across both groups ($p < 0.001$). Technique Comparison: the "end-to-end" technique showed superior results in patients with a linear lymphatic pattern. The "end-to-side" technique was more effective in cases with higher hydrostatic venous pressure, preventing blood reflux into the lymphatic vessels.

Discussion: Surgical success directly correlated with the disease stage identified by ICG patterns ("stardust" and "diffuse" patterns yielded less significant results compared to "linear" patterns). Outcomes in lower limb lymphedema were more modest due to higher hydrostatic pressure, necessitating careful selection of venules with competent valves.

Conclusion: 1. Lymphovenous anastomosis is an effective and safe treatment for early-stage lymphedema (ISL I-II), providing a sustained reduction in limb volume. 2. Microsurgical intervention significantly reduces the frequency

of infectious complications (erysipelas), which is critical in preventing the progression of fibrosis.

Keywords: Lymphedema, lymphovenous anastomosis (LVA), ICG-lymphography.

POLYCYSTIC OVARIAN SYNDROME: BEYOND THE METABOLIC SYNDROME

E.D. Malima, A.A Aje, H.N. Aloyce, M.C. Uzomah
Stavropol State Medical University, Stavropol, Russia
Department of Obstetrics
and Gynaecology #1 with the Advanced Training Course
Scientific supervisor: C.M.Sc., Associate Professor **K.K. Kuyumcheva**

Background: Polycystic Ovarian Syndrome (PCOS) is the most common endocrine disorder affecting women of the reproductive age. Traditionally, PCOS has been largely characterized by its association with metabolic syndrome, insulin resistance and obesity. However emerging evidence suggests that PCOS represents a complex multisystem disorder extending beyond metabolic dysfunction with significant reproductive, cardiovascular, neuroendocrine and psychological implications. Understanding these broader manifestations is essential for comprehensive patient management and long term risk reduction.

Objective: This study aims to highlight the non-metabolic dimensions of PCOS with focus on the reproductive dysfunction, fertility outcomes and pregnancy related complications.

Materials and methods: A comprehensive search of electronic databases was conducted to identify relevant studies on the non-metabolic dimensions of PCOS. Relevant data addressing ovulatory dysfunction, hyperandrogenism, endometrial pathology, fertility outcomes and pregnancy complications associated with PCOS were analyzed to provide an integrated overview of the syndrome.

Results: From an obstetric and gynecologic standpoint, it is revealed that PCOS demonstrates wide-ranging clinical implications such as chronic anovulation leading to menstrual irregularities and subfertility, hyperandrogenism manifesting as hirsutism, acne and alopecia contributing to reduced quality of life, increased risk of endometrial pathology due to prolonged unopposed estrogen exposure, adverse pregnancy outcomes including preterm birth, miscarriage, reproductive and obstetric complications occurring in women without obesity or metabolic syndrome.

Conclusion: Polycystic Ovarian Syndrome extends far beyond the borders of metabolic syndrome and should be approached as a multisystem disorder rather than solely a metabolic condition. Early identification and comprehensive management of ovulatory, endometrial and pregnancy related risks are essential to improve fertility outcomes and reduce long-term gynecologic morbidity. An individualized and multidisciplinary approach with targeted reproductive care inclusive of both metabolic and non-metabolic features should be emphasized to avoid the risk of underdiagnosis, improve clinical outcomes and the overall quality of life in affected women.

Keywords: Polycystic Ovarian Syndrome, infertility, hyperandrogenism, anovulation, pregnancy complications, endometrial pathology, reproductive health, metabolic syndrome.

WAR-TIME WOUNDS

Mani Rupesh, Rallabandi Samyuctaa Sree
Stavropol State Medical University, Stavropol, Russia
Department of General Surgery
Scientific supervisors: D.M.Sc., Professor **O.V. Vladimirova,**
C.M.Sc., Associate Professor **S.S. Korablina**

Background: War wounds have changed significantly from old to modern warfare. Old war wounds mainly included lacerations, deep cuts, gunshot wounds, stabs and puncture wounds including soft tissue injuries from close-range weapons, while modern warfare produces more complex trauma such as blast injuries, burns, multi-focus fractures and phlegmonous osteomyelitis due to explosives, drones and missiles.

Objective: This study is aimed to ascertain the prevalence, spectrum and outcome of war time wounds and a comprehensive study of protocols and treatment to enhance the condition of the patient.

Materials and methods: The data is extracted from a comprehensive review of Peer reviewed articles and from the WHO. This study utilized patient records obtained from Stavropol City Hospital- 02 to analyse combat-related injuries, treatment approaches, and outcomes in the emergency setting.

Results and discussion: Wound management has improved significantly from ancient to modern warfare. In ancient times, treatment was limited to basic wound cleaning, cauterization, and crude amputations, with high mortality due to microbial infection and blood loss. There were no organized evacuation systems; so many injured soldiers did not receive timely medical care.

In modern warfare, advanced trauma care is provided through early interventions such as haemorrhage control, airway management, and damage control surgery. Standard treatment usually includes debridement, necrectomy and amputations. Our wound care techniques avoid amputations and include Vacuum-Assisted Closure (VAC) therapy, which helps manage complex wounds by promoting healing and reducing infection. Ultrasound debridement in each tissue which undergoes VAC changes is performed. These advances in trauma care, evacuation, and wound management have significantly improved outcomes for combat casualties.

Conclusion: Combat trauma care has progressed significantly over time with the development of modern medical technologies, organized trauma systems, and rapid evacuation methods. Advanced treatment approaches and improved wound management techniques have enhanced the survival and recovery of injured soldiers. Continuous improvements in emergency response, triage systems, and trauma care remain essential for effectively managing complex combat injuries and improving patient outcomes.

Keywords: War-Time wounds, trauma, VAC therapy, Combat Casualty Care**.**

NEXT GENERATION PROBIOTICS FOR RETERM BIRTH PREVENTION: A REVIEW OF VAGINAL MICROBIOME TARGETED THERAPIES.

Martin Sundar Raj Philominal Manshika
Stavropol State Medical University, Stavropol, Russia
Department of Obstetrics
and Gynaecology #1 with the Advanced Training Course
Scientific supervisor: Assistant E.B. **Lavrinenko**

Background: Preterm birth (PTB) remains a leading cause of neonatal morbidity and mortality worldwide. A perturbed vaginal microbiome, typically characterized by a depletion of protective Lactobacillus species and an overgrowth of diverse anaerobic bacteria (often diagnosed as bacterial vaginosis), is a significant risk factor for spontaneous PTB. Traditional antibiotic therapies have shown limited efficacy in preventing PTB, likely due to their failure to restore a durable, healthy microbial ecosystem.

Objective: This review aims to synthesize current evidence on the potential of next-generation probiotics (NGPs) as a novel therapeutic strategy for preterm birth prevention. Specifically, it evaluates the rationale for moving beyond traditional lactobacilli to identify and characterize novel bacterial strains capable of restoring and maintaining a eubiotic vaginal microenvironment.

Materials and methods: Two distinct, parallel surveys hosted on a single, professional website.Survey A: For Healthcare Providers and survey B: For Women of Reproductive Age.The first survey targeted healthcare professionals, including obstetricians, gynecologists, midwives, and neonatologists, and assessed their knowledge of next-generation probiotics (specifically Lactobacillus crispatus), current clinical practices regarding probiotic recommendation, and perceived barriers to prescribing live biotherapeutic products for preterm birth prevention. The second survey targeted women of reproductive age (18–45 years) recruited via social media platforms. This patient oriented questionnaire evaluated their awareness of the vaginal microbiome, personal history of bacterial vaginosis or yeast infections, attitudes towards the use of microbiome based therapies during pregnancy, and trust in various sources of health information.

Results and discussion: A total of 20 participants completed the dual surveys, comprising 10 healthcare providers and 10 women of reproductive age.

Healthcare Providers: 90% acknowledged the microbiome preterm birth link, but only 20% could name L. crispatus as a next-generation probiotic. Just 30% were familiar with NGPs, and only 10% recommend them clinically. Top barriers: insufficient evidence (80%), lack of guidelines (70%). However, 80% would recommend NGPs if supported by strong data.

Patients: 40% were unaware of the vaginal microbiome. Yet 90% had infection history, 40% had BV, and 40% suffered recurrent symptoms. Only

20% had used probiotics, but 80% would follow a doctor's recommendation. Trust in obstetricians was 70%; zero trust in social media.

Conclusion: Patients trust doctors and want preventive options, but providers lack NGP knowledge and guidelines. Bridging this gap is essential for clinical translation.

Keywords: Next-generation probiotics, preterm birth prevention, vaginal microbiome, Lactobacillus crispatus, survey research, healthcare providers, patient attitudes, knowledge-action gap, bacterial vaginosis, live biotherapeutic products.

THE UNDERSTANDING OF PAIN AND CHRONIC PAIN BY MEDICAL STUDENTS

K.K. Mathatho, S. Yohanna, H.N.M. Zakir
Stavropol State Medical University, Stavropol, Russia
Department of Normal and Pathological Physiology
Scientific supervisor: C.M.Sc. Assosiate Professor **E.V. Eliseeva**

Background: Many People across the world suffer from the burden of debilitating chronic pain. Chronic pain is a complex and multifaceted condition characterized by persistent pain that lasts for more than three months, often outlasting the typical healing process. Unlike acute pain, which serves as a protective mechanism signaling injury or illness, chronic pain may arise from an initial injury or may occur without any identifiable cause. It can be associated with various medical conditions, including arthritis, fibromyalgia, neuropathy, and back pain, among others.

Objective: The modern understanding of Medical students of what pain is and when does it become chronic. Educating ourselves on the newer perceptions of chronic pain and its causes**.**

Materials and methods: We performed a survey of 100 medical students to evaluate their knowledge on pain pathways, define chronic pain and how to distingush chronic pain from normal pain**.** We questioned people on what pain is and how do they differentiate pain and chronic pain. We also asked about what are typically causes chronic pain.

The materials used for this study were also obtained from World Health Organization (WHO).

Results: Through the survey we have seen that only a modicum number of 20 medical students (about 20%) knew how to identify key pain pathways. About of 60 medical students (about 60%) could properly define chronic pain mechanisms and differentiate pain from chronic pain. The remaining 20 medical students, about 20%, were disinterested in the topic all together.

Conclusion: The study highlights the gaps within the medical student knowledge on the subject of pain and how well they understand it. This also displays the need for emphasis on the education of the subject of pain in the medical curricula to enhance future clinicians' management of chronic pain.

Keywords: Chronic pain, medical education, pain pathways.

BIOCOMPATIBILITY AND ANGIOGENIC POTENTIAL OF TITANIUM-BASED ALLOYS: A STUDY ON THE CHICK EMBRYO CHORIOALLANTOIC MEMBRANE MODEL

U.D. Matsuga[1], A.K. Gazaryan[1], A.K. Zelensky[1], D.Z. Choniashvili[2]
[1]Stavropol State Medical University, Stavropol, Russia
Department of Propaedeutics of Dental Diseases named after N.N. Garazha
[2] North Ossetian State University named after K.L. Khetagurov
Scientific supervisor: D.M.Sc., Professor **A.A. Dolgalev**

Background: The development of new materials for implant surgery requires thorough preclinical evaluation of their biocompatibility and effect on vascularization. The chick embryo chorioallantoic membrane (CAM) is a valuable in vivo model for assessing these properties.

Objective: To evaluate the biocompatibility, angiogenic activity, and embryotoxicity of six titanium-based materials (TiO_2, TiNb, $TiNbO_2$, BT6, TiNbZrTa, TiNbZrTaO) using the CAM assay.

Materials and methods: The study was conducted on 48 fertilized chicken eggs (n=8 per group). On the 7th day of incubation, sterile material samples were implanted onto the CAM. Macroscopic assessment of vascularization was performed on 9th and 13th days using a stereomicroscope. On 14th day CAM fragments were excised for histological examination (hematoxylin-eosin and Van Gieson staining) and morphometric analysis (vessel area, perimeter, and diameter) using ImageJ and VideoTest-Morphology 5.2 software.

Results and discussion: Macroscopic analysis revealed significant differences in angiogenic response. TiO_2 and BT6 samples maintained a dense, branched vascular network, indicating high biocompatibility. TiNb and $TiNbO_2$ caused partial vascular regression, while TiNbZrTa led to complete avascularity by the 9th day. Histological examination confirmed these findings: TiO_2 samples showed active angiogenesis with no signs of inflammation, dystrophy, or fibrosis. In contrast, TiNbZrTaO and BT6 induced severe circulatory disturbances, edema, necrosis, and diffuse lymphocytic infiltration. Morphometric analysis quantified these effects: the TiO_2 group exhibited the highest vessel area (up to 40,618 μm²) and diameter (up to 227 μm). The lowest values were recorded for the TiNbZrTa group (vessel area as low as 1,311 μm²), confirming its pronounced anti-angiogenic and embryotoxic effect.

Conclusion: The TiO_2 samples demonstrated the highest biocompatibility, supporting active angiogenesis without adverse tissue reactions. The TiNbZrTa alloy exhibited strong angiotoxicity, leading to complete inhibition of vascular growth. These results highlight the importance of chemical composition and surface treatment in determining in vivo performance of implant materials.

Keywords: Biocompatibility, angiogenesis, chorioallantoic membrane (CAM), titanium alloys, embryotoxicity, implant materials.

ANATOMICAL BASIS OF MYOCARDIAL INFARCTION

Noshika Lilhare, M. Preethi
Stavropol State Medical University, Stavropol, Russia
Department of Anatomy named after V.Yu. Pervushin
Scientific supervisor: C.M.Sc., Associate Professor **O.N. Mingalieva**

Background: Myocardial infarction (MI) is a major cardiovascular emergency caused by interruption of blood supply to a part of the heart muscle. The anatomical structure of coronary arteries, their branches, and areas of myocardial supply play a crucial role in determining the location and severity of infarction. Understanding the anatomical basis helps in early diagnosis, prevention, and management of MI.

Objective: To study and highlight the anatomical features of coronary circulation and their relationship to the development, location, and complications of myocardial infarction.

Materials and methods: This study is based on review of standard anatomical textbooks, clinical case references, and diagrams illustrating coronary artery distribution. The structural features of right and left coronary arteries, their branches, and myocardial territories were analyzed to understand patterns of ischemia and infarction.

Results and discussion: The left coronary artery, particularly the left anterior descending artery, is most commonly involved in myocardial infarction due to its extensive supply to the anterior wall of the left ventricle and interventricular septum. Variations in coronary dominance influence the severity and region of infarction. Occlusion of specific coronary branches leads to predictable patterns of myocardial damage, which correspond to clinical symptoms and ECG changes. Knowledge of collateral circulation also explains survival in some cases despite arterial blockage.

Conclusion: A clear understanding of coronary artery anatomy and myocardial blood supply is essential for recognizing the anatomical basis of myocardial infarction. This knowledge supports accurate diagnosis, targeted treatment, and improved clinical outcomes. Anatomical awareness also aids medical students and healthcare professionals in understanding complications and preventive strategies.

Keywords: Myocardial infarction, coronary arteries, coronary circulation, left anterior descending artery, cardiac anatomy, ischemia.

ROLE OF HER2 IMMUNOHISTOCHEMISTRY IN BREAST CARCINOMA

Noshika Lilhare
Stavropol State Medical University, Stavropol, Russia
Department of Pathological Anatomy
Scientific supervisor: C.M.Sc., Associate Professor **G.D. Dzhikaev**

Background: Human epidermal growth factor receptor 2 (HER2) is a key prognostic and predictive biomarker in breast carcinoma. HER2 overexpression is associated with aggressive tumor behavior and plays a critical role in guiding targeted therapy. Immunohistochemistry (IHC) is widely used in routine pathology practice to assess HER2 protein expression in tumor tissues.

Objective: To evaluate the role of HER2 immunohistochemistry in breast carcinoma and to analyze its association with clinicopathological parameters.

Materials and methods: This study included histopathologically confirmed cases of breast carcinoma obtained from Stavropol Regional Clinical Oncology Dispensary. Formalin-fixed, paraffin-embedded (FFPE) tissue sections were subjected to immunohistochemical staining for HER2 expression. HER2 immunoreactivity was evaluated and scored according to established guidelines as 0, 1+, 2+, or 3+. A total of five patients were included in the study. HER2 positivity was identified in 2 out of 5 cases. Clinicopathological parameters, including patient age, tumor size, histological grade, and lymph node status, were collected and analyzed for their association with HER2 expression.

Results and discussion: HER2 overexpression was observed in a subset of cases, while the remaining tumors demonstrated low or negative expression. The findings support the clinical utility of HER2 IHC as a reliable method for identifying patients who may benefit from targeted therapy. The observed association between HER2 positivity and adverse clinicopathological features suggests its role as an indicator of tumor aggressiveness, although interpretation is limited by the small sample size.

Conclusion: HER2 immunohistochemistry remains an essential diagnostic and prognostic tool in breast carcinoma. Accurate assessment of HER2 status contributes to personalized treatment planning and improved patient management.

Keywords: Breast carcinoma, HER2, immunohistochemistry.

ANALYSIS OF HEART RATE VARIABILITY IN INDIVIDUALS CONSUMMING ENERGY DRINKS

R.Yu. Novikov, E.S. Sagandykov
Stavropol State Medical University, Stavropol, Russia
Department of Normal and Pathological Physiology
Scientific supervisors: D.M.Sc., Professor **V.S. Kashnikov**,
C.M.Sc., Associate Professor **N.G. Radzievskaya**

Background: In Russia, sales of non-alcoholic energy drinks have skyrocketed, growing by 20% year-on-year, with up to 80% of teenagers and students consuming them regularly. A significant number of young people exceed the recommended dosage or mix energy drinks with alcohol, significantly increasing the risk of life-threatening conditions. Therefore, identifying early markers of autonomic imbalance (Baevsky index, QTc interval) is becoming critical for preventive medicine and regulation of such beverages in the Russian Federation.

Objective: to identify the features of vegetative regulation and the degree of stress of the adaptive mechanisms of the cardiovascular system under the influence of energy drinks. **The tasks set:** to evaluate the dynamics of heart rate variability indicators before and after consuming an energy drink, to conduct a comparative analysis of autonomic reactions in the main group and the placebo group, to verify the degree of change in stress reactivity using cardiointervalography.

Materials and methods: Thirty-one student volunteers aged 19–21 years were examined: the main group (energy drink consumption, n=20) and the

control group (placebo–sweet carbonated drinks, n=10). Functional status was assessed using cardiointervalography using the cardioQVARK complex at rest and 40 minutes after exposure. Statistical analysis was performed using Student's t-test ($p < 0.05$).

Results and discussion: An increase in the stress index and the PARS index indicates the regulatory system's transition to a state of pronounced functional stress. The LF/HF dynamics indicate increased sympathetic influence and rigid rhythm centralization, along with a decrease in the cardiac adaptive capacity. The study group is in a state of "artificial stress", while the control group exhibits parasympathetic relaxation. A decrease in the TP and VLF components reflects depletion of energy and humoral-metabolic reserves. Prolongation of the QTc combined with sympathicotonia is an arrhythmogenic factor that increases the risk of cardiac arrhythmias.

Conclusion: Consumption of energy drinks significantly limits the body's adaptive capacity, and the identified electrophysiological disturbances of the myocardium indicate a disproportionately high risk of developing pathology compared to the practical benefits of consumption.

Keywords: Cardiovascular disease, energy drinks, heart rate variability.

COMPARATIVE ANALYSIS OF OPEN AND ENDOVENOUS SURGICAL METHODS IN THE TREATMENT OF LOWER LIMB VARICOSE VEINS

A.H. Nyanchama, E.D. Malima, A.A. Aje, M.C. Uzomah
Stavropol State Medical University, Stavropol, Russia
Department of Hospital Surgery
Scientific supervisor: C.M.Sc., Assistant **A.M. Shakhnazaryan**

Background: Lower limb varicose veins represent a prevalent venous pathology with significant implications associated with pain, edema, skin changes and reduced quality of life. Traditional open surgery, specifically high ligation and stripping long have been the gold standards in symptomatic and complicated cases. However, minimally invasive techniques-namely endovenous laser ablation (EVLA) and radiofrequency ablation (RFA)-has shifted the therapeutic paradigm due to perceived advantages in recovery and morbidity. Despite widespread adoption of these minimally invasive modalities, a nuanced comparison of their holistic outcomes, encompassing clinical efficacy, procedural morbidity, patient-centered recovery, remains essential for evidence based clinical decision making.

Objective: This study aims to conduct a comparative analysis of open surgery versus endovenous methods (EVLA/RFA) in treating symptomatic lower limb varicose veins. The primary objectives were to evaluate and compare technical success rates, post-procedural pain, recovery time, and early recurrence rates between the two approaches.

Materials and methods: A comprehensive search of major electronic medical databases on the comparative study was conducted to analyse open and endovenous surgical methods in the treatment of lower limb varicose veins involving patients with primary saphenofemoral junction incompetence, allocated into two groups. Group A underwent conventional open high ligation and stripping

under spinal anesthesia while Group B underwent either EVLA or RFA under local tumescent anesthesia. Outcome measures included: operative duration, visual analog scale (VAS) for pain, complication rates, time to return to normal daily activities, complete venous occlusion rates at 1 and 6 months, assessed via duplex ultrasound, recurrence rates over a defined follow-up period. Statistical analysis was performed to evaluate differences between groups.

Results and discussion: Technical success was 100% in Group B and 98.3% in Group A at 1-month follow-up. Patients in Group B reported to resume normal daily activities earlier and had shorter recovery periods. Complication rates, including wound infections and hematoma, were higher in open surgery group, whereas minor complication such as paresthesia was occasionally observed in the endovenous group. These findings underscore a trade-off: endovenous techniques offer superior perioperative outcomes and expedited convalescence; yet open surgery demonstrates marginally superior durability in the short-to-medium term. The reduced morbidity associated with endovenous methods directly translates to enhanced patient satisfaction, but the subtle variance in recurrence rates warrants consideration regarding long-term cost-effectiveness.

Conclusion: Endovenous ablation techniques (EVLA/RFA) offer a safe and effective alternative to open surgery in terms of reducing immediate postoperative pain, accelerating functional recovery, and minimizing disruption to daily life. However, conventional open surgery continues to demonstrate slightly lower rates of anatomical recurrence at six months. The choice of surgical modality should therefore be individualized, balancing the patient's lifestyle demands for rapid recovery due to minimally invasive nature. Further long-term studies are recommended to assess durability and recurrence discrepancy persists beyond the early postoperative period.

Keywords: Varicose veins, endovenous ablation, radiofrequency ablation, high ligation and stripping, venous insufficiency, minimally invasive surgery, postoperative recovery.

CLIMATE CHANGE–INDUCED EMERGENCE OF PATHOGENS: IMPLICATIONS FOR SURGICAL PRACTICE

C.E. Okoh, T.O. Olagoke
Stavropol State Medical University, Stavropol, Russia
Department of General Surgery
Scientific supervisor: D.M.Sc., Professor **O.V. Vladimirova**

Background: Climate change has accelerated the thawing of Arctic and sub-Arctic permafrost layers, which serve as long-term reservoirs for dormant microorganisms. As frozen soils melt, pathogens preserved for decades or centuries may re-enter ecosystems and potentially infect humans and animals. Among the most resilient microorganisms are spore-forming bacteria such as Bacillus anthracis and species of Clostridium. These organisms can remain viable in soil for long periods and may reemerge following environmental disturbances such as flooding, permafrost degradation, or soil erosion.

Objective: The aim of this study is to analyze the relationship between climate change–induced permafrost thawing and the reemergence of dormant

pathogens, and to evaluate how historical epidemiological patterns, bacteriological changes, and modern environmental conditions may influence surgical infection management.

Materials and methods: A narrative review of scientific literature, epidemiological reports, and historical medical data was conducted using international medical databases. Sources included publications related to permafrost microbiology, climate change and infectious diseases, and surgical infection management. Special attention was given to documented outbreaks associated with environmental pathogen release, including cases of Anthrax reported in rural regions of Serbia following environmental soil disturbance. Additional analysis considered infections caused by anaerobic soil bacteria such as Clostridium perfringens and Clostridium tetani, which may contaminate traumatic wounds and require urgent surgical intervention. Historical comparisons were also performed to evaluate differences in disease prevalence before and after the introduction of antibiotics and vaccines.

Results and discussion: Historical medical records indicate that infectious diseases were among the leading causes of death during ancient and medieval times due to the absence of effective antimicrobial therapy and sterilization techniques. The discovery of antibiotics in the twentieth century significantly reduced mortality rates and was followed by the development of numerous vaccines and antimicrobial drugs.

Conclusion: Climate change–induced permafrost thawing represents a potential source of reemerging infectious pathogens that may alter modern epidemiological patterns. The resurgence of environmentally persistent bacteria such as Bacillus anthracis and Clostridium species may increase the risk of severe infections requiring surgical attention.

Keywords: Climate change; permafrost thawing; emerging pathogens; anthrax; clostridial infections; surgical infections; ultraviolet sterilization; environmental health.

THE PREVALENCE OF DENGUE FEVER IN NIGERIA

J.O. Otakpo, M.M. Prusty, M.O. Jeffrey
Stavropol State Medical University, Stavropol, Russia
Department of Infectious Diseases with the Advanced Training Course
Scientific supervisor: D.M.Sc., Head of the Department **L.I. Tkachenko**

Background: Limited studies have investigated the seroprevalence of dengue viruses (DENVs) in Nigeria. Furthermore, there is no active surveillance program in place. Consequently, this study sought to determine the seroprevalence of DENV in relevant studies published in all six geopolitical zones in Nigeria.

Introduction: Dengue is a viral infection caused by dengue virus (DENV) which is a *Flavivirus.* This virus is an enveloped ribonucleic acid (RNA) virus with a positive sense. DENV has four different serotypes, namely, DENV-1, DENV-2, DENV-3, and DENV-4; these serotypes are distinguished by the different antigens but have about 65%–70% homology in their nucleotide sequence. That is why infection with one serotype does not protect completely

against the other serotypes. A new DENV-5 has been detected in some countries like Malaysia in 2013. It is known as “breakbone fever” due to the severity of fever. The *Aedes* mosquito is known to transmit other viruses such as chikungunya virus, Zika virus, yellow fever virus, and West Nile virus. Immunity is lifelong for the serotype, but the severity of symptoms is seen with subsequent secondary infection with another serotype.

Objective: Review of prevalence of dengue fever conducted in Nigeria.

Materials and methods: The scoping review was carried out using the Arksey and O’Malley framework. Twelve electronic databases were searched for relevant articles using a predesigned search strategy consisting of Mesh terms and Boolean search operators.

Results and discussion: Out of a total of 2646 articles, 21 met the inclusion criteria. The results showed a high prevalence of dengue in Nigeria. The southeast and northwest zones had a prevalence of 70.8% and 64.8%, respectively. There was heterogeneity in the reviewed studies, in which enzyme-linked immunosorbent assay was used in 80%. Two studies used polymerase chain reaction and the detected serotypes were DENV 1 and DENV 2.

Conclusion: In summary, dengue fever is an important pathogen that causes high morbidity and mortality in Nigeria. Studies from different geopolitical zones have proven that dengue is an endemic infection with the potential to become an epidemic. Although there is a paucity of data and national control programs have not been established, there is a need to harmonize the existing data because of differences in study design.

Keywords: Dengue, Nigeria, risk factors, seroprevalence.

CLINICAL VARIANTS OF THE COURSE OF MENINGEAL SYNDROME (clinical case)

J.O. Otakpo, M.M. Prusty, M.O. Jeffrey
Stavropol State Medical University, Stavropol, Russia
Department of Polyclinic Pediatrics
Scientific supervisor: D.M.Sc., Associate Professor **E.N. Voronkina**

Background: High morbidity and mortality, especially among young children. Variability of the clinical picture of meningeal syndrome depending.

Introduction: To study the etiology of meningeal syndrome using literary sources. To identify the main clinical features of the course of meningeal syndrome. To consider methods of diagnosis and treatment of meningeal syndrome at the present stage. To evaluate various variants of the course of meningeal syndrome using the example of patients from different age groups.

Objective: To study the characteristics of the course of meningeal syndrome in patients of different ages using the example of presented clinical cases.

Materials and methods: A study was conducted at the Stavropol Regional Children’s Clinical Hospital. A retrospective analysis of medical records was conducted to study the characteristics of meningeal syndrome. The main conditions for the analysis of medical documentation were the presence of: anamnestic data and complaints; assessment of the patient’s objective condition

upon admission and subsequent response to therapy; laboratory and instrumental research methods. During the study of anamnestic data, special attention was paid to the following factors: features of the patient's medical history, the presence of concomitant pathologies.

Results and discussion: This study analysed clinical cases of patients aged from 0 to 17 years presenting with meningeal syndrome, aiming to elucidate the etiology, clinical features, diagnostic approaches, and treatment modalities associated with this condition. Through a comprehensive review of the clinical data and literary sources, several key findings and insights have emerged.

Conclusion: Three out of three patients (100%) had clinical manifestations of the disease. Of these: increased body temperature: 3 people (100%); intoxication syndrome 3 people (100%); meningeal symptoms: 2 people (75%). Therapy for diseases associated with meningeal syndrome was carried out in accordance with clinical guidelines, taking into account the characteristics of the patient's condition and the clinical picture of the pathology.

APPLICATION FROM FOR INTERNATIONAL SCIENTIFIC CONFERENCE FOR STUDENTS AND SICKLE CELL ANAEMIA: PATHOPHYSIOLOGY AND CRISIS MANAGMENT

Pradeep Umadevi Anjana
Stavropol State Medical University, Stavropol, Russia
Department of Hospital Therapy
Scientific supervisor: C.M.Sc., Associate Professor **Y.M. Marchenko**

Background: Sickle Cell Anaemia is an inherited disorder caused by a Beta-globin gene mutation producing hemoglobin S (HbS). Under hypoxic conditions, HbS polymerizes leading to sickling of red blood cells, hemolysis and vascular occlusion.

Objective: To outline the pathophysiology and clinical management of sickle cell crises.

Materials and methods: The review of clinical records and literature was performed, focusing on disease mechanism, clinical features and management strategies.

Results and discussion: Sickling of RBCs leads to chronic hemolysis and vaso-occulasion causing anaemia and ischemic tissue injury. Patients commonly present with pain crises, fatigue and complications such as acute chest syndrome. Crises are triggered by infection, dehydration or hypoxia. Management includes analgesics, hydration, oxygen therapy and transfusion in severe cases. Hydroxyurea reduces crisis frequency by increasing fetal hemoglobin. Preventive care plays a key role in reducing morbidity.

Conclusion: Sickle Cell Anaemia is a chronic disorder with recurrent crises. Early diagnosis, prompt crisis management and preventive measures improve patient outcomes.

Keywords: Sickle Cell Anaemia, Hemoglobin S, Vaso – occlusion, Hemolysis, Pain Crisis

ENDOMETRIOSIS: THE HIDDEN EPIDEMIC AFFECTING FERTILITY AND QUALITY OF LIFE

Pradeep Umadevi Anjana
Stavropol State Medical University, Stavropol, Russia
Department of Obstetrics
and Gynaecology #1 with the Advanced Training Course
Scientific supervisor: C.M.Sc., Associate Professor **K.K. Kuyumcheva**

Background: Endometriosis is a chronic, estrogen-dependent dyshormonal disorder characterized by the presence of endometrial-like tissue outside the uterine cavity. It affects approximately 10-15% of women of reproductive age worldwide. Despite its high prevalence, diagnosis is often delayed by 7-9 years due to nonspecific symptoms and limited awareness. The condition commonly presents with chronic pelvic pain, dysmenorrhea, dyspareunia and infertility, significantly impairing physical, psychological and social well-being.

Objective: To evaluate the epidemiological burden of endometriosis, examine its impact on fertility and assess its effect on quality of life.

Materials and methods: Reviews and data regarding prevalence, infertility rates, symptom burden and economic impact were collected from observational studies.

Results and discussion: Endometriosis is identified in 30-50% of women with infertility and 40-60% of those with chronic pelvic pain. Advanced stages are associated with ovarian endometriomas, pelvic adhesions and reduced spontaneous conception rates. Chronic pelvic pain is reported in 70-80% of patients while dysmenorrhea affects up to 90%. QoL assessments demonstrate higher rates of anxiety, depression and reduced work productivity. Economic analyses reveal substantial healthcare costs and indirect productivity losses.

Conclusion: Endometriosis is a significant yet under-recognized public health issue affecting fertility and quality of life. Early diagnosis and multidisciplinary management are essential to reduce long-term reproductive and psychosocial consequences.

Keywords: Endometriosis; infertility; chronic pelvic pain; quality of life; reproductive health.

SYMPTOM BASED SCREENING FOR PCOS RISK AMONG STAVROPOL STATE MEDICAL UNIVERSITY STUDENTS

Pradyumna Vinod Bhagwat, Kaushik Deepak Sathawane, Mohan Roy
Stavropol State Medical University, Stavropol, Russia
Department of Obstetrics
and Gynaecology #1 with the Advanced Training Course
Scientific supervisor: Assistant **E.B. Lavrinenko**

Background: Polycystic Ovary Syndrome (PCOS) is a common endocrine disorder affecting women of reproductive age. It often presents with menstrual irregularities, acne, excess body hair, and weight gain. Many young women remain undiagnosed due to mild or ignored symptoms. Early identification of individuals at risk may help prevent long-term complications such as infertility,

insulin resistance, diabetes, and cardiovascular disease. Screening in university settings may help in early detection.

Objective: To determine the prevalence of PCOS risk based on symptom screening among Stavropol State Medical University students and to assess its association with Body Mass Index (BMI).

Methods and materials: We conducted a cross-sectional questionnaire-based study among female students aged 18–25 years. Any used a structured self-administered questionnaire to collect information regarding menstrual history, hyperandrogenic symptoms, family history, and lifestyle factors. Height and weight were on recorded to calculate BMI. Participants into low-, moderate-, and high-risk groups based on symptom scoring were colegoriso and discussion.

Results: Significant proportion of students fell into moderate and high risk categories based on symptom screening.

Conclusion: Analyzing the data we concluded how many percent of students were under the risk of PCOS and associated higher BMI with the risk of having PCOS. Symptom-based screening in university settings may help in early identification and prevention of long-term reproductive and metabolic complications.

Keywords: Polycystic ovarian syndrome, Symptoms based screening, Body Mass Index (BMI), university students.

LAPAROSCOPIC INGUINAL HERNIA REPAIR

R.K. Purbey, Ifemeni E.D., P.V. Bhagwat, M. Zaid
Stavropol State Medical University, Stavropol, Russia
Department of Faculty of Surgery
Scientific supervisor: C.M.Sc., Associate Professor **E.V. Pechenkin**

Background: Inguinal hernia repair is among the most common general surgical procedures worldwide. Laparoscopic techniques – transabdominal preperitoneal (TAPP) and totally extraperitoneal (TEP) – have become established alternatives to open repair, offering a preperitoneal view that enables wide mesh coverage of the myopectineal orifice. These approaches may provide faster recovery and less chronic groin pain in appropriately selected patients.

Objective: To compare and analyze tactical laparoscopic methods in treating inguinal hernia, summarize key anatomy and technical principles of TAPP and TEP.To review common complications and their prevention.

Materials and methods: 15 surgical procedures were carried out at the clinical Endosurgery Department of Stavropol State Medical University. The procedures were carried out on 10 men and 5 women within age group of 40-50 years. The TAPP procedures were performed on 6 Men and 2 women and TEP was performed on 4 men and 3 women and all were on general anesthesia. Each procedure took an average time of approximately 50minutes to complete and after which they were all moved to the Resuscitation Room for further care till full recovery.

Results and discussion: In both 10 Males and 5 females, there was quicker postoperative recovery, reduced long-term groin pain and better cosmetic result due to minimal scarring when compared to open mesh Surgery. And also both TAPP and TEP in the 15 procedures yield similar overall outcomes but 4 out

of 6 men had a minor complication (seroma) which was encountered during the TAPP surgery.

Conclusion: Laparoscopic inguinal hernia repair is a safe and effective option with outcomes comparable to open repair and potential benefits in recovery and chronic pain. Optimal results require thorough anatomical knowledge, adherence to technical principles, completion of the learning curve, and appropriate patient selection and which tactical laparoscopic method to apply depends on the surgeon's preference.

Keywords: Pre-eclampsia, TAPP, TEP, Chronic groin pain, Learning curve.

HYPERTENSIVE DISORDERS OF PREGNANCY AND LONG-TERM CARDIOVASCULAR HEALTH

K.P. Raushan, Ifemeni E.D.
Stavropol State Medical University, Stavropol, Russia
Department of Obstetrics
and Gynaecology #1 with the Advanced Training Course
Scientific supervisor: C.M.Sc., Associate Professor **K.K. Kuyumcheva**

Background: Hypertensive disorders of pregnancy (HDP) are leading causes of maternal and perinatal morbidity and mortality worldwide and are now recognized as important markers of future cardiovascular disease (CVD). Pregnancy functions as an early "stress test" for the maternal cardiovascular system; failure of normal adaptation, as seen in HDP, is associated with persistent hemodynamic changes and increased long-term risk of cardiovascular, renal, metabolic, neurological disease, and venous thromboembolism.

Objective: To summarize current evidence on maternal cardiovascular changes in normal pregnancy versus HDP, and on the recurrence and long-term health risks after HDP.

Methods and materials: A narrative review of the literature including cohort studies, randomized controlled trials, systematic reviews, and meta-analyses on HDP and future health risks. Critical appraisal of international and national guidelines (e.g. FIGO, ACOG, AHA/ACC, WHO, national cardiovascular societies) on CVD prevention and postpartum care. Expert consensus from the FIGO Committee on Impact of Pregnancy on Long-term Health and the FIGO Division of Maternal and Newborn Health, integrating evidence with clinical feasibility in both high- and low-resource settings.

Results: HDP substantially increase women's long-term risk of chronic hypertension and major cardiovascular events (coronary disease, heart failure, stroke), as well as kidney disease, type 2 diabetes, metabolic syndrome, dementia, epilepsy, and venous thromboembolism, particularly after early-onset or recurrent pre-eclampsia.

Conclusion: HDP are early, strong markers of future cardiovascular and related disease. Integrating structured postpartum screening, lifestyle and breastfeeding support, and long-term follow-up into routine care is essential to reduce lifetime risk, and targeted trials are needed to define the most effective interventions for this high-risk group.

Keywords: Hypertensive disorders of pregnancy; pre-eclampsia; cardiovascular disease; pregnancy; postpartum care.

THALASSEMIA: A MODERN GLOBAL HEALTH CONCERN

Ridhima Bhardwaj, Mahika, Bansh, T.S. Shepeleva
Stavropol State Medical University, Stavropol, Russia
Department of Biology
Scientific supervisor: Assistant **T.S. Nikolenko**

Background: Thalassemia is an inherited blood disorder caused by reduced or abnormal haemoglobin production, leading to chronic anaemia and related health complications. It is highly prevalent in regions such as India, the Mediterranean, and Southeast Asia. Nowdays migration and globalisation have contributed to the spread of thalassemia beyond traditional high-risk areas, making it a significant modern global health problem.

Objective: This study aims to summarize the prevalence, clinical features, management approaches, and preventive strategies for thalassemia, emphasizing its significance as a global health concern.

Materials and methods: Data were derived from a review of regional and global literature published between 2020 and 2025, including epidemiological statistics, clinical practice guidelines, and reports on preventive initiatives. Special attention was given to India and Russia to understand regional variations in disease burden and management practices.

Results and discussion: Global prevalence. Worldwide, there are millions of carriers, with an estimated 60,000-70,000 new cases of severe thalassemia born annually.

India remains a high-burden country, with registered patients rising from 806 in 2023 to 4,361 in 2025. National screening has identified over 50,000 carriers, reflecting an estimated 42 million carriers nationwide. In Russia, thalassemia is rare (1 in 200,000-300,000), but at least 20 HBB mutations have been identified, including among ethnic Russians. A 2025 report highlighted cases initially misdiagnosed as iron deficiency anaemia, underscoring the need for differential diagnosis.

Conclusion: Thalassemia remains a major global health challenge. Early diagnosis, appropriate management, and preventive screening can significantly reduce morbidity and improve patient outcomes. International cooperation is essential to mitigating the global burden of the disease.

Keywords: Thalassemia, haemoglobin, genetic disorder, anaemia, blood transfusion, screening, global health.

THE LEVEL OF TOTAL IMMUNOGLOBULIN E IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE ACCOMPANIED BY CONNECTIVE TISSUE DYSPLASIA

V.A. Rybas
Stavropol State Medical University, Stavropol, Russia
Department of Hospital Therapy
Scientific supervisor: C.M.Sc., Associate Professor **A.V. Rybas**

Background: The functional state of the immune system in individuals with connective tissue dysplasia (CTD) is characterized by both activation of immune

mechanisms that maintain homeostasis and their insufficiency, which leads to a violation of the ability to adequately free the body from foreign particles and, consequently, to the development of recurrent infectious and inflammatory diseases of the bronchopulmonary system. Immunological disorders in patients with CTD include increased blood levels of immunoglobulin E (IgE).

Objective: To study the total IgE level in patients with chronic obstructive pulmonary disease (COPD) on the background of CTD.

Materials and methods: 70 patients with COPD were examined. All patients underwent electrocardiography, chest X-ray survey, spirography, and fibrobronchoscopy. The level of IgE was determined in blood serum by enzyme immunoassay. The control group consisted of 20 healthy volunteers. For statistical processing of the material, the computer program of statistical analysis "SPSS" was used.

Results and discussion: Signs of CTD were detected in 26 patients with COPD (37.1%). The total IgE content in healthy volunteers was 43.54±18.91 kU/l. When comparing the levels of total IgE (Mann–Whitney U-test) in patients with COPD and in the control group, a significant increase in it was found in patients with COPD ($U=65.21$, $p<0.05$). The average IgE content in patients with COPD was 215.34±26.63 kU/L. 37.1% of patients with COPD showed a normal level of total IgE, while in other cases (62.9% of patients) it was increased. When comparing IgE levels in smokers and non-smokers with COPD, slightly higher values of immunoglobulin were noted, but these differences were statistically insignificant ($U=84.0$, $p>0.05$). When comparing the values of this indicator in male and female patients, a tendency to increase IgE levels in women was revealed ($U=79.2$, $p>0.05$). Most often, the unclassifiable CTD phenotype was observed in COPD patients – in 73% of cases.

Conclusion: in patients with COPD, there was an increase in the level of total IgE, significantly higher levels are determined in patients with COPD with an unclassifiable CTD phenotype; the level of IgE does not depend on the gender factor.

Keywords: Connective tissue dysplasia, immunoglobulin E.

MOLECULAR MODELING OF *Cys-NP(Ag)* COMPLEXES WITH PROTEINS-RECEPTORS IN *Staphylococcus aureus* AND *Escherichia coli* MODELS

Z.A. Sadulaeva, S.I. Yakhyaeva, T.F. Tevosyan
Stavropol State Medical University, Stavropol, Russia
Department of General and Biological Chemistry
Scientific supervisor: C.Ch.Sc., Associate Professor **O.A. Dyudyun**

Background: It is known that the mechanisms of antimicrobial action of silver ions and silver nanoparticles (*NP(Ag)*) are differ. When silver ions interact with the microbial surface, they are reduced, which is accompanied by a decrease in the effective ion concentration and, consequently, a reduction in the antimicrobial activity of the drug. *NP(Ag)* act as a reservoir, providing prolonged release of both cluster and ionic silver. L-cysteine is known to be a good surface modifier for nanoparticles. An aqueous solution containing L-cysteine and silver

nitrate is a polymer-like supramolecular compound formed by silver mercaptide molecules and *Ag+* ions, forming linear chains stabilized by silver-sulfur bonds. Under physiological conditions, cysteine is predominantly a zwitterion; however, at pH values above the isoelectric point (pI = 5.1), its anionic forms are present, facilitating chemisorption and further stabilizing free silver ions.

Objective: Conduct molecular modeling of *Cys-NP(Ag)* complexes with proteins-receptors using *Staphylococcus aureus* and *Escherichia coli* models.

Materials and methods: Using Discovery Studio molecular modeling software and the PyRx virtual screening tool, an *in silico* analysis was performed to evaluate the interaction of a ligand (cysteine) with receptor proteins using *Staphylococcus aureus* and *Escherichia coli* models. Molecular docking of 100 receptor proteins was performed, and the affinity of the resulting complexes was calculated. The amino acid environment of the ligand was analyzed for the most stable complexes.

Results and discussion: Molecular docking results indicate a moderate affinity of cysteine for the studied receptors. A more pronounced interaction was observed for the *E. coli* 7VEN protein (ΔG = –3.9 kcal/mol); among the *St. aureus* receptors, the highest affinity was recorded for the complex with 5CZZ (ΔG = –3.7 kcal/mol). The identified differences in binding energy between the studied microorganisms are insignificant.

Keywords: Molecular modeling, cysteine, silver nanoparticles, receptor proteins

ENDOMETRIOSIS

Sahu Tanu, Sarkar Priyanka
Stavropol State Medical University, Stavropol, Russia
Department of Obstetrics
and Gynaecology #1 with the Advanced Training Course
Scientific supervisor: Assistant **E.B. Lavrinenko**

Background: Endometriosis is a chronic gynecological disorder, affecting ~10% of reproductive-age women globally, involves ectopic endometrial-like tissue causing inflammation, adhesions, pelvic pain, dysmenorrhea, dyspareunia, and infertility. Lesions predominantly affect ovaries (endometriomas) and peritoneum, driven by retrograde menstruation, nulliparity, and early menarche.

Objective: To provide a comprehensive review of endometriosis, focusing on diagnosis, disease mechanisms, and recent treatment strategies.

Material and methods: A systematic review of peer-reviewed articles published between 2010 and 2024 was conducted using databases such as PubMed, Web of Sciences, and Scorpus, including clinical trials cohorts (n=100-500 women aged 18-45 with histologically confirmed disease, and meta-analyses on pathogenesis, diagnostics and treatments.

Results and discussions: Hormonal therapies (GnRH agonists, progestins) alleviate pain in 70–80% short-term, but surgical recurrence reaches 20–50%, with deep infiltrating disease worsening infertility. Quality-of-life (SF-36) plummets, with chronic pain disrupting daily function in >90%. Diagnostic delays average 7–10 years due to symptom overlap (IBS, PID) and limitations of ultrasound,

MRI, and CA-125. Combined medical-surgical strategies outperform surgery alone for fertility preservation, while emerging biologics (e.g., anti-IL-8) target immune dysregulation and estrogen excess. Multidisciplinary care–gynecologists, pain specialists, fertility experts–is essential.

Conclusion: Endometriosis remains a challenging condition, with ongoing research focused on understanding its pathophysiology and developing targeted therapies.

Keyword: Endometriosis, pelvic pain, infertility, hormonal therapy, laparoscopy, biomarkers.

HPV VACCINE AND CERVICAL CANCER

Sarthak Singh, Pooja
Stavropol State Medical University, Stavropol, Russia
Department of Obstetrics
and Gynaecology #1 with the Advanced Training Course
Scientific supervisor: Assistant **E.B.Lavrinenko**

Background: Cervical cancer remains the fourth most common cancer in women worldwide, with approximately 660,000 new cases and 350,000 deaths annually. More than 90% of deaths occur in low- and middle-income countries. Persistent infection with high-risk Human Papillomavirus (HPV), particularly types 16 and 18, is a necessary cause of cervical cancer. Despite being largely preventable through vaccination and screening, global coverage remains insufficient.

Objective: To review the virology, pathogenesis, clinical impact, and global prevention strategies of HPV infection, with emphasis on vaccination as a key tool toward cervical cancer elimination.

Materials and methods: A literature-based review of epidemiological data, molecular mechanisms of HPV-induced carcinogenesis, vaccine efficacy trials, and global implementation strategies was conducted. Key focus areas included viral oncogenesis (E6/E7-mediated disruption of p53 and pRb), vaccine types (bivalent, quadrivalent, and nonavalent), and WHO elimination targets (90-70-90 strategy).

Results and discussion: HPV 16 and 18 account for approximately 70% of cervical cancers, while additional high-risk types contribute another 20%. Vaccination before the age of 16 reduces cervical cancer risk by up to 80–90%. Countries such as Sweden, England, and Denmark report up to 88% reduction in invasive cervical cancer among early-vaccinated cohorts. Single-dose vaccine strategies demonstrate 92–97% efficacy against persistent HPV 16/18 infection and have been adopted by more than half of implementing countries. However, global first-dose coverage remains only 21%, far below the WHO target of 90%, particularly in high-burden regions such as Sub-Saharan Africa.

Conclusion: HPV vaccination is a safe and highly effective primary prevention strategy against cervical cancer. While significant progress has been made, global disparities in vaccine coverage threaten elimination goals. Accelerated implementation of vaccination and screening programs, especially in low-resource settings, is essential to achieve the WHO target of eliminating cervical cancer as a public health problem.

Keywords: Cervical cancer; Human papillomavirus (HPV); HPV vaccination; Viral oncogenesis; cervical cancer prevention; vaccine efficacy; WHO elimination strategy.

SEVERE CHICKENPOX ASSOCIATED WITH ACUTE LYMHPOBLASTIC LEUKEMIA IN A 4-YEAR-OLD CHILD: CLINICAL CASE

Selvarathi Anbazhagan Yazhini, Subramanian Muthu Selvi, Erendzhenov Erentsen Mandzhievic
Stavropol State Medical University, Department of Policlinic Pediatrics
Regional Children's Clinical Hospital,
Department of Oncology and Pediatric Hematology
Stavropol, Russia
Scientific supervisors: C.M.Sc., Associate Professor **O.E Rubacheva,**
C.M.Sc., Head of the of the Department **G.V. Bykova**

Background: The incidence of infectious complications during cytostatic therapy of acute lymphoblastic leukemia (ALL) is more than 80.0%. Most often, they develop at the stage of induction therapy. In this case, chickenpox (CP) in patients with secondary immunodeficiency can acquire a severe, generalized form, and also have a beneficial effect on the course of the underlying disease.

Objective: To present to the target audience a clinical case of a favorable outcome of a severe form of varicella in an immunocompromised child with acute lymphoblastic leukemia.

Materials and methods: We conducted a retrospective analysis of the medical history of a child with acute lymphoblastic leukemia (ALL), treated in the hematology department of the Stavropol Regional Children's Clinical Hospital (SRCH).

Results and discussion: A 4 year – old boy, was first diagnosed with acute lymphoblastic leukemia (ALL) on October 11, 2024. The diagnosis was confirmed by immunophentyping and bone marrow cytology. On November 12, a course of induction, and antibacterial therapy was started against the background of fungicides and blood transfusion. At the end of December 2024, he suffered from a mild form of coronavirus infection (COVID-19). From August 1, 2025, chemotherapy was resumed in the day hospital format.

On January 15, the child's temperature rose to 38.00 C every 6-8 hours, and a rash typical of chickenpox (spots, papules) appeared, which subsequently developed into vesicles. No medical assistance was provided for 5 days. On January 20, the boy was hospitalized in the infectious diseases department of the Sverdlovsk Children's Clinical Hospital, on January 23, due to deterioration of the patient's condition he was transferred to the intensive care unit. Three telemedicine consultations were held via videoconference with members of the multicenter scientific and clinical tearm of the D. Rogachev National Medical Research Center for Pediatric Hematology, Oncology and Immunology (NMIC DGOI).

Against the background of hematopoietic aplasia, the child with ALL was diagnosed with chickenpox, atypical, generalized (visceral), complicated by hepatitis, liver failure of infectious-toxic genesis, bilateral interstitial pneumonia.

The boy's condition gradually worsened: hemorrhagic syndrome, liver and respiratory failure, generalized edema syndrome increased.

He underwent intensive antibacterial therapy using reserve group drugs in maximum dosages, parenteral antiviral, replacement and immunoglobulin therapy, plasma transfusion plasmapheresis. Chemotherapy was suspended.

The examination revealed anemia (HGB – 68 g/l, RBC – $2.72\times10^{12/l}$), accelerated ESR (32-43 mm/h), hyperbilirubinemia (40.9-67.4 μmol/l), extremely high aminotransferase activity (ALT – 137-3362.4 U / l, AST – 72.0-6639.0 U/l), thrombocytopenia (PLT–$34\times10^{9/l}$), hypocoagulation (APTT–120.5 sec., INR – 2.35 units), ferritin 2620-4600 μg l. The therapy gave a positive result: fever, hemorrhagic and skin syndromes were stopped, multiple organ failure did not progress, hemodynamically stable. February 02, discharged under the supervision of a pediatrician and oncohematologist.

Conclusion: Timely discontinuation of immunosuppressive therapy and the combine use of antiviral and antibacterial drugs made it possible to exclude the fatal outcome of generalized chickenpox due to secondary immunodeficiency. It is important to note that no negative impact of CP on the course of ALL was observed.

Keywords: Children, chickenpox, immunosuppression, acute lymphoblastic leukemia.

ARTERIAL STIFFNESS AND TYPES OF HEMODYNAMIC RESPONSES IN YOUNG INDIVIDUALS

O.V. Sergeeva, M.E. Evsevieva, A.A. Taran, G.Zh. Marukyan, A.V. Kalinina
Stavropol State Medical University, Stavropol, Russia
Department of Faculty Therapy
Scientific supervisor: D.M.Sc., Professor **M.E. Evsevieva**

Background: The relevance of this study is based on the high prevalence of early subclinical changes in the vascular wall in young individuals, which often remains undiagnosed. Of particular interest is the relationship between arterial stiffness (AS) and types of hemodynamic response to graded physical exercise, considering sex and body weight. Clarifying these patterns is important for early cardiovascular risk stratification.

Objective: To assess arterial stiffness under different types of hemodynamic response to graded physical exercise (GPE) in young individuals, considering sex and body weight.

Materials and methods: A total of 173 individuals aged 18–25 years (85 males and 88 females) were examined at the Health and Anti-Aging Medicine Center of Stavropol State Medical University. Individual hemodynamic response to GPE was assessed using the Valenta bicycle ergometer system (Russia). Arterial stiffness was evaluated by the CAVI index using the VaSera VS-1500N sphygmograph (Fukuda Denshi, Japan). Groups were stratified by BMI: normal body weight (18.5–24.9 kg/m²) and overweight (>25 kg/m²). Results were analyzed separately for males and females.

Results: In males, the lowest AS was observed in those with overweight and exercise-induced hypertension, while the highest CAVI values were found in

overweight individuals with a hypotensive response to GPE. In females, the worst values of AS were observed in normal-weight individuals with a hypotensive response, and the best in overweight individuals with a hypertensive response. Overall, arterial stiffness in overweight females was lower than in normal-weight peers regardless of hemodynamic response type.

Conclusion: The findings demonstrating an association between overweight and a more favorable elastic potential of the vascular wall in both males and females are consistent with the concept of the "obesity paradox" in youth. Exercise testing may be a useful tool for further risk stratification. In males, the combination of overweight, hypotensive response to GPE, and high CAVI values likely reflects early stages of vascular remodeling following a transient period of reduced arterial stiffness. In females, the adaptive effect of increased body weight on arterial stiffness persists, indicating sex-related differences in the timing of vascular remodeling.

Keywords: Arterial stiffness, graded physical exercise, hemodynamic response types, CAVI index.

THE PRESENCE OF SOMATIC PATHOLOGY AS A JUSTIFICATION FOR THE CHOICE OF RETRACTION SYSTEMS IN THE PROSTHODONTIC DENTISTRY CLINIC

A.A. Shahanova, A.E. Chomaeva, U.V. Lityagina
Stavropol State Medical University, Stavropol, Russia
Department of Dental Care Organization,
Management and Prevention of Dental Diseases
Scientific supervisor: Assistant **V.M. Avanisyan**

Background: In Prosthodontic dentistry, obtaining an accurate impression requires high- quality gum retraction, but the choice of a retraction system should take into account the general somatic status of the patient. The use of traditional threads impregnated with vasoconstrictors (adrenaline, aluminum chloride) can provoke tachycardia, blood pressure surges and arrhythmia, which is poses a serious threat to patients with hypertension, coronary heart disease and endocrine disorders. Patients with diabetes have an increased risk of tissue injury, and the risk of bleeding increases in blood diseases and taking anticoagulants. In addition, the components of hemostatics and pastes can cause local and systemic allergic reactions.

Objective: To justify the differentiated choice of retraction systems in the clinic of prosthodontic dentistry, taking into account the presence of somatic pathology in patients and the peculiarities of their allergic history.

Materials and methods: 30 patients (15 men and 15 women) aged 45 to 58 years took part in the clinical comparative study. Patients were divided into three equal groups (10 patients each):

• Control group: patients without severe somatic pathology and allergies.

• The first experimental group: patients with a stressed allergic status (including acrylic materials and monomers).

• The second experimental group: patients with cardiovascular diseases (atherosclerosis, coronary artery disease, hypertension), regularly taking anti-coagulants and/or disaggregants.

Results and discussion: Initial condition: Mild gingivitis was observed in the control and first experimental groups (PMA index 12.3% and 11.9%, respectively). In patients with cardiovascular pathology (second experimental group), the indices were significantly higher (PMA – 18.7%, SBI – 1.9 points), which indicated an increased tendency to bleeding. Control group: All methods proved to be satisfactory. Retraction paste turned out to be the most atraumatic, but in patients with a thick gum biotype, it did not provide sufficient opening of the gingival groove (less than 0.2 mm), which required the use of thread. In general, the paste gave a qualitative result in 93.3% of cases, but showed insufficient effectiveness in 26.7% (due to the thick biotype). The first experimental group (allergies): 4 patients out of 30 (13.3% of the total sample) revealed hidden allergic reactions to hemostatic components (aluminum chloride, capramine). The use of impregnated thread caused hyperemia and itching in 2 patients. The use of a thread without impregnation allowed to obtain a high-quality impression in 9 out of 10 patients without side effects. Second experimental group (CVD and anticoagulants): The use of impregnated threads was not carried out, as it would be prognostically accompanied by unstable hemostasis in 40% of cases. The use of only dry thread provided stable hemostasis in 9 out of 10 patients. Mild bleeding was recorded in 7 patients (PMA 0.15), but this did not affect the quality of the impression.

Conclusion: The choice of retraction system should be based on a comprehensive assessment of the clinical situation and somatic status of the patient. Retraction paste is atraumatic, but limited by the gum biotype. Chemically impregnated threads are contraindicated for patients on anticoagulant therapy due to the risk of secondary bleeding and unstable hemostasis. The safest method for patients with cardiovascular diseases is a dry thread without impregnation, which expands the groove mechanically, excluding systemic reactions and chemical effects on the periodontium. Only an individualized approach guarantees the safety and effectiveness of orthopedic treatment.

Keywords: Gum retraction, prosthodontic dentistry, somatic pathology, cardiovascular diseases, allergic status, retraction thread, retraction paste, hemostasis.

PREVALENCE OF MALARIA IN INDIA *(PLASMODIUM VIVAX)*

Shahdeo Ambika, Mudaliar Hemavarshini, I.V. Klimanovich
Stavropol State Medical University, Stavropol, Russia
Department of Biology
Scientific supervisor: Assistant **T.S. Shepeleva**

Background: Malaria remains a significant public health challenge in India, which accounts for approximately 73% of the malaria burden in the South-East Asia Region. While *Plasmodium falciparum* is often associated with higher mortality, *Plasmodium vivax* is the most geographically widespread species in the country. *P. vivax* is uniquely challenging due to its ability to form dormant liver stages (hypnozoites), which can cause relapses months or even years after the initial infection, making it a “stumbling block” for national elimination goals.

Objective: To analyze the current prevalence and epidemiological trends of *Plasmodium vivax* in India, to examine the biological and systemic challenges associated with its elimination, and to review the government's strategic frameworks aimed at achieving a malaria-free India by 2030.

Materials and methods: Data were obtained from the World Malaria Report 2025, official publications of the National Center for Vector Borne Diseases Control (NCVBDC), and documents from the Ministry of Health and Family Welfare. A comparative analysis of case incidence, species distribution, and annual parasitic incidence (API) was conducted for the period from 2015 to 2024 year.

Results and discussion: India has made remarkable progress, exiting the WHO's "High Burden to High Impact" group in 2024. Total malaria cases declined by over 80% between 2015 and 2023 year. However, *P. vivax* still accounts for nearly 40% of all reported cases in 2024, indicating that its elimination lags behind that of *P. falciparum*. Persistent hotspots remain in states such as Odisha, Chhattisgarh, Jharkhand, and West Bengal.

Despite the overall decline, the elimination of *P. vivax* faces distinct biological challenges. The primary obstacle remains the requirement for a 14-day radical treatment to eliminate hypnozoites and prevent relapses. Adherence to this regimen is often hindered by patient non-compliance and the risk of hemolysis in glucose-6-phosphate dehydrogenase (G6PD)-deficient individuals, complicating mass drug administration efforts.

Conclusion: India is progressing toward zero indigenous malaria cases by 2027, supported by the National Strategic Plan (2023–2027) and the "Test, Treat, Track" strategy. Eliminating *P. vivax* will depend on better relapse management, expanded digital surveillance, and routine G6PD screening.

Keywords: *Plasmodium vivax*, malaria prevalence, India, relapse, Hypnozoites, NCVBDC.

COMPARATIVE ANALYSIS OF SURGICAL COMPLICATIONS IN CANCER PATIENTS WITH LUNG CANCER IN THE EARLY POSTOPERATIVE PERIOD

D.K. Shevtsov, K.N. Ayrapetyan, V.A. Rybas
Stavropol State Medical University, Stavropol, Russia
Department of General Surgery
Scientific supervisor: Assistant **S.V. Shamirov**

Background: postoperative pain is a significant problem in cancer surgery, affecting the quality of life and the risk of chronic pain syndrome. The intensity of pain depends on the scope of the operation, gender and age of the patient, which requires an individualized approach to analgesia.

Objective: to conduct a comparative assessment of pain in cancer patients in the early postoperative period, taking into account gender, age, and comorbidity.

Materials and methods: 30 patients were examined in the Thoracic department of Stavropol State Oncology Centre, mean age – 47±4.7 years, men – 15, women – 15. All patients were asked to complete the DN4 (0-10 points) and BPI

questionnaires after surgery. Patients were divided into 2 age groups according to WHO (group I – 18–44 years, group II – 45–59 years). Statistical data processing was performed in SPSS-17.0, and the Kruskal-Wallis H-test was used to compare groups; the difference was considered significant at $p<0.05$.

Results and discussion: Young patients had higher DN4 values (Group 1 – 46.8±1.66, II –3.2±1.78, H=15.85, p=0.00007; BPI: Group 1 – 72.27±13.6, II – 39±23.75, H=13.17, p=0.00028). Gender analysis: DN4 (Group 1 – 4.07±2.28, II – 5.9±2.34, H=3.9, p=0.046; BPI: Group 1 – 45.3±23.04, II – 65.9±24.16, H=4.8, p=0.028). In women, the pain tolerance is lowered by prolactin. Analysis of pain sensitivity with concomitant pathology: without pathology DN4 – 3.7±2.31, BPI –36.6±16.3; with pathologies – 6.14±2.03 and 74.93±17.94, $p<0.05$.

Conclusion: In the group of young patients, higher values were observed according to the results of two questionnaires. Women showed a statistically significant trend towards higher values. Significantly higher values on both scales were determined in patients with concomitant pathology.

Keywords: Pain syndrome, pain sensitivity questionnaire.

CLINICAL MANIFESTATIONS OF THE ORAL MUCOSA CONDITION IN CHILDREN WITH TYPE 1 DIABETES MELLITUS

Y.E. Shutov, D.M. Goman, E.A. Vakushina, S.M. Tumanyan, A.P. Vorobyeva
Stavropol State Medical University, Stavropol, Russia
Department of Pediatric Dentistry
Scientific supervisor: D.M.Sc., Professor **E.A. Vakushina**

Background: In addition to common risk factors for oral mucosal diseases in children, such as poor oral hygiene and harmful habits, clinical observations frequently reveal mucosal lesions resulting from systemic diseases unrelated to the primary state of the oral cavity.

Objective: To identify the clinical features of the oral mucosal condition in children suffering from type 1 diabetes mellitus.

Materials and methods: A study of the oral mucosal tissues in children with T1DM was conducted at the Filippsky City Children's Clinical Hospital and the Stavropol Region Children's Clinical Hospital. The study utilized informed voluntary consent for preventive dental examinations, as well as laboratory data from blood and urine analysis.

Results and discussion: Children admitted with newly diagnosed diabetes in a state of ketoacidosis exhibit pronounced primary manifestations of diabetes, such as dryness of the oral mucosa, tongue, and lips. In contrast, children with a chronic course of the disease present both primary and secondary manifestations, including inflammatory diseases and fissured tongue (lingua plicata).

Conclusions: A thorough examination of the oral cavity is essential, as it facilitates the prompt detection of the disease, the formulation of appropriate treatment strategies, and the prevention of complications.

Keywords: Type 1 diabetes mellitus, oral mucosa, laboratory analysis, degree of systemic disease compensation.

SURGICAL STRATIGIES AND CLINICAL OUTCOMES OF STAGES III AND IV DECUBITUS ULCERS

Singh Chahat
Stavropol State Medical University, Stavropol Russia
Department of General Surgery
Scientific supervisor: D.M.Sc., Professor **O.V. Vladimirova**

Background: Decubitus ulcers remain a significant yet underreported cause of morbidity among immobilized patients, particularly in orthopedic and neurology settings. Advanced Stage III and IV ulcers are frequently complicated by severe malnutrition (hypoproteinemia) and secondary infections such as osteomyelitis, especially in developing healthcare settings due to delayed presentation and socio-economic factors. While early preventive strategies are known to reduce incidence, advanced cases often necessitate surgical intervention when conservative management fails.

Objective: To evaluate the clinical efficacy of surgical debridement and flap reconstruction in the management of advanced decubitus ulcers, and to assess the role of perioperative nutritional optimization in improving wound healing outcomes.

Materials and methods: A retrospective study was conducted at a tertiary care center (Thanjavur Medical College, India) between 2019 and 2024. Patients with Stage III and IV decubitus ulcers involving sacral, ischial, and trochanteric regions were included.

All patients underwent radical sharp debridement followed by reconstruction using fasciocutaneous or myocutaneous flaps, including gluteal artery perforator flaps and V-Y advancement flaps.

Perioperative management included structured nutritional optimization, targeting a protein intake of 1.5 g/kg/day, addressing prevalent anemia and hypoproteinemia.

Results and discussion: Stable wound closure was achieved in approximately 83–87% of patients, demonstrating high efficacy of combined surgical and supportive management. A significant proportion of patients (over 35%) presented with malnutrition (BMI < 18.5), highlighting its role as a major risk factor for ulcer severity and delayed healing.

Postoperative complications, including minor wound dehiscence and seroma formation, were observed in approximately 16.6% of cases.

The findings emphasize that while surgical reconstruction provides reliable outcomes in advanced ulcers, long-term success is highly dependent on postoperative care, including nursing care bundles and home-based follow-up. Recurrence prevention remains a challenge, particularly in resource-limited rural settings where access to pressure-relieving devices is restricted.

These observations align with recent evidence suggesting that integration of preventive strategies with surgical care can significantly improve overall patient outcomes.

Conclusion: Surgical management of Stage III and IV decubitus ulcers is highly effective when combined with aggressive nutritional support and a multidisciplinary approach. While flap reconstruction offers durable wound

closure, optimizing patient condition and strengthening postoperative preventive care are essential to reduce complications and recurrence.

Keywords: Decubitus ulcers, pressure ulcers, flap reconstruction, surgical debridement, nutritional support, wound healing, multidisciplinary care.

HEADACHE REHABILITATION

A.M. Stolpova
Yessentuki branch of Stavropol State Medical University, Yessentuki, Russia
Scientific supervisors: **E.D. Sklyarova, M.V. Limarenko**

Introduction: Many modern people have headache that it is the common occurrence. People often take painkillers. When people take non-drug methods it leads to chronic pain and it is forming a strong circle forming stress – pain – pain.

Objective: To study the prevalence of headaches among young people and evaluate the effectiveness of existing rehabilitation methods for patients with chronic headache.

Results and discussion: As a result of the survey it was revealed that 62% students most of whom are girls have headache several times a month with an intensity of 5-6 on the scale from 1 to duration from 30 minutes to 4 hours. They don't want to consult a doctor; they think that headache can't or can't lead to disability or sick leave. In order to alleviate the condition, respondents take painkillers.

Conclusion: The results of the research work showed that young medical people don't know methods of getting medical headache they don't consider them effective but effective methods are the therapy of remedy to rehabilitation the basic methods pharmacotherapy of remedy to and these methods improve the quality of life of patients.

Keywords: Headache, recommendation, prevention, gymnastics, regressive muscle relaxation, relaxing verbalization, autogenic training, breathing exercises, self-massage, relaxation.

IMMUNOHISTOCHEMICAL FEATURES OF BREAST TISSUE AREAS ADJACENT TO THE TUMOR IN PATIENTS WITH FIBROADENOMAS

Swati, Bindhu Gayathri Jayan
Stavropol State Medical University, Stavropol, Russia
Department of Pathological Anatomy
Scientific supervisor: C.M.Sc., Associate Professor **G.D. Dzhikaev**

Background: Benign breast tumors, such as fibroadenomas, often develop against the background of fibrocystic disease proliferative forms of breast tissue changes and are considered as significant factors in oncogenesis. The prognosis of the disease is determined not only by the characteristics of the tumor itself but also by its microenvironment (stroma), interaction which plays a key role in tumor growth, formation, and the risk of recurrence. The study of immunohistochemical features of paratumor tissues is promising for identifying predictors of recurrence or malignant transformation.

Objective: To characterize the immunohistochemical profile of breast tissue adjacent to fibroadenomas, focusing on hormone receptor expression, myoepithelial integrity, and proliferative activity to elucidate the nature of the peritumoral microenvironment.

Materials and methods: The study was based on biopsy samples of breast tissue areas adjacent to the tumor from 58 patients operated on for fibroadenoma. Histological examination was performed on sections stained with hematoxylin and eosin. Immunohistochemical (ihc) analysis was conducted using antibodies against estrogen receptors (er), progesterone receptors (pr), ki-67 protein, and smooth muscle actin (sma). The ihc study was performed according to standard protocols with high-temperature antigen retrieval.

Results and discussion: Histological examination revealed various forms of fibrocystic disease in the peritumoral tissues: non-proliferative (17%), proliferative with moderate (67%) and marked (16%) epithelial proliferation. Ihc analysis showed that the expression of ki- 67 (proliferation marker) was significantly higher in tissues with marked proliferative changes (41.1% of ki-67-positive structures) compared to non-proliferative forms (23.4%). The proportion of progesterone receptor-positive structures was also higher in the proliferative forms (up to 74.5%) compared to the non-proliferative form (43%). Estrogen receptor expression was observed in 72% of glandular structures. Expression of smooth muscle actin was pronounced in non-proliferative and moderately proliferative forms but was weaker in cases with marked hyperplasia, indicating possible disruption of the myoepithelial layer.

Conclusion: Fibroadenomas develop against the background of benign breast hyperplasia. Proliferative forms of fibrocystic disease are characterized by increased expression of ki-67, er, and pr, which may increase tissue sensitivity to hormones and their mitogenic effects. High expression of smooth muscle actin in non-proliferative and moderately proliferative forms suggests the preservation of the myoepithelial barrier, which is a favorable able factor. A decrease in sma expression in marked hyperplasia may be an indirect sign of microinvasion, requiring further study using additional ihe markers.

Keywords: Fibroadenoma, breast, immunohistochemistry, ki-67. Estrogen receptors, progesterone receptors, smooth muscle actin.

PAROXYSMAL SUPRAVENTRICULAR TACHYCARDIA IN A PEDIATRIC PATIENT WITH DILATED CARDIOMYOPATHY

S.V. Swetha, S. Gil Christ, E.F. Osaze
Stavropol State Medical University, Stavropol, Russia
Department of Polyclinic Pediatrics
Scientific supervisors: C.M.Sc., Assistant **E.G. Zurnacheva,**
C.M.Sc., Associate Professor **O.E. Rubacheva**

Background: Paroxysmal supraventricular tachycardia (PSVT) is a common pediatric arrhythmia that, while often benign, can significantly compromise cardiac function and exacerbate heart failure in the context of underlying dilated cardiomyopathy (DCM).

Objective: To present a pediatric case of dilated cardiomyopathy with arrhythmia, including PSVT and frequent ventricular ectopy, highlighting the

diagnostic findings, clinical progression, and importance of comprehensive rhythm monitoring to guide treatment and prevent adverse outcomes.

Materials and methods: A 15-year-old male patient with dilated cardiomyopathy and arrhythmia presented with complaints of weakness, lethargy, palpitations (pulse-143 bpm), pallor, abdominal pain, and loss of appetite. The clinical evaluation included his anemesis, physical examination, and diagnostic tests. These included multiple echocardiograms with Doppler analysis, 24-hour Holter monitoring, standard ECGs, and X-ray examinations. The patient's history revealed that despite ongoing treatment with Atenolol, he had a significant episode of right ventricular tachycardia, prompting to hospitalization.

Results and discussion: Physical examination on admission revealed a patient in severe condition with tachycardia (125 bpm), muffled and arrhythmic heart sounds on auscultation, and an enlarged heart border on percussion. Echocardiography revealed severely reduced global myocardial contractility (Left Ventricular Ejection Fraction of 32.96%), with diffuse hypokinesis and paradoxical septal dyskinesia with marked dilation of the right ventricle and right atrium, left ventricular cavity dilation, and hypertrophy of the interventricular septum. Significant tricuspid regurgitation (Grade 2-3) was a persistent finding, along with milder regurgitation of the mitral, aortic, and pulmonary valves. A 24-hour Holter monitor captured the severe arrhythmia, recording sinus rhythm with episodes of ventricular rhythm, a high supraventricular (393) and ventricular (578) extrasystoles, and complex forms including bigeminy, trigeminy, and couplets. The circadian index was reduced, and episodes of first-degree AV block were noted.

Conclusion: This case shows that children with dilated cardiomyopathy need thorough arrhythmia testing. Treating PSVT alone is not enough, the underlying heart condition and other dangerous rhythms must also be managed. Careful monitoring helps guide treatment, including medications or an implantable defibrillator to prevent sudden cardiac death.

Keywords: PSVT, dilated cardiopathy, arrhythmia.

PREVALENCE OF GINGIVAL RECESSION IN STUDENTS OF THE DENTISTRY FACULTY OF STATE MEDICAL UNIVERSITY: A COMPARATIVE ANALYSIS OF JUNIOR AND SENIOR YEARS.

S.M. Topkaya, R.V. Martirosian
Stavropol State Medical University, Stavropol, Russia
Department of Therapeutic Dentistry
Scientific supervisor: C.M.Sc., Associate Professor **G.V. Kasimova**

Background: Gingival recession is an apical displacement of the gingival margin with exposure of the tooth root, accompanied by increased sensitivity and aesthetic impairments. In industrially developed countries, there is a tendency towards an increase in this pathology, especially among the young population, which is due to changes in lifestyle, hygiene habits, and the prevalence of harmful factors.

Objective: To conduct a comparative analysis of the frequency of gingival recession occurrence in 1st and 5th year students of the Dental Faculty of Stavropol State Medical University and to identify the main etiological factors.

Materials and methods: At the Department of Propaedeutic Dentistry of Stavropol State Medical University, 100 students were examined: 50 1st-year students (17-18 years old) and 50 5th-year students (23-24 years old). A visual assessment of the periodontal tissues condition, height of attached gums, nature of occlusion, and architectonics of the oral vestibule was performed. Hygiene habits, presence of bad habits, and history of orthodontic treatment were analyzed.

Results and discussion: Gingival recession was detected in 42% of 1st-year students (21 individuals) and in 28% of 5th-year students (14 individuals). In all cases, a localized mild form was diagnosed. In junior students, the predominant risk factors were: insufficient height of attached gums (76%), malocclusion anomalies (62%), excessive consumption of carbonated drinks and energy drinks (48%), smoking and use of snus (34%), presence of lip or tongue piercing (12%). In 5th-year students, the leading factors were: history of orthodontic treatment (71%), malocclusion pathology (57%), insufficient height of attached gums (43%), smoking (36%), improper tooth brushing technique using horizontal movements and hard brushes (29%). Anatomical and topographical factors (shallow vestibule, improper frenulum attachment) occurred with comparable frequency in both groups (22-24%). It is noteworthy that the higher prevalence of recession among first-year students may be associated with insufficient hygienic literacy and more aggressive impact of bad habits before entering university, while in senior students, iatrogenic factors and consequences of orthodontic treatment play a leading role. The obtained data are consistent with literature data on the polyetiological nature of gingival recession and the need for a comprehensive approach to prevention.

Conclusion: The prevalence of gingival recession among dental students remains high, especially in junior years (42%). Differences in the structure of etiological factors were revealed: behavioral and anatomical factors predominate in first-year students, while iatrogenic and occlusal factors predominate in senior students. Early diagnosis, correction of hygiene skills, and timely identification of anatomical prerequisites are the basis for the prevention of gingival recession in young individuals.

Keywords: Gingival recession, dental students, risk factors, oral hygiene, orthodontic treatment.

RESULTS OF HETEROTOPIC IMPLANTATION OF TITANIUM AND ZIRCONIUM COATINGS IN AN EXPERIMENT ON SMALL LABORATORY ANIMALS (RATS)

I.I. Tsakhova[1], T.V. Zalesova[1], F.A. Kobanov[1], A.K. Zelensky[1], G.K. Gezuev[2]
[1]Stavropol State Medical University, Stavropol, Russia
Department of Propaedeutics of Dental Diseases named after N.N. Garazha
[2]OOO «DENTA-CITY», Chechen Republic, Grozny, Russia
Scientific supervisor: D.M.Sc., Professor **A.A. Dolgalev**

Background: The development of new titanium and zirconium-based coatings for implants is a promising direction to improve their biocompatibility. Preclinical evaluation of soft tissue response to such materials is a mandatory step in their implementation.

Objective: To assess the wound healing process and biocompatibility of samples with various titanium and zirconium-based coatings during heterotopic subcutaneous implantation in Wistar rats.

Materials and methods: The experiment was performed on 60 male Wistar rats (Ethics Committee Protocol No. 134 dated 17.04.2025). The animals were divided into 9 groups depending on the implanted material: BT6 (control), BT6+Ti, BT6+TiO_2, BT6+ZrO_2, TiNb, TiNbO, TiNbZrTa, TiNbZrTaO. Under inhalation anesthesia (Sevoflurane), sterile samples were implanted into a subcutaneous pocket on the back. Visual assessment of the postoperative wound condition was performed on 3rd and 7th days. Animals were euthanized on 14th and 21st days for material collection.

Results and discussion: In the early postoperative period (days 1-3), complications in the form of wound dehiscence and implant loss were recorded in 3 rats (one case each in the BT6+TiO_2, BT6+ZrO_2, and TiNbO groups). On the 3rd day, in the BT6 (control) and TiNbZrTa groups, all animals showed suture integrity with mild hyperemia at the wound edges. In the TiNb and TiNbZrTaO groups, 2-3 rats exhibited tissue hyperemia and infiltration. By the 7th day, in all groups except for isolated cases of mild hyperemia, wounds were healing by primary intention with no signs of inflammation. The best healing results were demonstrated by the BT6, BT6+ZrO_2, and TiNbZrTa groups, where no signs of inflammation were present in any animal by the 7th day.

Conclusion: Most of the studied titanium and zirconium-based samples showed satisfactory biocompatibility, confirmed by primary wound healing. The best results were observed in the BT6 control group, as well as in the groups with ZrO_2 coating and TiNbZrTa alloy. The TiNbO material demonstrated the least favorable reaction, which requires further study or modification.

Keywords: Biocompatibility, heterotopic implantation, titanium alloys, zirconium coatings, Wistar rats, postoperative healing.

CARDIORENAL SYNDROME RISK IN PATIENTS WITH CARDIOVASCULAR PATHOLOGY

L.D. Tsaturyan, K.N. Airapetyan, V.A. Rybas
Stavropol State Medical University, Stavropol, Russia
Department of Normal and Pathological Physiology
Scientific supervisors: D.M.Sc., Professor **L.D. Tsaturyan**,
C.M.Sc., Associate Professor **N.G. Radzievskaya**

Background: The pathophysiological relationship between cardiovascular diseases and impaired renal function is encapsulated by the term “cardiorenal syndrome” (CRS). In routine clinical practice, renal function assessment is often limited to measuring creatinine and urea levels, which may remain within normal limits even when glomerular filtration rate (GFR) is already reduced, thus complicating early CRS diagnosis.

Objective: To evaluate the dependence of renal functional parameters on the nosological form of cardiovascular pathology and to determine the prevalence of latent chronic kidney disease (CKD) in patients of the cardiology department.

Materials and methods: We conducted a retrospective analysis of 99 medical records of patients treated in the cardiology department. The exclusion criterion was a previously diagnosed CKD. Age, gender, creatinine, and urea levels were recorded. GFR was calculated using the CKD-EPI 2021 formula. Statistical analysis was performed using IBM SPSS Statistics.

Results and discussion: A reduced GFR (<90 mL/min/1.73 m²) was observed in 54.5% of patients. The sensitivity of creatinine for detecting reduced GFR was 27.8%, urea – 35.2%. In 55.6% of patients with reduced GFR, creatinine and urea levels stayed within the normal range ("latent GFR reduction"). A positive correlation was found between age and this phenomenon ($\rho=0.367$; $p<0.001$). Multiple regression analysis did not show an independent effect of individual cardiovascular nosologies on GFR after age correction; age was the only significant predictor ($\beta=-0.592$; $p<0.001$). The prevalence of undiagnosed latent CKD (GFR <60 mL/min/1.73 m²) among patients without a corresponding diagnosis was 15.8%.

Conclusion: Among patients with cardiovascular pathology, reduced GFR is often not associated with elevated creatinine and urea levels, particularly in the elderly. The obtained results indicate the need for routine GFR calculation in all patients of this group, regardless of traditional marker levels, for early cardiorenal syndrome detection.

Keywords: Cardiorenal syndrome, chronic kidney disease, glomerular filtration rate.

THE CONTENT OF AUTOANTIBODIES TO INSULIN AND INSULIN RECEPTORS IN THE BLOOD SERUM OF PATIENTS WITH TYPE 2 DIABETES MELLITUS DEPENDING ON THE LEVEL OF POSTPRANDIAL HYPERGLYCEMIA

A.A. Vartanyan

Stavropol State Medical University, Stavropol, Russia

Scientific supervisor: D.M.Sc., Professor, Head of the Department of Clinical Pharmacology with the Advanced Training Course **V.A. Baturin**

Background: The incidence of type 2 diabetes mellitus has increased sharply in recent years. The insufficient effectiveness of pharmacotherapy due to the development of tolerance to antidiabetic drugs is a serious problem.

Objective: To study levels of insulin receptor and insulin autoantibodies in patients with varying degrees of postprandial hyperglycemia.

Materials and methods: Fifty patients with type 2 diabetes mellitus treated in the endocrinology department were examined. Two groups were formed based on blood glucose levels 2 hours after a meal: one with high levels (up to 15 mmol/L) (21 patients) and the other with very high levels (above 15 mmol/L) (29 patients). Pre-meal glucose and glycated hemoglobin levels were also determined. An enzyme-linked immunosorbent assay (ELISA) was used to determine the level of autoantibodies (IgG) to insulin and insulin receptors in venous blood. All patients received metformin with insulin, as well as a number of other antidiabetic medications.

Results and discussion: It was established that in the patients of the first group the blood glucose content after meals was (M±m) – 12.2±0.41 mmol/l, and in the second – 19.7±0.7 mmol/l ($p = 0.0018$), which, of course, is due to the adopted division of patients into groups. At the same time, the concentration of glucose in the blood taken

in the morning before meals did not differ in the groups (6.7±0.4 mmol/l – in the first; 6.5±0.4 mmol/l – in the second). The levels of glycated hemoglobin were higher in the first (14.5±1.1) than in the second group (10.1±0.4) (p = 0.000). The content of autoantibodies to insulin in the blood was the same in both groups. When assessing insulin receptor autoantibody levels, a trend toward higher levels was observed in the second group (42.9±4.7) compared to the first (31.0±3.0) (p=0.025). This may be related to insulin receptor expression in response to metformin in patients in the second group, which likely contributes to the greater effectiveness of antidiabetic therapy in these patients.

Conclusion: Determining insulin receptor autoantibody levels may improve the diagnosis of tolerance to antidiabetic medications.

Keywords: Type 2 diabetes mellitus, antibodies, hemoglobin, tolerance, glucose, insulin, metformin.

CORONAVIRUS EFFECT IN INDIA AND RUSSIA

Verma Shivam, Tyagi Krish, T.S. Nikolenko
Stavropol State Medical University, Stavropol, Russia
Department of Biology
Scientific supervisor: C.M.Sc., Associate Professor **I.V. Klimanovich**

Background: The COVID-19 pandemic, caused by the SARS-CoV-2 virus, emerged as a global health crisis in late 2019 and rapidly spread across the world, profoundly impacting nations regardless of their economic status or healthcare preparedness. India reported its first COVID-19 case in January 2020, while Russia confirmed its initial cases around the same period. Both countries experienced significant epidemiological challenges. Understanding the comparative impact of the pandemic in these two large, diverse nations provides valuable insights into how biological, demographic, and policy factors influence disease transmission and outcomes.

Objective: To analyze and compare the epidemiological impact of COVID-19 in India and Russia. To examine the biological factors influencing disease severity and transmission in both populations.

Materials and methods: COVID-19 epidemiological data extracted from Ministry of Health and Family Welfare (India), Russian Federal Service for Surveillance on Consumer Rights Protection and Human Wellbeing (Rospotrebnadzor), World Health Organization reports, peer-reviewed scientific publications.

Results and discussion: India reported over 45 million confirmed COVID-19 cases and more than 530,000 deaths, while Russia documented over 24 million cases and approximately 400,000 deaths as of 2023. Both countries experienced multiple waves driven by emerging variants–Delta variant severely impacted India during April-June 2021, while Russia faced significant surges from Omicron and its sublineages. Demographic analysis reveals differential impact: urban populations in both nations showed higher initial infection rates, while rural areas in India faced challenges in healthcare access. Age-structured mortality patterns were similar, with elderly and comorbid populations at highest risk. Russia experienced higher case fatality rates in certain regions due to healthcare infrastructure disparities, while India's vast population density facilitated rapid viral transmission in metropolitan areas.

Conclusion: Lessons learned from both countries in COVID-19 pandemics emphasize the need for strengthened healthcare infrastructure, equitable vaccine

distribution strategies, and improved risk communication for future pandemic preparedness.

Keywords: COVID-19 pandemic, India, Russia, comparative impact of the pandemic.

CLEAR CELL RENAL SARCOMA IN CHILDREN. A CLINICAL CASE REPORT

D.A. Volkov, I.A. Stremenkova, G.M. Kremneva, L.V. Romanova, V.V. Overchenko
Stavropol State Medical University, Stavropol, Russia
Department of Faculty Pediatrics,
Department of General and Biological Chemistry
Regional Children's Clinical Hospital, Stavropol, Russia
Scientific supervisor: C.M.Sc., Associate Professor **I.A. Stremenkova**

Introduction: Clear cell renal sarcoma (CCRS) accounts for approximately 2–5% of all primary malignant kidney tumors in children. It is characterized by an extremely aggressive course, a high rate of bone and brain metastasis, and a poor prognosis if diagnosed late. Due to the rarity of this pathology and the similarity of its imaging features to nephroblastoma (Wilms' tumor), diagnosis verification is only possible after immunohistochemical and molecular genetic testing.

Objective: to present a clinical observation of clear cell renal sarcoma in a child, emphasizing the difficulties of differential diagnosis and the choice of treatment tactics.

Materials and methods: Patient R., 3 years old, was admitted to the Hematology and Pediatric Oncology Department of the Regional Children's Clinical Hospital in November 2025 with complaints of abdominal distension. An outpatient ultrasound examination revealed a space-occupying lesion in the left kidney, 9-10 cm in diameter. During hospitalization, a contrast-enhanced CT scan of the chest and abdomen was performed, which also revealed an additional capsular cystic-solid lesion in the left kidney with active vascularization and contrast agent accumulation. A remote TMC was conducted with specialists from the D. Rogachev National Medical Research Center for Pediatric Hematology, Oncology, and Imaging (NMIC D. Rogachev), during which the clinical and radiological diagnosis was made: "Nephroblastoma on the left, localized form".

Results and discussion: The child was initiated on preoperative (neadjuvant) chemotherapy in the AV regimen for 4 weeks. On the 3rd week of the course, chickenpox was detected, preoperative (neadjuvant) chemotherapy was suspended. Due to the lack of positive dynamics, the child was recommended to extend the AV course for 2 weeks-hospitalization at the Federal Center for left nephrectomy with regional lymph node dissection. At the Federal Center, a histological examination was performed and the final diagnosis was: clear cell sarcoma of the kidney, high-risk group, local stage 2, renal sinus invasion. The child was initiated on a course of polychemotherapy (PCT) in accordance with the SIOP RTSG 2016 protocol for high-risk groups. Concurrently, radiation therapy was performed on the left flank of the abdomen. Currently, the child is undergoing the 4th course of polychemotherapy according to the SIOP RTSG 2016 protocol.

Conclusion: This clinical observation demonstrates that clear cell renal

sarcoma, despite its imaging characteristics similar to nephroblastoma, requires morphological and molecular genetic confirmation to initiate therapy earlier. Aggressive management with radical surgery and protocol-based polychemotherapy can achieve disease control.

Keywords: Clear cell renal sarcoma, polychemotherapy, radiation therapy, children.

COMPARATIVE ANALYSIS OF ANXIETY AND DEPRESSION OF CLINICAL AND PRE-CLINICAL STUDENTS OF THE FOREIGN STUDENTS FACULTY OF STAVROPOL STATE MEDICAL UNIVERSITY

V.B. Zafirova, Ifemeni E.D., K.P. Raushan
Stavropol State Medical University, Stavropol, Russia
Department of Public Health and Healthcare, Medical Prevention and Informatics
Scientific supervisor: C.M.Sc., Associate Professor **V.B. Zafirova**

Background: Psychological disturbance due to the highly stressful medical education process, with no consensus regarding the influence of age, gender, and stage of education. Therefore, the present study aimed to comparative analyses of stressor sources that may influence the levels of anxiety and depression, experienced by medical students and examine them based on gender, age, environmental factors, cultural differences, adaptation and stage of medical education.

Objective: To compare factors correlating with stress, anxiety, and depression between medical students in preclinical (PP) and clinical programs (CP).

Materials and methods: This study involved 100 students from the faculty of Foreign Medical students of Stavropol State medical university and psychological well-being was assessed using HADS, and the various sources of stress were evaluated using the SACQ questionnaire.

Results and discussion: The overall prevalence of depression and anxiety was 67.5%, 69.0% respectively. Students in their first year, third year (transition between preclinical and clinical years) and 5th year showed higher depression symptoms compared to students in their second, fourth or sixth year. The data were analyzed using the Microsoft Excel. In the cross-sectional study conducted in the 2026 academic year with a total of 100 (male = 66, female = 34, mean age = 24, range = 21-34) undergraduate medical students. The study included 57.5% in Pre-clinical and 42.51% in clinical (M:F 2:1), and a mean age of 24 years. The analysis revealed differences in anxiety and depression between groups, but not in stress. In the Preclinical group, weather, change of environment, cultural differences, language barrier were the sole factors correlating with stress ($p<0.05$). Anxiety and depression were common both in clinical and preclinical years, but increase significantly in the clinical years.

Conclusion: The stressors identified as the most intense in all students and were related to study process (amount of classwork, examinations, and grades) and language barrier. The levels of depression, anxiety and stress among medical students are relatively high. Therefore, modifying the academic process to create a positive educational environment should be recommended.

Keywords: Medical education; anxiety levels, depression, language barrier medical students.

SCIENTIFIC ABSTRACTS OF CONFERENCE PARTICIPANTS FROM OTHER MEDICAL UNIVERSITIES OF THE RUSSIAN FEDERATION

THE NEED FOR ADDITIONAL FIBRATE THERAPY IN PATIENTS WITH DIABETES MELLITUS AND VERY HIGH CARDIOVASCULAR RISK ON THE BACKGROUND OF GENETIC ENGINEERING ALIROKUMAB.

Abhishek Sharma
North Caucasus State Medical Academy, Medical Institute, Cherkessk, Russia
Department of Internal Medicine
Scientific supervisor: C.M.Sc., Associate Professor **A.R. Janibekova**

Background: Due to uncontrolled dyslipidemia, many patients worldwide remain at risk of cardiovascular disease even after taking statins. Proprotein convertase subtilisin/kexin type 9 inhibitors provide significant reductions in LDL levels and better outcomes in high-risk groups.

Objective: To evaluate the efficacy and safety of long-term use of a proprotein convertase subtilisin/kexin type 9 inhibitor in patients after myocardial infarction for 12 months.

Materials and methods: The study included 6-7 male patients with post-infarction cardiosclerosis, aged 56-65 years. All patients had type 2 diabetes mellitus combined with chronic heart failure with an ejection fraction of 49% or less. They also had failed to achieve target lipid levels, with 85.7% of patients having familial hypercholesterolemia (FH). Q-wave STEMI was detected in 71.4% of patients, and Q-wave STEMI in 28.6%. Diagnostic tools included echocardiography and ECG monitoring. Laboratory diagnostics included complete blood count, blood chemistry, lipid profile, lipoprotein (a), transaminase, and creatine kinase levels. Alirocumab was also added to the treatment.

Results and discussion: By the third month of targeted therapy, patients showed a significant reduction in lipid profile parameters. The average age of patients was 55.2±5.9 years. All patients underwent lipoprotein (LPA) testing, and two groups were formed based on the data obtained: 57.1% of patients had LPA >125 nmol/L and 42.9% had LPA <125 nmol/L. Triglyceride levels decreased from baseline 5.8±0.1 mmol/L to 3.7±0.1 mmol/L (by 34.3%), $p<0.001$, and low-density lipoprotein cholesterol levels decreased from 3.2±0.10 mmol/L to 1.4±0.09 mmol/L (by 58.1%), $p<0.001$. On average, the reduction in LDL-C in patients after the addition of alirocumab was 61.7% after 6 months and 58.1% after 12 months. It is noteworthy that with alirocumab therapy, target LDL-C values of <1.4 mmol/L are achieved (LDL-C <1.4 mmol/L) in 71.3% of patients, while the target LDL-C value of <1.1 mmol/L was achieved. The achieved result was observed in 71.4% of patients, demonstrating the drug's high efficacy.

Conclusion: Thus, the inclusion of alirocumab in the treatment regimen in the day hospital of a multidisciplinary hospital contributed to a stable course of coronary artery disease, good tolerability of the therapy without side effects, and high lipid-lowering activity within the first months of treatment.

Keywords: Lipoprotein (a), chronic heart failure, myocardial infarction, proprotein convertase subtilisin/kexin type 9 inhibitors, alirocumab, LDL cholesterol, lipid-lowering therapy, secondary prevention, cardiovascular complications.

MITOCHONDRIAL DISEASES – CARDIOLOGICAL MANIFESTATIONS

Addala Dimpu Satya Akhlad
North Caucasus State Medical Academy, Medical Institute, Cherkessk, Russia
Department of Internal Medicine
Scientific supervisor: C.M.Sc., Associate Professor **A.R. Janibekova**

Background: The article is devoted to the topic of mitochondrial diseases, which are among the most common genetic metabolic disorders. A special group consists of lysosomal storage diseases, one of the variants of which is Fabry disease (CF). This is a progressive orphan hereditary metabolic disease linked to the X chromosome in the GLA gene encoding the alpha GalA enzyme, leading to its absence or insufficient activity, resulting in an abnormal accumulation of hereditary metabolic disease /(and PKP – glycophospholipids of two types: globotriaosylceramide (Gb3) to a greater extent and its derivative globotriaosylsphingosine (Lizo – Gb3) in lysosomes of cells of various body tissues (vascular endothelium, kidneys, heart, CNS (central nervous system), peripheral nervous system, etc.), as well as in serous body fluids [1, 2]. The results of recent studies have supplemented information on the epidemiology of Fabry disease and its prevalence.

Discussion: It has been established that myocardial damage is a prognostically unfavorable and frequent manifestation of BF. According to statistics, in 34% of men and 57% of women, heart damage is the leading cause of death. The mechanisms of cardiovascular damage are caused by the deposition of glycosphingolipids in cardiomyocytes, endothelial and smooth muscle vessels, endocardial cells, and conducting tissue, as well as in valve fibroblasts. All of this leads to the development of LVH, diastolic dysfunction, myocardial ischemia, and arrhythmias and conduction disturbances. However, myocardial inflammation and autoimmune reactions also play a role in the pathogenesis. According to research findings, the frequency of pathogenic mutations was 0.93% and 0.90% in more than 5,400 patients with LVH and/or HCM of unknown etiology. Arrhythmias and conduction disturbances are other manifestations of this condition. IHD manifests itself as myocardial infarction in 2% of patients

Conclusion: In recent years, thanks to a more in-depth study of this pathology, approaches to the diagnosis and treatment of Fabry's disease have significantly improved. However, there are still challenges in the late diagnosis of Fabry's disease and, as a result, the late initiation of specific therapy, which affects the prognosis and quality of life for patients. Further in-depth research on the complex pathophysiology of the disease will help to refine and improve the diagnostic and treatment stages of this pathology, thereby optimizing the individual approach to managing this patient population in real clinical practice.

Keywords: Hereditary metabolic disease, lysosomal storage diseases, Fabry disease, epidemiology, alpha galactosidase A, enzyme replacement therapy.

PREEMPTIVE ANALGESIA WITH THE PEPTIDE ANALGESIC TAFALGIN

Ali Ahmed Ezzat, E.V. Shulga, S.V. Akopjanyan
North Ossetian State Medical Academy, Vladikavkaz, Russia
Department of Anesthesiology, Reanimation and Intensive Care
Scientific supervisor: D.M.Sc., Head of the Department **V.D. Slepushkin**

Background: It is known from the literature that 30% to 70% of patients experience severe pain after surgery. There is a trend towards avoiding the use of opioid analgesics, which have many side effects. Therefore, selective mu-opioid receptor agonists are being developed, which have only a selective analgesic effect. One such example is the Russian peptide analgesic Tafalgin, which has been evaluated from various perspectives.

Objective: To evaluate the possibility of using the peptide analgesic tafalgin as a means of anticipatory analgesia in the postoperative period.

Material and methods: The study included 28 patients of both sexes (20 men and 8 women aged 52.5±2.0 years), who underwent right- or left-sided hemi-colectomy under general anesthesia (total intravenous anesthesia with tracheal intubation). The patients were divided into 2 groups. The first group of patients (16 people) received traditional pain relief in the postoperative period by intramuscular administration of promedol solution. Patients of the second group (12 people) were injected subcutaneously with 4 mg of the peptide analgesic Tafalgin in the operating room 10-15 minutes before transfer to the intensive care unit. During the day of the postoperative period, the following indicators were noted: the time of onset of pain syndrome more than 3 points on a 10-point visual-analog scale, the amount of promedol required to relieve pain syndrome, and the frequency of nausea and vomiting.

Results and discussion: In patients of group 1, pain syndrome more than 3 points was recorded 3.5±0.5 hours after the end of surgery. In patients of group 2, similar postoperative pain syndrome was recorded 7.5±0.5 hours ($p<0/05$). During the first 24 hours of the postoperative period, patients in group 1 required 2.8±0.3 ml of promedol for full-fledged pain relief, while patients in group 2 required 1.1±0.2 ml of promedol solution ($p<0.05$). Two patients in group 1 experienced nausea and vomiting. There were no episodes of frequency or vomiting in patients in group 2.

Conclusion: Thus, the use of the new domestic peptide analgesic Tafalgin as a means of anticipatory analgesia allows for a 2-fold reduction in the use of opioid analgesics for the relief of postoperative pain syndrome. When using Tafalgin, the incidence of postoperative nausea and vomiting is reduced.

Keywords: Analgesia, Tafalgin.

CHRONIC HEART FAILURE AND SLEEP-RELATED BREATHING DISORDERS

E.R. Bichenova
North Ossetian State Medical Academy, Vladikavkaz, Russia
Department of Pharmacology with Clinical Pharmacology
Scientific supervisor: D.M.Sc., Professor **L.Z. Bolieva**

Background: Chronic heart failure (CHF) is one of the leading causes of cardiovascular mortality, with an estimated prevalence of 7% based on

epidemiological studies. Sleep-disordered breathing (SDB) occurs more frequently in patients with CHF than in the general population, and its incidence during heart failure decompensation is significantly higher than during a stable disease course.

Objective: To evaluate the prevalence of SDB, specifically obstructive sleep apnea (OSA), among patients experiencing CHF decompensation.

Materials and methods: Patients exhibiting clinical signs of CHF at NYHA classes II-IV were included. To confirm the presence of SDB, patients identified as medium or high risk for obstructive sleep apnea using the STOP-BANG questionnaire underwent respiratory monitoring (RM) with the SOMNOcheck micro device. During the monitoring, parameters such as blood oxygen saturation (SpO_2), airflow in the upper airways, and heart rate were recorded. The data were subsequently analyzed and adjusted by a somnologist physician. The primary indicator of SDB was the apnea-hypopnea index (AHI), reflecting the number of respiratory events per hour of sleep. The severity of SDB was classified according to the AHI.

Results and discussion: Among the 32 participants in the RM, predominantly men (20 men, 12 women), 12 (37.5%) exhibited mild OSA, 6 (18.75%) moderate OSA, 10 (31.25%) severe OSA, and 4 (12.5%) had no OSA. Additionally, 20 patients (62.5%) demonstrated atrial fibrillation.

Conclusion: Despite advances in CHF treatment, sleep-related breathing disorders remain highly prevalent in this patient group, underscoring the importance of early detection and management.

Keywords: Sleep-disordered breathing, obstructive sleep apnea, chronic heart failure.

POSSIBILITIES OF SENSORY DIAGNOSTICS OF PERIODONTAL INFLAMMATORY DISEASES IN DENTAL PRACTICE

E.K. Chikareva, V.M. Maksimova, V.S. Shtana
Belgorod State National Research University, Belgorod, Russia
Department of Prosthodontic Dentistry
Scientific supervisor: D.M.Sc., Professor **I.P. Ryzhova**

Background: Inflammatory processes in the oral cavity are one of the most common dental pathologies, the diagnosis of which in the early stages is complicated by indolent inflammation or unclear symptoms. Modern approaches to periodontal inflammation are mainly focused on minimally invasive and inexpensive methods.

One of the promising directions is the use of sensor systems that mimic the olfactory function, allowing for the analysis of the composition of volatile organic compounds.

Objective: Evaluating of effectiveness of sensor diagnostics of inflammatory periodontal diseases in dental practice for timely treatment and management of complications.

Materials and methods: The study involved 70 individuals with chronic periodontitis. Patients were divided into 3 groups based on the severity of the inflammatory process (mild, moderate, severe). Patients underwent a classic perio-screening, including the determination of hygiene indices. Subsequently, the inflamed areas were scanned using an “electronic nose” biosensor. Following

this, patients received professional treatment. Measurements were repeated after 10 days to assess the dynamics of the inflammatory process. The results were recorded and analyzed.

Results and discussion: The study established the effectiveness of scanning. Based on the obtained data, a scoring scale for evaluating inflammatory processes was developed, based on the intensity of the sensory response.

0 points – absent or weak response, absence of inflammation, 0 – 500,000 Hz·s.

1 point – weak response, mild inflammation, 500,000 – 1,000,000 Hz·s.

2 points – moderate response, moderate inflammation, 1,000,000 – 2,000,000 Hz·s.

3 points – pronounced response, severe inflammation, 2,000,000 – 2,800,000 Hz·s.

Conclusion: The use of sensory diagnostics allows for rapid and objective determination of the degree of inflammatory changes in periodontal tissues, which increases diagnostic efficiency and enables timely therapeutic interventions.

Keywords: Diagnostics, VOCs (Volatile Organic Compounds), periodontal inflammation.

KIDNEY FUNCTION AND MORPHOMETRIC PARAMETERS OF ORGANS IN EXPERIMENTAL METABOLIC SYNDROME AND ITS PHYTOCORRECTION

A.Ch. Chiviev

North Ossetian State Medical Academy, Vladikavkaz, Russia

Department of Biological Chemistry

Scientific supervisor: C.M.Sc., Associate Professor,

Vice-Rector for Internal Affairs **A.E. Gurina**

Background: The problem of the prevalence of metabolic syndrome (MS) is of particular relevance, since the incidence of this pathology is steadily increasing worldwide. In this regard, research aimed at developing methods for the treatment and correction of MS is of great importance. Among a wide range of drugs with metabolic activity, herbal preparations with a range of pharmacological effects occupy an important place. Such drugs include raw artichoke seeds (Cynara scolymus L.), which has antihyperglycemic, hepatoprotective, and cardioprotective effects.

Objective: To study was to study the effect of artichoke seed extract on morphometric parameters of organs and kidney function in rats with experimental MS.

Materials and methods: An experimental model of metabolic syndrome was formed on 20 male Wistar rats by including in the diet a 12-week diet containing 16% standard feed, 25% lard, 17.5% fructose, 19.5% condensed milk with sugar, 19.5% spread, 2.5% Hubble, Mendel and Wakeman salt mixture and 25%-solution of fructose. Half of the animals with MS were injected with artichoke seed extract (EAP) at a dose of 5 ml/kg intragastrically for 14 days. Intact animals kept on a standard diet were used as controls. At the end of the experiment, body weight and length were determined in rats, abdominal circumference was determined, and urine was collected for 6 hours, after which the concentration of urea, creatinine, sodium, potassium, and chlorine ions was determined using an automatic biochemical analyzer. The animals were slaughtered under thiopental anesthesia, the liver, kidneys, amniotic, omentum, and epididymal adipose tissue were excised and their weight was determined. Statistical data processing was

carried out according to the Student's t-criterion for independent samples using the MS Excel 2016 software.

Results and discussion: According to the data obtained, a significant increase in body weight and abdominal circumference with MS compared with the control, which was statistically significantly lower during phytocorrection in both groups ($p<0.001$). In rats with MS, there was a significant increase in body mass index ($p<0.001$) and abdominal circumference ($p<0.001$), as well as a decrease in these indicators with the introduction of EAP. The analysis of the mass of internal organs revealed a significant increase in the absolute ($p<0.001$) and relative ($p<0.01$) liver mass in rats with MS relative to the control group, probably due to its fatty infiltration. Against the background of EAP administration, both relative ($p<0.001$) and absolute ($p<0.05$) liver mass decreased in comparison with the 1st experimental group. The absolute and relative weight of the kidneys significantly increased by 13% and 40%, respectively, in animals with MS, and their relative weight decreased by 5% in rats after a course of administration of artichoke extract. It was found that the mass of visceral adipose tissue increased statistically significantly ($p<0.001$) in both experimental groups. Assessment of the ion and water excretion function of the kidneys showed a significant decrease in the concentration of creatinine ($p<0.001$) and urea ($p<0.001$) in the urine of rats with MS, and the use of EAP led to a restoration of creatinine and urea levels in the urine of rats, in accordance with the control. The excretion of sodium ions significantly increased in both experimental groups due to the presence of a salt mixture in the feed, and potassium excretion significantly decreased in the group with MS, which, according to modern concepts, may be due to an increase in the activity of ion transporters of the basolateral tubule membranes, but in the group receiving EAP on the background of MS, potassium excretion corresponded to the norm. Differences in the excretion of chlorine ions in all experimental groups were not significantly significant.

Conclusion: A number of morphometric changes are observed in rats with experimental MS, indicating abdominal obesity, steatohepatosis, and changes in kidney mass. Assessment of kidney function showed a decrease in creatinine, urea and potassium excretion, but against the background of taking EAP, these indicators were compensated, indicating the nephroprotective effect of the phytopreparation.

Keywords: Metabolic syndrome, rats, artichoke seed extract, kidney function, electrolyte balance.

EVALUATION OF THE EFFECTIVENESS OF DRUGS BASED ON RED YEAST RICE ON LIPID METABOLISM

Dar Samir Ahmad
North Caucasus State Medical Academy, Medical Institute, Cherkessk, Russia
Department of Internal Medicine
Scientific supervisor: C.M.Sc., Associate Professor **A.R. Janibekova**

Background: Preventing the development and progression of cardiovascular disease is currently one of the most important tasks in outpatient medicine. Therefore, drugs based on monacolin K, a component of red yeast rice, may be effective in these patients.

Objective: To evaluate the efficacy and safety of long-term monacolin K in achieving target low-density lipoprotein (LDL) levels in patients with low cardiovascular risk.

Materials and methods: The study included six male and female patients with low to moderate cardiovascular risk, aged 43–51 years. The mean age was 47.2±3.4 years. All patients had abdominal obesity. All patients had an ejection fraction of 50% or higher based on echocardiography. All patients failed to achieve target lipid levels due to refusal of statin medications, lack of indication for statin therapy, or statin intolerance. Stage I–II hypertension was detected in 71.4% of patients. Instrumental diagnostics included echocardiography and ECG monitoring.

Results and discussion: By the second month of lipid-lowering therapy, the examined patients showed a significant reduction in lipid profile parameters. All patients underwent lipoprotein (LPA) levels; no LPA values >125 nmol/L were recorded. Triglyceride levels decreased from baseline 4.1±0.1 mmol/L to 3.7±0.1 mmol/L (by 9.8%) ($p>0.05$), and low-density lipoprotein (LDL) cholesterol levels decreased from 3.2±0.10 mmol/L to 2.4±0.09 mmol/L (by 25.0%) ($p>0.05$). It is noteworthy that target LDL-C values of <1.4 mmol/L were achieved in 16.6% of patients treated with monacolin K. The increase in HDL was moderate and did not exceed 1%. All changes did not reach statistical significance ($p>0.05$), indicating a limited but stable effect of low-dose monacolin K therapy. This result indicates the low efficacy of the drug in the short-term regimen, which requires further monitoring with a possible dose increase. The drug is well tolerated and is not accompanied by side effects, and laboratory safety parameters remain unchanged.

Conclusion: Thus, the inclusion of monacolin in the treatment regimen for dyslipidemia in patients with low and moderate cardiovascular risk contributed to a stable course of coronary artery disease, good tolerability of therapy without side effects, and high lipid-lowering activity of the drug already in the first months of treatment.

Keywords: Lipoprotein (a), red yeast rice-based preparation, coronary heart disease, LDL cholesterol, lipid-lowering therapy, secondary prevention, cardiovascular complications.

QUAD-BLEND NATURAL SWEETENER: A FUNCTIONAL REPLACEMENT FOR SUCROSE

Dhedhi Akash, Kotradiya Dharmesh, Sakhaliya Jitendra, A.M. Yovloeva
Ingush State University, Medical institute named A.Kh. Aushev, Magas, Russia
Department of Normal Physiology
Scientific supervisor: D.M.Sc., Professor **B.A. Kodzoeva**

Background: The global surge in metabolic disorders and diabetes has shifted consumer demand toward natural, non-caloric alternatives to sucrose. High-intensity sweeteners like Stevia and Monk Fruit exist but often fail to replicate sugar's full sensory and functional properties. This study explores combining botanical and food science approaches to create a superior sugar substitute. Stevia provides intense sweetness via steviol glycosides, while Monk Fruit contributes mogrosides for a cleaner taste profile.

Objective: The study aims to develop a Quad-Blend natural sweetener that matches sugar in sweetness and volume (1:1), eliminates aftertaste, maintains zero glycemic index, and preserves functional properties like caramelization and browning in cooking and baking.

Materials and methods: Stevia is cultivated in warm climates and harvested before flowering for optimal glycoside levels. Monk Fruit is grown in humid, high-altitude regions with manual pollination. Extraction involves drying, grinding, and filtering plant materials. Erythritol is produced via fermentation, while allulose is enzymatically derived. The Quad-Blend consists of Allulose (25%), Erythritol (40%), Monk Fruit (20%), and Stevia (15%).

Results and discussion: The blend successfully replicates sugar's sweetness curve and reduces aftertaste significantly. It performs well in baking, though browning occurs faster due to lower caramelization temperature of allulose. Clinical findings show no blood glucose spikes and possible satiety benefits. Additionally, the blend is non-cariogenic, preventing dental decay.

Conclusion: The Quad-Blend represents a major advancement in sugar replacement by combining multiple sweeteners for optimal taste and functionality. It can be used as a 1:1 substitute for sugar. For baking, reducing temperature by 15°C is recommended to avoid over-browning while maintaining quality.

Keywords: Natural sweetener, sucrose replacement, stevia, monk fruit, erythritol, allulose, glycemic index, low-calorie sweetening, functional food ingredients.

PRINCIPLES OF TREATMENT OF GALLSTONE DISEASE IN THE PRESENCE OF LIVER CIRRHOSIS

D.S. Dyukov, A.M.T. Mohammed, A.H. Ramazanov
Yaroslav the Wise Novgorod State University Medical Institute,
Veliky Novgorod, Russia
Human Morphology Department
Scientific supervisor: C.M.Sc., Associate Professor **M.D. Kashaeva**

Introduction: Gallstone disease and liver cirrhosis often coexist, creating a challenging clinical situation that complicates both diagnosis and treatment. Management therefore requires careful risk assessment and individualized decision-making. While cholecystectomy remains the standard treatment for symptomatic gallstones less invasive and endoscopic approaches may be preferred in high-risk cases.

Objective: To improve the outcomes of surgical treatment in patients with gallstone disease (GSD) combined with liver cirrhosis (LC), by using an optimal scope of surgical interventions aimed at correcting biliary pathology and achieving portal decompression.

Materials and methods: A total of 49 patients with gallstone disease associated with liver cirrhosis were operated on. Their ages ranged from 25 to 78 years. Of these, 38 were hospitalized electively and 11 urgently. In diagnosing gallstone disease in cirrhotic patients, ultrasound examination (US) was considered highly important. Destructive changes were detected by ultrasound in 7 patients; all underwent urgent surgery consisting of laparoscopic cholecystectomy (LC)

with fixation of the peritoneal flap to the gallbladder bed. In 6 patients (4 with acute calculous cholecystitis without destruction and 2 admitted electively), only laparoscopic cholecystectomy was performed. In the remaining 36 elective patients, along with cholecystectomy, hepatophrenopexy was performed using the clinic's method. Among them, 7 patients underwent laser blood irradiation, 26 patients underwent electrocoagulation with liver extraperitonealization. An important aspect is the treatment of the gallbladder bed after removal, which always bleeds heavily. Due to the rigidity and fragility of the liver, suturing the bed increases bleeding. Therefore, bleeding control should be achieved using electro- or laser coagulation, followed by closure with a mobilized flap of diaphragmatic peritoneum during liver extraperitonealization. The mobilized peritoneal edge from the liver dome is sutured or fixed to fibrous tissues of the bed near the hepatoduodenal ligament. The edge of the retroperitoneally displaced right liver lobe is additionally fixed with 2–3 sutures through the covering peritoneum to the diaphragm above or near the costal margin. In 3 out of 36 patients with subcompensation and ascites, a lymphovenous anastomosis (LVA) was performed prior to surgery.

Results: Long-term results (5–12 years' follow-up) showed that within 6–8 months after surgery, complications developed in 3 of the 6 patients who underwent "pure" laparoscopic cholecystectomy: In one case: bleeding from esophageal varices, in two cases: development of ascites, in one of these cases: hepatic decompensation leading to death. In the second group (36 patients), outcomes were good and satisfactory. In 2 patients with subcompensation, LVA was performed one year after surgery, with good long-term outcomes over 4 and 6 years.

Conclusion: Surgical treatment of gallstone disease and chronic calculous cholecystitis in patients with portal liver cirrhosis should include not only biliary sanitation but also procedures aimed at decompression of the portal system, stabilization of cirrhosis, stimulation of regenerative processes. It is also essential to control bleeding from the gallbladder bed by fixing a mobilized flap of diaphragmatic peritoneum to its edges.

Keywords: Gallstone disease, liver cirrhosis, calculous cholecystitis.

METHODS OF DIAGNOSTICS AND TREATMENT OF OROFACIAL PAIN AT A DENTAL APPOINTMENT

D.S. Dyukov, N. Talebahmadabadi
Yaroslav the Wise Novgorod State University Medical Institute,
Veliky Novgorod, Russia
Human Morphology Department
Scientific supervisor: D.M.Sc., Professor **L.G. Proshina**

Background: Orofacial pain is a variety of pain symptoms affecting the face, head, and neck that can have a variety of causes, including dental problems, trauma, neurological disorders, arthritis, muscle dysfunction, and psychosocial factors.

Objective: To demonstrate the importance of a comprehensive and related assessment of patients with orofacial pain at the dental appointment.

Materials and methods: Over last 5 years of work in the dental clinic, 150 patients with various orofacial pain, aged from 18 to 60 years, were examined females 110, males 40.

Results and discussion: When contacting the clinic, the main trouble was constant pain in the ear area, which over time radiated to the face on one side, less often on both sides, the temple, and the appearance of clicks when chewing.

During an external examination of the patients, 110 of them were found to have abnormalities in the dental system (pathological bite; the presence of dystopic and impacted teeth; adentia of the lateral group of teeth (premolars/molars), most often on one side; as a result, food intake was carried out on one side); in 25 patients, bad habits (bruxism), 15 patients without visible dental pathology during external examination. To diagnose the cause of orofacial pain, the following was performed: X-ray examination of the temporomandibular joint (TNJ) by Schüller (138 patients had uneven joint spaces in the TMJ area with signs of arthrosis); blood test for rheumatoid factor in 2 patients – positive result. 10 patients were referred to an otolaryngologist and a neurologist at their place of residence.

Conclusion: Diagnosis of orofacial pain includes a comprehensive examination of the patient at a dental appointment. It is important to consider individual patient characteristics when choosing treatment methods for orofacial pain when deciding which approach will be most effective for each person.

Keywords: Dental examination, orofacial pain, diagnostic in dentistry, temporomandibular joint.

REGIONAL FEATURES OF BRUXISM IN ZABAYKALSKY KRAI: ASSESSMENT OF PATHOLOGY PREVALENCE AND THE ROLE OF PSYCHOTROPIC DRUGS IN ITS DEVELOPMENT

Yu.O. Ganotina, A.S. Lukinova, E.V. Starceva
Chita State Medical Academy, Chita, Russia
Department of Pharmacology
Scientific supervisors: C.M.Sc., Head of Dept. of Pharmacology **S.V. Yuntsev,**
FL Dept. Teacher **Yu.M. Kruglova**

Background: In Russia, bruxism prevalence among adults ranges from 6% to 20%. Worldwide it is 22,2% with drug-induced bruxism accounting for 14%, primarily linked to drugs such as paroxetine, venlafaxine, duloxetine, sertraline, escitalopram, but accessible literature lacks data on the prevalence of drug-induced bruxism in Zabaykalsky Krai, creating a significant gap in understanding the problem's scale at the local level, which is relevant because of increasing global stress levels, rising consumption of psychotropic drugs.

Objective: Drawing on analysis of the clinical experience of dentists in Chita, assess the prevalence of bruxism in the region and determine the significance of risk factors such as psychotropic drug use, chronic stress, and others in the development of bruxism.

Materials and methods: A single-point descriptive study was conducted using survey and relative value analysis. The study involved 11 dentists with various practical experiences.

Results: The survey of Chita dentists revealed that the prevalence of bruxism

among patients in Zabaykalsky Krai is 16–30%, correlating with global and national data. 40% of dentists associate bruxism with psychostimulants, 30% with SSRIs, alcohol, and smoking, and 20% with caffeine and stress related to professional activities and sports. 45% link prescription drugs to acute or severe bruxism. Notably, 50% reported an increase in bruxism patients over the last 5–10 years, confirming the issue's relevance. An analysis of clinical cases shows bruxism causes pathological tooth wear to the gum line, chronic periodontitis, soft tissue and oral mucosa trauma, temporomandibular joint (TMJ) disorders, tremor of the lower jaw, and complicates orthopedic and orthodontic treatment. Furthermore, bruxism diagnosis in Zabaykalsky Krai is hindered, as only 36% of dentists routinely assess caffeine and nicotine use in patient history.

Conclusion: The study confirms an increasing prevalence of bruxism in Zabaykalsky Krai and its association with the use of psychotropic substances, which dentists must consider in history-taking, diagnosis, and prevention, as in long-term it leads to serious dentofacial system disorders.

Keywords: Bruxism, Zabaykalsky Krai, psychotropic drugs.

IATROGENIC EVOLUTION: HOW MEDICNE BECOMES THE DRIVING FORCE OF GENETIC CHANGES IN HUMANITY

A.M. Gezgiev, D.A. Gagieva, B.M. Oligova, L.M. Dakieva
Ingush State University, Medical institute named A.Kh. Aushev, Magas, Russia
Department of Biology
Scientific supervisors: C.M.Sc., Professor **D.A. Gagieva,**
D.Biol.Sc., Professor **A.M. Plieva**

Background: Medical progress has led to a critical weakening of purifying natural selection: the Crow index has decreased by an order of magnitude, while the Biological State Index (Ibs) has approached 0.99. This paper analyzes the phenomenon of **iatrogenic evolution** – the unintended alteration of the human gene pool under the influence of medical interventions.

Objective: To identify the mechanisms of iatrogenic evolution and formulate a forecast regarding global genetic inequality.

Materials and methods: The study is based on the analysis of population genetics data, demographic statistics, and radiobiological experimental results.

Results and discussion: The mortality component (I_m) in Russia decreased from >1 in the 19th century to 0.01–0.02 by 2020. The mean Ibs value for 191 countries is 0.927, four times higher than a century ago. Purifying selection has virtually lost its effectiveness.

Three types of genetic load are identified. Type I load – the conservation of deleterious alleles due to the treatment of hereditary diseases (hemophilia, familial hypercholesterolemia). Type II load – the induction of new mutations by medical radiation (CT scans, X-rays). Type III load – indirect effects: the evolution of pathogens toward antimicrobial resistance and the rise of autoimmune diseases (hygiene hypothesis). An additional factor is intergroup selection – changes in the gene pool driven by culturally determined differences in fertility. Forecast: populations with the most advanced medicine accumulate genetic load faster. Within 3–5 generations, the prevalence of hereditary diseases may become higher in technologically developed countries, creating a new form of global inequality –

genetic inequality.

Conclusion: The weakening of selection and the three mechanisms of genetic load accumulation pose a long-term threat. Predicted genetic inequality necessitates a shift toward long-term strategic planning in healthcare.

Keywords: Iatrogenic evolution, natural selection, genetic load, intergroup selection.

BROUGARD SYNDROME AS A VARIANT OF CARDIAC SODIUM CHANNELOPATHY: VARIOUS MASKS

Gulve Nikhil Subhash
North Caucasus State Medical Academy, Medical Institute, Cherkessk, Russia
Department of Internal Medicine
Scientific supervisor: C.M.Sc., Associate Professor **A.R. Janibekova**

Background: BRUGADA syndrome is a clinical and electrocardiographic syndrome associated with ion channel dysfunction (channelopathy), leading to a high risk of sudden cardiac arrest due to dangerous arrhythmias.

Objective: To analyze the differential diagnosis between BRUGADA and AMI using a clinical case as an example.

Materials and methods: Patient K., 35 years old, presented for a routine medical examination at the outpatient clinic. The patient was urgently hospitalized with suspected acute coronary syndrome. Shortness of breath with minor physical exertion, weakness occurring after stress. The condition is moderate, BP 115/60 mmHg, HR 95 beats/min, RR 20 beats/min, Troponin I is 24 ng/ml (normal 0–29 ng/ml). The CPK-MB level is 12 units (normal 5-28). ECG: sinus tachycardia. HR 92 beats/min. Semi-horizontal position of the electrical axis of the heart. PO – 0.16 sec, QRS – 0.08 sec, OT – 0.36 sec. In leads V1 and V2 there is a horizontal elevation of the ST segment of up to 3 mm. To clarify the nature of the ST segment elevation, an ECG was taken 2 ribs higher, which registered a pronounced elevation of the J-point, a vaulted change in the ST segment and T-wave inversion in leads V1-V3. The obtained picture corresponds to SB. Coronary angiography (CAG): no hemodynamically significant stenosis was found. Echocardiography: The size of the heart chambers, thickness and contractility of the myocardium are within normal limits. Intracardiac hemodynamic parameters are normal. Holter ECG monitoring revealed sinus rhythm and episodes of sinus arrhythmia with a heart rate from 47 to 143 bpm, with periods of sinus tachycardia during the day, evening, and morning hours, and sinus bradycardia at night and in the early morning hours. No supraventricular arrhythmias were recorded. Ventricular arrhythmias. Based on the proposed diagnostic criteria, coronary artery bypass grafting was established. ICD (implantation of a cardioverter-defibrillator) was performed as planned.

Conclusion: Despite the relative rarity of SB in the population, its timely diagnosis is crucial. Asymptomatic SB, as in the clinical example presented here, presents a significant diagnostic challenge. The only evidence-based treatment for SB is ICD, which was administered to our patient. Genetic testing was offered to the patient's relatives. The prognosis for SB is extremely poor due to its high mortality rate.

Keywords: SCD – sudden cardiac death, VT – ventricular tachycardia,

ICD – implantable cardioverter-defibrillator, ECG – electrocardiography.

ACUTE ADHESIVE INTESTINAL OBSTRUCTION: COMPARATIVE ANALYSIS OF OPEN AND LAPAROSCOPIC OPERATIONS FOR 2022-2024 FOR THE REPUBLIC OF NORTH OSSETIA-ALANIA

J.A. Jafarova, P.F. Umarova
North Ossetian State Medical Academy, Vladikavkaz, Russia
Department of Surgical Diseases No. 2
Scientific supervisor: C.M.Sc., Associate Professor **M.V. Kalitsova**

Background: Acute adhesive intestinal obstruction (AAIO) is an acute condition that often requires emergency surgery and results from the formation of adhesions after abdominal surgery and inflammatory processes. Adhesions lead to compression or bending of the intestine, disrupting the normal movement of intestinal contents. The traditional approach in the surgical treatment of AAIO is an open surgical operation aimed at dissecting adhesions (i.e., adhesiolysis) and eliminating the causes of obstruction. However, in recent years, with the development of laparoscopic surgery, laparoscopic surgery has been considered as an alternative method of treating AAIO. The question of choosing the optimal treatment method for acute intestinal obstruction is the subject of constant discussion. Some surgeons believe that open laparotomy is the most optimal and beneficial option while other consider laparoscopic surgery to be less traumatic and more preferable.

Objective: To conduct a comparative analysis of the results of open and laparoscopic operations for acute adhesive intestinal obstruction.

Materials and methods: A retrospective study of the case histories of 564 patients with AAIO who were inpatient treatment from 2022 to 2024 in the surgical departments of the Republican Emergency Hospital (REN) was conducted. The results of surgical treatment of patients with acute adhesive obstruction are analyzed from the perspective of choosing the optimal type of surgical intervention.

Results and discussion: During the study period, 564 patients with acute adhesive intestinal obstruction were hospitalized in REN. Emergency surgery was performed in 21 (3.7%) patients: 12 (2.1%) with strangulation and 9 (1.6%) with peritonitis. In 543 (96.3%) cases, conservative resolution of the obstruction was attempted, but in 101 (18.6%) patients, therapy did not have the desired effect and indications for surgical treatment were given. It was not possible to determine the severity of the adhesive process before surgery, because of this, the method of surgery (laparotomy/ laparoscopy) depended on the degree of qualification of the doctor. Of the 86 patients scheduled for laparoscopic adhesiolysis, only 20 (23.3%) had laparoscopically completed surgery, while 66 (76.7%) required laparotomy conversion. The main reasons for the conversion were: massive adhesions, intraoperative hemodynamic instability, the need for resection and the need for intestinal decompression. During laparoscopic operations, a decrease in the frequency of postoperative complications was noted: with open operations – 18.1%, with laparoscopy – 6.6%. There were no deaths after laparoscopic operations during the study period, and 7 (7.3%) patients died after laparotomy in the postoperative period. The average bed-day after laparotomy operations was

12 days, and after laparoscopic operations it was 6 days. The average duration of laparoscopic operations with AAIO was 88.8±20.1 minutes, and the duration for open operations was 98.4±18.8.

Conclusion: 1. It is difficult to assess the severity of the adhesive process before surgery, so the choice of surgery method depended on the qualifications of the surgeon.

2. Laparoscopic surgery was prescribed to 86 patients, but 66 (76.7%) of them required conversion to open surgery.

3. With the I-II degree of severity of the adhesive process, laparoscopic operations are preferable, with the III- IV degree, as a rule, a transition to laparotomy was required.

4. Laparoscopy, in comparison with laparotomy, is a rapid operation with a low number of recurrences and postoperative complications.

Keywords: Laparoscopy, adhesions.

FEATURES OF PARAMETERS OF DAILY MONITORING OF ARTERIAL PRESSURE IN PATIENTS WITH ARTERIAL HYPERTENSION AND ABDOMINAL OBESITY

Kaushik Prem

North Caucasus State Medical Academy, Medical Institute, Cherkessk, Russia

Department of Internal Medicine

Scientific supervisor: C.M.Sc., Associate Professor **A.R. Janibekova**

Background: Left ventricular (LV) myocardial remodeling is a change in the size, shape, and function of the heart due to injury (infarction) or overload (hypertension). The process involves molecular and structural abnormalities leading to hypertrophy, chamber dilation, and decreased contractility.

Objective: To compare the age-related patterns of left ventricular (LV) remodeling in patients with arterial hypertension.

Materials and methods. An analysis of the medical records of 87 patients with acute myocardial infarction (AMI) was performed. They underwent a comprehensive examination, including echocardiography. Patients were divided into three groups according to the WHO classification: Group 1 – 28 (32.2%) middle-aged individuals; Group 2 – 26 (29.9%) elderly patients; Group 3 – 33 (37.9%) patients over 75 years of age. The classification of LV remodeling variants was assessed based on the ratio of the relative LV wall thickness to the LV myocardial mass index. Indirect assessment of aortic elasticity (EA) was studied using the ratio of stroke volume (SV) to pulse pressure (PAP), expressed as a percentage. Aortic elasticity was assessed using the compliance coefficient (CCO) and pulse wave velocity (PWV). All patients underwent ultrasound examination (EnVisor HD, Philips, Netherlands).

Results: In middle-aged patients, normal geometry (NG) and concentric remodeling (CR) were detected in 29.4% and 14.5% of cases, respectively, while concentric hypertrophy (CH) and eccentric hypertrophy (EH) were found in 21.2% and 34.9% of cases. In elderly patients, NG, CH, CH, and EH were found in 11.3%, 11.8%, 36.2%, and 40.7% of cases. Patients in Group 3 were characterized by predominant CH and EH (35.3% and 31.3%, respectively), while NG and CHR accounted for only 13.1% and 19.2% of cases. The results of the EA study showed

that the lowest values of this indicator were observed in the elderly group, which is a consequence of higher PBP, peripheral vascular resistance, and low SVR values. EA was significantly higher in middle-aged and elderly subjects.

Conclusion: Heart remodeling in the presence of arterial hypertension is a compensatory process aimed at maintaining myocardial contractility. In elderly and senile patients, EH and CH predominate, while LVH is the predominant variant in patients under the age of 60. In the elderly and senile age, there are maladaptive processes affecting the geometry of the heart.

Keywords: Cardiac remodeling, acute myocardial infarction, aortic elasticity, pulse arterial pressure, concentric remodeling, eccentric hypertrophy.

DYNAMICS OF CHANGES IN DENTAL INDICES AFTER DENTAL IMPLANTATION IN PATIENTS WITH CHRONIC HEART FAILURE

G.A. Kesaeva
North Ossetian State Medical Academy, Vladikavkaz, Russia
Department of Dentistry
Scientific supervisor: D.M.Sc., Professor **A.A. Remizova**

Background: The problem of partial or complete edentulism is common among all age groups but is particularly prevalent among individuals of working age. Dental implantation is rightfully considered the "gold standard" of treatment for this condition. However, achieving positive treatment results depends on a number of factors, including maintaining adequate oral hygiene. According to the authors, patients with a history of cardiovascular disease have a reduced motivation for oral hygiene.

Objective: Improving the effectiveness of dental implantation in patients with chronic heart failure.

Materials and methods: The study involved 311 participants, 69.1% of whom (n=215) had chronic heart failure. The participants were divided into three clinical groups based on their functional class of CHF. All patients were partially edentulous. During treatment planning, a decision was made to perform two-stage dental implantation. In the immediate postoperative period, the Oral Hygiene Index-Simplified (OHI-S) and Periodontal Index (PI) were assessed.

Results and discussion: In the intergroup comparison of the OHI-S index by the 3rd day of observation, patients with CHF FC I (NYHA) showed indicators of unsatisfactory (2.1±0.3) and poor (3.5±0.8) oral hygiene, not exceeding the average values, whereas in respondents with CHF FC III (NYHA) the initial indicators of the described parameters are significantly higher, and by the month of observation they reach peak values: 2.1±0.2 and 4.6±1.4, respectively. The values of the severe periodontal pathology indicator vary in the range from 5.5±1.0 to 6.3±0.9, reaching peak values in patients with CHF FC III (NYHA).

Conclusion: When comparing the results of the OHI-S index between the group of patients with CHF FC I (NYHA), CHF FC II and III (NYHA), a negative trend in the index is determined as the functional class progresses with an average value of 4.6±1.4. A similar trend is observed when analyzing the PI index: in patients with CHF FC III (NYHA), more pronounced and persistent periodontal pathology is observed (6.1±0.2) in the postoperative period in an intergroup comparison.

Keywords: Dental implantation; chronic heart failure.

OCCURRENCE OF GALVANISM IN THE ORAL CAVITY WITH COMBINED WEARING OF ZIRCONIUM CROWNS

A.A. Khozieva, M.A. Eloeva
North Ossetian State Medical Academy, Vladikavkaz, Russia
Department of Dentistry № 1
Scientific supervisor: C.M.Sc., Associate Professor **S.K. Khetagurov**

Background: In recent years, there has been an increase in the use of zirconium crowns in dental practice due to their high strength, biocompatibility and aesthetics. However, despite the inertness of zirconium oxide, cases of galvanism with the combined use of zirconium and metal structures are recorded in clinical practice. It is known that many metals used in orthopedic Dentistry, are not indifferent to the body. Most researchers associate the symptoms of the symtomocomplex, which develops when in contact with soft and hard tissues of the oral cavity and includes the phenomena of paresthesia of the mucous membrane of the mouth and tongue, the development of erosive ulcerative processes leading to allergies and sensitization of the body, with the action of electrical potential, Arising in the oral cavity due to the presence of metallic

Objective: To assess the possibility of galvanism in the oral cavity when wearing zirconium crowns in combination with other dentures containing metals.

Materials and methods: We examined 50 people. The age of the examinees is from 40 to 69 years. During the study, a questionnaire was conducted on patients who wore zirconium crowns in combination with metal prostheses. To more accurately determine the presence of galvanic currents in the oral cavity, electrical measurements were carried out in patients using specialized equipment. The diagnosis included:

- collection of anamnesis and complaints;
- measurement of electromotic force (EMF) using a galvanometer.
- clinical examination of the oral mucosa;

The study was conducted in the dental polyclinic of SOGMA, at the Department of Dentistry № 1. All subjects underwent a preventive examination of the oral cavity, followed by filling out a dental card and registration of dental status.

Results and discussion: During the questionnaire, it was noticed that 30% of patients experienced unpleasant sensations, such as tingling and pinching in the crown area; 25% of patients noted increased sensitivity to temperature changes (hot and cold); 10% of patients reported constant discomfort, which increased when eating food. According to the results of the measurement of electromotive force (EMF) using a galvanometer, it was found that 63% of patients had small electric currents (up to 0.5 mA) between zirconium crowns and metal elements, and in 37% of patients the currents exceeded 0.5 mA, which may indicate a more pronounced manifestation of galvanism. The largest number of cases of galvanism was observed in patients with zirconium crowns in combination with amalgam and nickel-chromium alloys. The use of titanium or ceramic elements in combination with zirconium significantly reduced the likelihood of galvanism. During a clinical examination of the oral cavity, hyperemia and swelling of the mucous membrane

are often observed in patients with galvanosis, especially in places of contact with metal structures. Some patients have ulcers and erosions that can be painful and make it difficult to eat.

Conclusion: The results of the study confirm the presence of galvanism in the oral cavity when combined wearing zirconium crowns with metal prostheses. The need for further study of this phenomenon and the development of recommendations for its prevention are important aspects for improving the quality of dental care and patient comfort.

Keywords: Galvanism, zirconium crowns, galvanometer.

THE IMPACT OF INSUFFICIENT IODINE INTAKE. PREVENTION OF IODINE DEFICIENCY

A.S. Kovalenko, A.I. Neshta
North-Caucasus Federal University, Stavropol, Russia
Department of Pharmaceutics and Pharmacognosy
Scientific supervisor: C.Pharm.Sc., Associate Professor **D.S. Anenko**

Background: In June 2024, the WHO reported that residents of the European region are at an increased risk of developing iodine deficiency due to changes in their diet, particularly an increase in the consumption of plant-based foods.

Objective: Identify the causes and consequences of iodine deficiency in the body, as well as some methods for addressing this issue.

Materials and methods: Iodine deficiency is a condition in which the body contains an insufficient amount of iodine, leading to problems with the production of thyroid hormones. Thyroxine (T4) contains the main reserve of organic iodine in the human body, while triiodothyronine (T3) is formed from thyroxine and is responsible for regulating plastic (anabolic) and energy metabolism. These hormones regulate metabolism and also influence the growth and development of the body, so their deficiency can lead to serious health problems in both adults and children.

Iodine deficiency is particularly pronounced in residents of regions far from the sea. This is due to insufficient consumption of the main source of iodine – seafood. Adolescents, pregnant women, and lactating women can also be included in the risk group. In cases of digestive system diseases, iodine may be poorly absorbed, which also leads to a deficiency of this trace element.

Results and discussion: For the prevention of iodine deficiency in individuals susceptible to this condition, it is necessary to periodically check the state of the thyroid gland and relevant hormones. This will allow for early detection of the trace element deficiency. For further prevention, it is recommended to consume more iodine-containing foods (seaweed, fish, shrimp, shellfish, white beans, feijoa, eggs). Where possible, one should choose products with increased iodine content (iodized salt, drinking water, bread), which will increase the level of this trace element in the body.

Conclusion: Iodine deficiency is a serious medical and social problem that can lead to irreversible health disorders, especially in children and pregnant women. However, this problem can be successfully addressed through timely diagnosis and simple preventive measures, such as adjusting the diet and consuming iodine-rich foods.

Keywords: Iodine deficiency, iodine, thyroxine, triiodothyronine.

PHARMACOTHERAPY OF CHRONIC GASTRODUODENITIS IN CHILDREN: ANALYSIS OF TREATMENT REGIMENS AND COMPLIANCE WITH CURRENT CLINICAL GUIDELINES

A.V. Lapteva, K.E. Markina
South Ural State Medical University, Chelyabinsk, Russia
Department of Outpatient Therapy and Clinical Pharmacology
Scientific supervisors: D.M.Sc., Professor **G.G. Ketova**,
Assistant **O.M. Shamina**

Background: Chronic gastritis and gastroduodenitis are among the most common gastrointestinal diseases in children. Rational pharmacotherapy and adherence to clinical guidelines play an important role in achieving effective treatment outcomes.

Objective: To evaluate pharmacotherapy prescribed to children with chronic gastroduodenitis in a pediatric hospital and assess its compliance with current clinical guidelines.

Materials and methods: A retrospective study was conducted at the Gastroenterology Department of the Chelyabinsk Regional Children's Clinical Hospital. Medical records of hospitalized children with diagnoses K29.3 (chronic superficial gastritis), K29.5 (chronic gastritis, unspecified), and K29.8 (duodenitis) according to ICD-10 were analyzed over an 11-month period. Out of 478 hospitalized patients, 41 had these diagnoses. Patients were divided into two groups based on the presence of Helicobacter pylori: Hp-positive (n=14) and Hp-negative (n=27). Treatment regimens were evaluated for compliance with age- and weight-based dosing and current clinical guidelines.

Results and discussion: Patients without Helicobacter pylori infection predominated in the cohort. In the Hp-positive group, correct dosing ranged from 71% to 80% for antibacterial drugs and reached 75% for proton pump inhibitors and bismuth preparations. In the Hp-negative group, appropriate dosing of proton pump inhibitors was observed in 64% of cases and ursodeoxycholic acid in 75%. Overall adherence to clinical guidelines was 77% (30 of 39 cases), while dosing errors were identified in 23%. Patients receiving guideline-compliant therapy demonstrated faster symptom regression, with pain and dyspeptic manifestations decreasing from 8.5 to 2.5 points by day 5 of treatment. In contrast, patients with dosing errors showed slower symptom resolution and longer treatment duration. Laboratory parameters also improved more significantly in the group receiving appropriate therapy.

Conclusion: Pharmacotherapy of chronic gastroduodenitis in children demonstrates a moderate level of adherence to clinical guidelines. Dosing errors are associated with slower clinical improvement and persistence of inflammatory markers. Improving adherence to clinical recommendations may enhance treatment outcomes in pediatric practice.

Keywords: Chronic gastroduodenitis, children, pharmacotherapy,

Helicobacter pylori, clinical guidelines, drug dosing.

SENSORY EVALUATION OF THE BIOCOMPATIBILITY OF DENTAL FIXATION MATERIALS

V.M. Maksimova, E.K. Chikareva, N.M. Pogosyan
Belgorod State National Research University, Belgorod, Russia
Department of Orthopedic Stomatology
Scientific supervisor: D.M.Sc., Professor **I.P. Ryzhova**

Background: In modern prosthetic dentistry, there is an intensive development dynamic in the field of fixed prosthetics. The introduction of innovative materials and high-tech methods for manufacturing fixed dental prosthetic constructions significantly improves the clinical effectiveness of dental treatment. With the advancement of materials science and clinical dentistry, the understanding of biocompatibility is gradually expanding. It is becoming evident that the absence of an acute toxic reaction does not always imply the complete biological neutrality of a material.

Objective: To evaluate the biocompatibility of fixation materials and the response of periodontal tissues using sensory diagnostics.

Materials and methods: The study examined 54 patients with impaired chewing efficiency that required restoration using fixed dental prostheses. Subsequently, patients underwent a primary rapid sampling of volatile organic compounds (VOC) from periodontal tissues, followed by a secondary sampling procedure using zinc phosphate and glass ionomer fixation materials. Sensory diagnostics were performed using a piezoelectric sensor device.

Results and discussion: The study revealed differences in the sensory response of periodontal tissues when using different fixative materials. According to the data obtained, the sensory response of periodontal tissues was:

Indicator	Primary express collection	Cement test zinc phosphate luting cement	Cement test glass ionomer luting cement
Periodontal tissue response level *(VOC imprint S) ΣSB.O., Hz s*	420,080 Hz·s	3,467,958 Hz·s	1,032,035 Hz·s

Conclusion: Sensory diagnostics allows us to record changes in the response of periodontal tissues when using various fixing materials. The obtained data indicate varying degrees of biological impact of the studied cements on periodontal tissues.

Keywords: Sensory diagnostics, volatile organic compounds, fixative materials, periodontal tissues.

ASSESSMENT OF ADHERENCE TO THERAPY IN OUTPATIENTS WITH CHRONIC HEART FAILURE

A.A. Moskvitin, V.A. Tsionova, N.A. Sergeev, S.E. Pinyugin
Chita State Medical Academy, Chita, Russia
Scientific supervisors: C.M.Sc., Associate Professor **V.I. Prosyanik**, C.M.Sc., Associate Professor **S.I. Shchadneva,** Senior Lecturer **N.G. Pushkaryova**

Background: Chronic heart failure (CHF) remains a leading cause of mortality. Despite the proven efficacy of modern quadruple therapy, patients'

actual prognosis often worsens due to poor adherence to outpatient treatment. This highlights the need to analyze therapy dynamics and compliance barriers to reduce hospital readmissions.

Objective: To assess the level of adherence to medical therapy and identify the main reasons for its decline in outpatients with CHF depending on age.

Materials and methods: A retrospective analysis of 104 outpatients with CHF was conducted 6-8 months after discharge. Patients were divided into 3 groups: middle age (45-59 years, n=18), elderly (60-74 years, n=52), and senile age patients (75-90 years, n=34). Adherence was assessed using the modified National Society of Evidence-Based Medicine Adherence Scale (0 to 4 points, 0 = full adherence). Statistical analysis was performed using Pearson's chi-squared test.

Results and discussion: Strict adherence (0 points) was found in 18.3% (n=19) of all the patients. The elderly group showed the best compliance (30.8%), with non-adherent patients mostly scoring 2 points. In the middle-aged group, strict adherence was 16.7%, and non-compliant patients typically scored 3 points. The difference between these two groups was not significant ($p=0.247$). In the senile group, strict adherence was completely absent (0%), which was significantly lower compared to patients under 75 ($p<0.001$). Gender analysis revealed that males demonstrated a significantly higher strict adherence level than females (31.4% vs. 11.6%, $p=0.014$). In the overall sample of non-adherent patients (n=85), the leading causes for therapy violation were forgetfulness (49.4%), polypharmacy (12.9%), reluctance for long-term treatment (12.9%), and fear of side-effects (7.1%).

Conclusion: Adherence to therapy in CHF outpatients remains critically low and decreases with age, reaching zero in patients over 75. Cognitive factors and polypharmacy are the main barriers. The obtained data justify the need to simplify dosing regimens at discharge and introduce active outpatient monitoring.

Keywords: Chronic heart failure, adherence to therapy, compliance, polypharmacy, outpatients.

STATE OF THE NASAL CAVITY AND PARANASAL SINUSES IN THE ELDERLY, SENILE, AND LONG-LIVING POPULATIONS

P.A. Muslimova
Dagestan State Medical University, Makhachkala, Russia
Department of Ear, Nose, and Throat Diseases
Scientific supervisors: D.M.Sc., Professor **Yu.A. Dzhamaludinov**, D.M.Sc., Associate Professor **S.M. Kharkharova-Makkaeva**

Background: The issue of age-related pathology of the upper respiratory tract is gaining significant importance due to the general aging of the population. In older age groups, morphofunctional changes in the nasal mucosa and bony structures can mask pathological processes or lead to their atypical presentation.

Objective: To investigate the condition of the nasal cavity and paranasal sinuses in elderly, senile, and long-living individuals residing in various geographical zones of the Republic of Dagestan.

Materials and methods: A study was conducted involving 1483 individuals

(631 men, 852 women). The research employed subjective (symptom collection) and instrumental methods, including rhinoscopy, nasal endoscopy, and paranasal sinus radiography. A detailed analysis was performed on 350 patients who presented with complaints related to ENT organs.

Results and discussion: Among the examined patients, the most frequent complaints reported were: impaired nasal breathing (23.6%), periodic muco-purulent discharge (10.9%) in 38 cases, nasal congestion with mucous discharge (29.4%) in 103 cases, rhinorrhea without congestion (16.6%) in 58 cases, and nasal dryness (14.3%) in 50 cases.

Objective examination of these 350 patients revealed: acute and chronic rhinitis in 145 individuals (41.4%), comprising 91 elderlies, 39 senile, and 15 long-living individuals; nasal septum deformities in 152 individuals (43.4%); chronic purulent sinusitis in 29 individuals (8.3%); and polypoid rhinosinusitis in 23 individuals (6.6%). A key characteristic of these conditions was the obfuscated clinical presentation.

Conclusion: Diseases of the nasal cavity and paranasal sinuses in elderly individuals and long-livers often manifest with minimal subjective complaints. Therefore, thorough diagnostic evaluation is crucial for detecting subclinical inflammatory processes in geriatric patients.

Keywords: Elderly age, long-livers, nasal cavity, paranasal sinuses, diagnostics.

THE ROLE OF UNCONTROLLED ANTIBIOTIC APPLICATION IN THE FORMATION OF ANTIBIOTIC RESISTANCE TO ESKAPE GROUP PATHOGENS

A.I. Neshta, A.S. Kovalenko
North-Caucasus Federal University, Stavropol, Russia
Department of Pharmaceutics and Pharmacognosy
Scientific supervisor: C.Pharm.Sc., Associate Professor **D.S. Anenko**

Background: Antibiotic resistance is recognized by the World Health Organization as one of the ten major threats to global public health. In 2023, every sixth laboratory-confirmed case of infection with common bacterial infections worldwide was characterized by resistance to antibiotic treatment.

Objective: Demonstrate the necessity of comprehensive measures aimed at reducing the level of antibiotic self-medication, due to the increasing antibiotic resistance of ESKAPE group pathogens.

Materials and methods: A group of microorganisms has been identified that combines highly virulent and most resistant pathogens under the name ESKAPE, which have high epidemiological potential. This group includes species such as: *Staphylococcus aureus*, *Klebsiella pneumoniae*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Acinetobacter*, and *Enterococcus*. Pathogens of this group most often cause healthcare-associated infections (HAIs). Induced resistance in Gram-negative bacteria develops when mutations occur in target genes, establishing a new defense mechanism. Bacteria become resistant.

The reasons for increasing antibiotic resistance may include:

1. Unjustified antibiotic use creates favorable conditions for the proliferation

of resistant forms of microorganisms.

2. Premature discontinuation of the treatment course. Bacteria whose life cycle was not affected by the antibiotic acquire resistance.

3. Failure to comply with proper quality control of medicinal products leads to a reduction in their pharmacological effect, which establishes resistance to the drug in the microorganism.

Results and discussion: The problem of ESKAPE pathogens is relevant due to the spread of microorganisms in medical institutions and their resistance to antibiotics. The relevance of the problem is due to the fact that ESKAPE pathogens cause most of the hospital infections, especially in critically ill patients and those with weakened immune systems. **Conclusion:** Thus, uncontrolled self-medication with antibiotics creates strong selective pressure, contributing to the establishment and spread of resistant strains among ESKAPE group pathogens.

Keywords: Antibiotic resistance, antibiotics, microorganisms, ESKAPE group pathogens.

CHANGES IN THE CHEMICAL ENVIRONMENT OF THE ORAL CAVITY IN PATIENTS WITH PROSTHETIC

A.V. Pavlenko, V.I. Pivovarov
Belgorod State National Research University, Belgorod, Russia
Department of Orthopedic Stomatology
Scientific supervisor: D.M.Sc., Professor **I.P. Ryzhova**

Background: Modern dental practice widely employs both removable and fixed prosthetic constructions. Their use alters the oral microbiota, leading to modifications in the chemical environment of oral fluid. Conventional diagnostic methods usually detect inflammatory processes only at clinically visible stages which highlight the need for techniques capable of identifying early chemical shifts in the oral cavity. A promising direction is the use of sensor-based diagnostic systems analyzing volatile organic compounds.

Objective: To assess changes in the chemical environment of the oral cavity in patients with prosthetic constructions using clinical and sensor-based research methods.

Materials and methods: The study included ten patients of the same age group with various fixed prosthetic constructions. Each of them underwent a clinical examination with determination of oral hygiene indices. Oral fluid samples were collected from the cervical area of prosthetic crowns for subsequent analysis using a piezoelectric biosensor system.

Results and discussion: Data revealed a distinct alteration in the sensory profile of oral fluid in patients with prosthetic constructions. Increased signal intensity suggested microbial metabolite accumulation. These results indicate that prosthetic constructions may promote microbial imbalance, influencing the chemical composition of oral fluid.

Conclusion: Sensor-based diagnostic methods effectively identify chemical changes in the oral environment of patients with prosthetic constructions. The findings support the potential of such methods for early detection and ongoing monitoring, warranting further research on larger patient groups.

Keywords: Sensor-based diagnostic methods, modern dental practice, oral

microbiota.

COMPARATIVE ANALYSIS OF AWARENESS OF MAXILLOFACIAL ONCOLOGICAL DISEASES AMONG YOUNG PEOPLE AGED 18–24

S.V. Petrova*, *E.M. Postnikova
Samara State Medical University, Samara, Russia
Department of Therapeutic Dentistry with a Course in Osteopathy
Scientific supervisor: D.M.Sc., Professor **M.A. Postnikov**

Introduction: Maxillofacial malignancies have aggressive progression and high mortality. Five-year survival reaches 80–90% with early detection (I–II) but drops to 20–40% at advanced stages (III–IV). Recently, incidence among younger populations has increased, potentially linked to rising risk factors: traditional cigarettes, e-cigarettes, vapes, smokeless tobacco (snus, nasvay), and HPV-associated oropharyngeal cancers. Cancer awareness in this demographic, stratified by professional background, remains understudied.

Objective: To compare knowledge and behavioral attitudes regarding maxillofacial cancer awareness among respondents aged 18–24 from medical and non-medical backgrounds.

Material and methods: A single-center cross-sectional anonymous online survey was conducted (January–February 2026). Inclusion criteria: age 18–24, higher education, and voluntary consent. From 512 initial participants, stratified stratified random sampling was used to select two equal groups (n = 300; 150 medical, 150 non-medical) from the initial 512 respondents. The questionnaire assessed risk factors, symptoms, viruses, information sources, and prevention. Fisher's exact test was used ($p<0.05$).

Results and discussion: Significant differences were found between groups. Smoking was identified as a risk factor by 97.3% (medical) vs. 85.3% (non-medical) ($p<0.05$); alcohol by 72.7% vs. 48.7% ($p<0.05$); chronic mucosal trauma by 90.7% vs. 71.3% ($p<0.05$). Symptom recognition: non-healing ulcer (100% vs. 92%, $p<0.05$), white/red patch (80% vs. 62.7%, $p<0.05$). HPV awareness: 82% (medical) vs. 60.7% (non-medical) ($p<0.05$); 22% of non-medicals denied any viral association with cancer. Primary information sources: physicians for medical students (90%), internet for non-medicals (86.7%). Lack of interest: 12.7% (non-medical) vs. 1.3% (medical) ($p<0.05$).

Conclusion: Cancer awareness among youth aged 18–24 is insufficient, especially in non-medical individuals. Key gaps exist regarding alcohol, chronic trauma, and HPV. Given internet dominance among non-medicals, targeted digital prevention programs are needed to promote vaccination and self-examination.

Keywords: Cancer awareness, oral cancer, young people, risk factors, HPV, prevention.

ADAPTATION OF A PIEZOELECTRIC SENSOR FOR THE DIAGNOSIS OF ORAL MUCOSAL CONDITIONS

V.I. Pivovarov, A.V. Pavlenko
Belgorod State National Research University, Belgorod, Russia
Department of Orthopedic Stomatology
Scientific supervisor: D.M.Sc., Professor **I.P. Ryzhova**

Introduction: Currently, research is underway to adapt a piezoelectric sensor

for volatile organic compounds (VOC) for use in dental practice.

Objective: To evaluate the feasibility of using a piezoelectric sensor for diagnosing changes in the oral mucosa under the influence of various types of nicotine-containing products.

Materials and methods: Measurements were performed in three time points with three repetitions each: T0 – baseline condition; T1 – after the use of nicotine-containing products, followed by rinsing with distilled water and a waiting period of 10 minutes; T2 – repeated measurement 10 minutes after T1.

Results and discussion: The study revealed significant differences in the magnitude of the sensor response between the investigated groups. MaxΔ, Hz (Mean±SD): Control – 180±40; Vape – 420±60; Cigarette – 950±120.S, a.u. (Mean±SD): Control – 472000±236000; Vape – 931000±217000; Cigarette – 1926000±411000.

Conclusions: The obtained results indicate that the sensor signal is sensitive to changes in the VOC profile associated with the use of different types of nicotine-containing products.

Keywords: Piezoelectric sensor, VOC profile.

EMERGENCY CARE FOR ANAPHYLACTIC SHOCK: ARE DENTISTS READY?

P.A. Samarina, D.I. Podyablonsky
Ryazan State Medical University, Ryazan, Russia
Department of Disaster Medicine
Scientific supervisor: C.M.Sc., Associate Professor **N.V. Minaeva**

Background: The global trend of increasing immediate-type allergic reactions determines a high probability of anaphylactic shock (AS) occurring in dental settings (e.g., in response to the administration of an anesthetic). The rapid onset of symptoms requires not only theoretical knowledge from the staff but also immediate practical action under time constraints, which underscores the need to assess the actual level of preparedness among specialists.

Objective: To assess the level of theoretical awareness of medical professionals in dental institutions (with higher and secondary education) regarding the provision of emergency care for anaphylactic shock.

Materials and methods: An anonymous survey was conducted using the Google Forms online platform. A total of 88 specialists participated in the survey: 57 dentists (65%) and 31 nurses (35%). Data processing was performed using descriptive statistics.

Results and discussion: The distribution of respondents by work experience was even (over 10 years – 38.6%, up to 5 years – 34.1%). A total of 12.7% of respondents had personally encountered manifestations of AS. The majority of specialists (98.9%) were aware of the presence of an anti-shock kit. Knowledge of early symptoms (feeling of fear, itching, hyperemia) was demonstrated by 70% of respondents. However, the key issue was the choice of first-line drug: only 78.4% correctly indicated Epinephrine. The most critical gaps were identified in practical aspects: only 59.1% identified the correct sequence of algorithm steps,

and only 55.7% of participants selected the correct dose of epinephrine (0.5 mL of 0.1% solution) for intramuscular administration. The remaining 44.3% chose knowingly ineffective or dangerous dosages.

Conclusion: Although more than half (70–80%) of medical professionals in dental institutions demonstrate sufficient awareness of the general principles of AS management, a serious deficiency in knowledge was identified regarding critically important aspects: the exact dose of epinephrine and the precise sequence of actions. This necessitates regular training and assessment of practical skills to enhance staff readiness to save the patient's life.

Keywords: Anaphylactic shock, dentists, Epinephrine.

IMPACT OF REMOVABLE PROSTHESIS MANUFACTURING TECHNOLOGY ON PATIENT ADAPTATION TIME AND QUALITY

V.S. Shtana, E.K. Chikareva
Belgorod State National Research University, Belgorod, Russia
Department of Orthopedic Stomatology
Scientific supervisor: D.M.Sc., Professor **I.P. Ryzhova**

Background: The timing and quality of the patient's adaptation to a removable prosthesis are largely determined by the technology used for its manufacture, including the accuracy of the fit of the structure, the selection of materials, design features, accounting to the anatomical and functional parameters of the patient, as well as the sequence of technological stages of manufacture.

Objective: To determine the dependence of the time of adaptation of patients to removable prostheses on the applied technology of their manufacture.

Materials and methods: The study was conducted on the basis of the Department of Orthopedic Dentistry of the National Research University "BelSU". The timing of the adaptation of 97 patients to removable prostheses made of materials from Belacryl-E GO, Belacryl-M GO, Villacryl H Plus using various technologies was studied. Patients were divided into 4 groups: 1 group – 24 people, used removable prostheses from Belakryl-E GO according to the manufacturer's technology; Group 2 – 24 people – "Belacryl-E GO" improved technology; Group 3 – 23 people "Belacryl-M GO" according to the manufacturer's technology; 4 group – 26 people – "Villacryl H Plus" according to the manufacturer's technology. Examinations and questionnaires were carried out on the day of installation of the design, after a week, 30 days, 6 months to assess the timing and quality of adaptation of patients to removable prostheses.

Results and discussion: During this study, the following results were obtained: the dynamics of adaptation was the fastest in-group 2 (prostheses from Belacryl-E GO using improvements technology): by Day 7, 83% of patients reported significant reduction in discomfort; by day 30, 92% of patients had fully adapted to the design. Prostheses from "Villacryl H Plus" (group 4) showed comparable results to group 2: by day 7, 77% of patients reported reduced discomfort; by day, 30 – 88% achieved full adjustment. In the 1st and 3rd groups (materials "Belacryl-E GO" and "Belacryl-M GO" according to the standard technology), adaptation was slower: by the 7th day, 58% and 61% of patients

noted a decrease in discomfort, respectively; complete adaptation by Day 30 was achieved in 72% (Group 1) and 75% (Group 3) of patients. Analysis of long-term results showed: the smallest percentage of complaints of inconvenience to wear – in the 2nd and 4th groups (8% and 10%, respectively); in groups 1 and 3, the proportion of complaints was 18% and 22%, respectively.

Conclusions: The results of the study confirm that both the choice of material and the technology for the manufacture of removable prostheses significantly affect the timing and quality of patient adaptation. The improved technology "Belacryl-E GO" and the material "Villacryl H Plus" demonstrated the best indicators. These data can be used to optimize orthopedic treatment and improve patients' quality of life.

Keywords: Polymer construction materials, individualization of orthopedic treatment, precursor-free basis polymers, adaptation, biocompatibility of polymer materials.

PSYCHOLOGICAL ASPECTS OF DRUG ADDICTION

A.M. Yovloeva, B.A. Kodzoeva, K.M. Khutieva, L.A. Kharsieva
Ingush State University, Medical institute named after A.Kh. Aushev,
Magas, Russia
Department of Normal Physiology
Scientific supervisor**:** C.M.Sc., Professor **D.A. Gagieva**

Background: In recent years, many countries have reported a sharp increase in psychoactive substance use, particularly among adolescents. Early drug initiation poses serious risks to physical and mental health and indicates an urgent social and medical problem.

Objective: To identify psychological and social factors predisposing young people to drug addiction.

Material and methods: A psychophysiological assessment of 1,200 individuals aged 12–35 was carried out from 2013 to 2022. Diagnostic tools included SMIL (adapted MMPI), the Leonhard–Shmishek`s test, and the Prognosis-2 questionnaire to evaluate neuropsychic stability and personality traits.

Results and discussion: Study findings show that drug addiction risk correlates with specific accentuated personality types. Individuals with hyperthymic, exalted, excitable, anxious, and cyclothymic traits scored 70 or higher on SMIL scales and demonstrated unstable emotional regulation, impulsivity, or high anxiety levels. Social and family factors play a key role: interpersonal conflicts, emotional neglect, low self-esteem, and the desire for acceptance often precede drug use. Adolescents with immature personalities and weak self-control are particularly vulnerable. Neurobiological predispositions, such as dopamine system imbalance, may further increase susceptibility to addiction.

Conclusion: Drug addiction among youth reflects complex interactions of psychological, biological, and social factors. Preventive measures should focus on early psychological support, family education, and promoting healthy coping mechanisms.

Keywords: Drug addiction, youth, personality types, psychosocial factors,

prevention.

FOUR CLINICAL AND LABORATORY PREDICTORS OF PROLONGED ANTIMICROBIAL THERAPY IN REAL-WORLD CLINICAL PRACTICE

E.Yu. Zolotova
South Ural State Medical University, Chelyabinsk, Russia
Department of Outpatient Therapy and Clinical Pharmacology
Scientific supervisors: D.M.Sc., Professor, **G.G. Ketova,**
Assistant **O.M**. **Shamina**

Background: Optimization the duration of antimicrobial therap remains a major challenge in the era of increasing antimicrobial resistance. In real-world clinical practice, treatment courses often exceed guideline-recommended duration due to the lack of standardized criteria for discontinuation therapy.

Objective: To identify clinical and laboratory factors predicting the duration antimicrobial therapy and to develop a risk profile for increasing treatment duration.

Materials and methods: A single-center retrospective study included 92 adult patients with urinary tract infections, lower respiratory tract infections, intra-abdominal infections and sepsis were examined. Therapy duration, disease severity, microbiological profile, multidrug resistance risk factors, inflammatory biomarkers (procalcitonin, C-reactive protein), and monitoring frequency were analyzed.

Results and discussion: The average duration of therapy was 11.4 days. Longer courses were observed for sepsis (16.8 days) and critical illness (26.3 days), while urinary tract infections required shorter treatment (7.2 days). Resistance to pathogens, including MRSA and ESBL-producing Enterobacterales, were associated with prolonged therapy. High peak levels of procalcitonin (>10 ng/mL), C-reactive protein (>200 mg/L), and leukocytosis correlated with prolonged treatment. Peak biomarker levels were more strongly associated with prolonged therapy than baseline measurements. Monitoring in dynamics was insufficient: procalcitonin levels did not increase in 56.7% of cases and C-reactive protein levels did not increase in 52.2% of cases.

Conclusion: Long-term antimicrobial therapy is associated with disease severity, sepsis, multidrug resistance, and increased peak levels of inflammatory biomarkers**.** The obtained results support the need to develop standardized biomarker-based treatment discontinuation criteria to optimize its duration.

Keywords: Antimicrobial therapy, pharmacotherapy, procalcitonin, treatment duration, multidrug resistance, sepsis, biomarker-guided approach.

SCIENTIFIC ABSTRACTS OF CONFERENCE PARTICIPANTS FROM THE UNIVERSITIES OF THE FOREIGN COUNTRIES

INTERLEUKIN-13 LEVELS IN PATIENTS WITH ALCOHOL USE DISORDER

A.K. Abdul, A.V. Kazachok
Belarusian State Medical University, Minsk, Republic of Belarus
Scientific supervisor: C.B.Sc., Associate Professor **Zh.A. Ibragimova**

Background: Alcohol dependence is associated with chronic systemic inflammation and dysregulation of cytokine balance, contributing to damage in various organs, including the central nervous system. Interleukin-13 (IL-13) is a pleiotropic cytokine involved in the regulation of immune responses and tissue remodeling. Imbalance of IL-13 may reflect fibrogenic and immunoregulatory shifts characteristic of alcohol-induced pathology. Elevated IL-13 expression has been described in patients with alcoholic steatohepatitis; however, its role in alcohol dependence without severe liver damage and its potential association with neuroimmune disturbances remain insufficiently understood.

Objective: To analyze IL-13 levels in groups of patients with different degrees of alcohol dependence.

Materials and methods: The study included 74 patients with alcohol use disorder (34 patients with alcohol dependence syndrome and 34 patients who consume alcohol with harmful consequences) treated at the Minsk Regional Clinical Center "Psychiatry and Narcology" (mean age 33±4 years) and 10 healthy volunteers. IL-13 concentrations were determined in plasma by ELISA using the Cloud-Clone Corp. system (China). Statistical analysis was performed using the nonparametric Mann–Whitney U-test (Statistica 10.0). The critical significance level was set at $p<0.05$.

Results: Plasma IL-13 levels differed between the groups depending on the severity of alcohol use disorders**.** In patients with alcohol dependence syndrome, a statistically significant increase in IL-13 concentration was found compared to the group of patients who consume alcohol with harmful consequences: 0.49 (0.13–2.4) pg/ml vs. 0.12 (0.1–0.15) pg/ml, respectively ($U=338.5$; $p=0.003$). No statistically significant differences were observed between both patient group and the control group ($p>0.05$).

Conclusion: Elevated IL-13 concentrations may indicate immune dysregulation associated with the progression of alcohol-related pathology and could serve as a potential diagnostic marker for the transition from harmful alcohol use to alcohol dependence. Furthermore, prolonged exposure to ethanol may trigger distinct inflammatory cascades, differing from the proinflammatory responses observed in episodic alcohol intoxication.

Keywords: Cytokine, inflammation, alcohol dependence, alcohol consumption, damage.

RESTORATION OF ANTERIOR TEETH USING FELDSPATHIC CERAMIC VENEERS AND CROWNS IN COMBINATION WITH DIGITAL DENTISTRY

J.O. Abdullaev
Andijan State Medical Institute, Andijan, Uzbekistan
Department of Orthopedic Dentistry and Orthodontics

Background: Restoration of anterior teeth remains a complex task requiring high aesthetic integration and functional precision. Feldspathic ceramic is considered one of the most aesthetic materials due to its optical similarity to

natural enamel, including translucency and fluorescence. At the same time, the development of digital dentistry has significantly improved diagnostic accuracy, treatment planning, and manufacturing of restorations. The integration of digital protocols reduces clinical errors and increases predictability of outcomes.

Objective: To evaluate the effectiveness of feldspathic ceramic veneers and crowns in combination with a digital workflow, including intraoral scanning, for achieving optimal aesthetic and functional results in anterior teeth restoration.

Materials and methods: Data were analyzed from modern scientific literature on feldspathic ceramics and digital dentistry. The workflow included digital smile design (DSD), intraoral scanning for obtaining precise 3D models, CAD-based design of restorations, and CAM manufacturing through milling or layering techniques. Feldspathic ceramics composed of feldspar, quartz and kaolin were used due to their superior эстетические свойства. Special attention was given to adhesive protocols, including hydrofluoric acid etching, silanization, and enamel bonding.

Results and discussion: The use of intraoral scanning eliminates inaccuracies associated with conventional impressions and allows immediate visualization of the clinical situation. Digital modeling ensures precise control of tooth morphology, occlusion, and contact points. Feldspathic ceramic demonstrated excellent aesthetic integration even at minimal thickness (0.3–0.5 mm), though its lower mechanical strength requires strict case selection and preservation of enamel. The digital workflow significantly improves marginal fit, reduces treatment time, and enhances reproducibility of results.

Conclusion: The combination of feldspathic ceramic restorations with digital dentistry provides a highly predictable and minimally invasive approach for anterior teeth restoration. Strict adherence to adhesive protocols and proper case selection are critical for long-term success.

Keywords: Feldspathic ceramic, veneers, crowns, digital dentistry, intraoral scanning, aesthetics.

COMPARATIVE ANALYSIS OF ALLOPLASTIC METHODS APPLIED IN THE SURGICAL TREATMENT OF INGUINAL HERNIAS

J.A. Abdullayev, V.A. Rahimov, J.N. Ramazanov
Azerbaijan Medical University, 3rd Department of Surgical Diseases,
Baku, Azerbaijan
Scientific supervisor: C.M.Sc., Associate Professor **V.A. Rahimov**

Background: The Lichtenstein operation is considered the “gold standard” for the treatment of inguinal hernias. This type of alloplasty is simple, and high clinical outcomes can be achieved through its application. However, the use of polypropylene meshes in the treatment of inguinal hernias can lead to several postoperative wound complications.

Objective: To evaluate the results of surgical treatment using alloplastic methods in patients with inguinal hernias.

Materials and methods: Alloplastic methods were applied in the treatment of 82 patients with inguinal hernias at the clinical base of the 3rd Department of Surgical Diseases of the Azerbaijan Medical University. The patients were divided

into two groups. In Group I (51 patients), the traditional Lichtenstein technique was applied. In this group, the area where the polypropylene mesh was placed was externally drained using a soft rubber drain. The drain remained in the wound for an average of 3–4 days. In Group II (32 patients), alloplasty was performed using a modified method proposed by T.A. Moshkova. The essence of the method was that after the neck of the hernia sac is sutured and closed, a sufficient portion of the sac wall is dissected and used to cover the posterior wall of the inguinal canal from the lateral inguinal fossa to the pubic tubercle. This flap was then sutured to the transversalis fascia behind the spermatic cord. The polypropylene mesh was placed over this peritoneal flap. Implementing this method of alloplasty required a large hernia sac; therefore, we primarily applied this technique in the treatment of large inguinal hernias. In Group II, the wound was not drained externally.

Results and discussion: Performing alloplasty with the aforementioned modified method reduced the number of postoperative complications. In Group I, where the traditional Lichtenstein technique was used, serous fluid accumulation (seroma) of varying degrees was detected in 9 patients post-surgery. However, no such complications were observed in any patient in Group II. This outcome was attributed to the drainage function of the peritoneal flap adjacent to the polypropylene mesh. Due to the absence of complications in the wound healing process in Group II, the average hospital stay was shortened, the duration of postoperative pain syndrome decreased, and these patients achieved faster rehabilitation.

Conclusion: During alloplasty, the peritoneal flap placed adjacent to the polypropylene mesh acts as an internal drain by reabsorbing the serous fluid secreted by the tissues in response to the prosthesis. This prevents the development of seroma in the wound–the most common complication following alloplasty of inguinal hernias.

Keywords: Inguinal, hernia, alloplasty, polypropylene mesh, Lichtenstein operation.

RISK MANAGEMENT IN THE PREVENTION OF HEALTHCARE-ASSOCIATED INFECTIONS IN MATERNITY CARE ORGANIZATIONS

G.U. Aldabekova, A.A. Musina, Z.G. Khamidullina
Astana Medical University, Astana, Kazakhstan
Department of Epidemiology and Biostatistics
Scientific supervisor: D.M.Sc., Professor **A.A. Musina**

Background: The implementation of risk management in the obstetric unit plays an important role in organizing infection control and ensuring epidemiological safety in the provision of medical care.

Objective: To evaluate the organization of measures for the prevention of epidemiological risks among healthcare workers of the obstetric unit of the Multidisciplinary City Hospital No. 3 in Astana, taking into account the integration of risk management for monitoring, analysis, and risk control, as well as improving the efficiency and quality of medical care for pregnant women, women in labor, and postpartum patients.

Materials and methods: After approval by the local ethics committee (Protocol No. 10 dated November 26, 2024), an anonymous survey of healthcare workers was conducted using Google Forms, which ensured convenient data collection and primary processing. The questionnaire consisted of 20 questions: 6 introductory items (gender, age, work experience, region, level of education, and specialty) and 14 questions aimed at assessing the functioning of the obstetric unit. The survey results showed that many difficulties in counseling pregnant women are associated with the increasing prevalence of extragenital pathology, which requires additional resources and the integration of IT technologies to improve healthcare efficiency.

Results and discussion: The risk management system of the obstetric unit revealed both strengths and problematic aspects. The study included 255 healthcare workers from maternity care organizations: physicians – 14.9% (N=38), mid-level medical staff – 73.3% (N=187), and specialists in medical rehabilitation, clinical and diagnostic services, administrative personnel, pharmacists, and other professionals – 11.8% (N=30).Episodes of misunderstanding between physicians and mid-level staff were reported by 11.6% (N=5) of physicians; however, no statistically significant differences between professional groups were found ($p = 0.66$). Access to training and educational activities was satisfactory for 79.9% (N=123) of mid-level staff and only 8.4% (N=13) of physicians ($p = 0.001$).

Conclusion: The integration of risk management and digital technologies can significantly improve the effectiveness of risk management and the quality of medical care. Electronic medical records provide rapid access to clinical information and help reduce risks. Analytical platforms with artificial intelligence enable prediction and prevention of complications. Telemedicine platforms support remote consultations with specialists, while health monitoring systems allow timely tracking of patient indicators.

Keywords: Staff satisfaction, infection risk, infection safety, maternity care, healthcare organization.

INFECTION RISK AND CONTROL IN MATERNITY CARE: RESOURCES, WORKFORCE AND STAFF DEVELOPMENT

G.U. Aldabekova, A.A. Musina, Z.G. Khamidullina
Astana Medical University, Astana, Republic of Kazakhstan
Department of Epidemiology and Biostatistics
Scientific supervisor: D.M.Sc., Professor **A.A. Musina**

Background: Ensuring infection safety in maternity healthcare facilities is a key aspect of maintaining high-quality medical care and safeguarding patient safety.

Objective: To assess, in a comprehensive manner, the factors that impact infection safety in maternity settings, including technical and pharmaceutical resources, employee satisfaction, interprofessional cooperation, and opportunities for professional growth.

Materials and methods: A cross-sectional study was carried out from January 20 to February 20, 2025, including 255 healthcare professionals employed in obstetric facilities in Astana, Semey, and Kokshetau. Data were collected via the Google Forms online platform. The study sample comprised physicians and

nursing staff, as well as specialists in medical rehabilitation, clinical diagnostics, administration, pharmacy, and other related fields.

Results and discussion: Among 255 healthcare professionals from obstetric facilities (physicians 14.9%, nurses 73.3%, other specialists 11.8%), nurses reported significantly higher satisfaction than physicians across most domains: equipment (78.7% vs. 11.3%, $p = 0.001$), drug availability (80.4% vs. 9.8%, $p = 0.009$), staffing (74.2% vs. 13.2%, $p = 0.07$), laboratory diagnostics (78.3% vs. 10.2%, $p = 0.001$), specialist consultations (76.3% vs. 14.2%, $p < 0.0001$), and access to training (79.9% vs. 8.4%, $p = 0.001$). No significant differences were observed in interprofessional communication ($p = 0.66$).

Conclusion: Physicians and nurses perceive working conditions and infection safety differently, with critical gaps in equipment, diagnostics, and professional development, highlighting the need for targeted management interventions in obstetric care facilities.

Keywords: Staff satisfaction, infection risk, infection safety, maternity care, healthcare organization.

CASE SERIES OF CHOLEDOCHOLITHIASIS MORE THAN 25 YEARS AFTER CHOLECYSTECTOMY

Dr. Ashutosh Kumar Singh
Rela Hospital – Multispeciality Hospital in Chennai, India
Department of General Surgery

Background: Cholecystectomy is one of the most commonly performed surgeries worldwide Post-cholecystectomy choledocholithiasis is a rare occurrence and presentation has been reported over a wide range of time following surgery, from 1 year up to rarely 20 years. In the following case series, the patients were found to have choledocholithiasis more than 25 years after cholecystectomy.

Presentation of cases: This is a case series of reported cases with choledocholithiasis more than 25 years after cholecystectomy, we are reporting the first three cases and we compare them to the previously published case.

Discussion: Surgical clip migration and remnant cysyic duct lithiasis (RCDL) has been widely reported as a cause for similar late post-cholecystectomy choledocholithiasis. The long cystic duct remnant noted during imaging further contributes to the possibility of RCDL, given that this would increase the area over which a remnant lithiasis may have been missed during the original operation.

The ideal length of the cystic duct remnant that could virtually eliminate the risk of primary cystic duct lithiasis is still to be debated. However, the non-secretory nature of the cystic duct makes the likelihood of primary cystic duct lithiasis quite unlikely and hence the cause of cystic duct lithiasis secondary to clip migration the more likely explanation for the findings presented with our cases.

The mean interval between surgery and discovery of RCDL in a study of 12 patients was 34.2 months, while clip migration time has been reported to vary between 11 and 20 years. The most common ductal stones in the United States are secondary stones, those that migrate into the CBD via the cystic duct. However, primary stones of the CBD have also been reported and cannot be ruled out in this case. These may originate intra-hepatically or within the CBD.

Conclusion: To our knowledge there are two cases reported in the literature with a latency of over 25 years between cholecystectomy and presentation of CBD lithiasis. This extreme latency in presentation importantly highlights possibilities of post-cholecystectomy bile duct stones and the need to acknowledge the potential for such late presentations thus reducing the propensity for secondary stones within the bile ducts. This case series serves as an addition to the existing literature.

Keywords: Choledocholithiasis, cholecystectomy, bile duct stones, cystic duct.

NURSES' ATTITUDES TOWARDS THE CARE OF DIABETIC FOOT ULCERS IN PATIENTS WITH TYPE 2 DIABETES MELLITUS

Sh.K. Batarbekova
Astana Medical University, Astana, Kazakhstan
Department of General Medical Practice with a Course in Evidence-based Medicine
Scientific supervisor: C.M.Sc., Associate Professor **D.K. Zhunussova**

Background: The core professional responsibilities of a nurse encompass: delivering medical care, organizing and coordinating the treatment process, educating patients and their families, conducting consultations, participating in research projects, and advocating for patients' interests and rights. Work in this field integrates a scientific approach with practical expertise, enabling the fulfillment of a broad spectrum of human needs. Given their role within the healthcare system, nurses are particularly crucial in managing chronic conditions like diabetes, including addressing complications such as diabetic ulcers.

Objective: To identify the characteristics of nurses' attitudes towards caring for patients with diabetic foot ulcers.

Materials and methods: A standardized questionnaire was used to assess nurses' attitudes toward diabetic foot complications. It took 10–15 minutes to complete, and questions included objective information and a subjective assessment of the topic importance. The questionnaire consisted of ten statements; each rated on a five-point Likert scale. The most positive response to the statement was given a score of five. The total score could range from 10 to 50 points. Lower scores reflected a negative attitude toward the issue under consideration, while higher scores indicated a positive stance.

Results and discussion: While 37.8% prioritized treatment over prevention, reflecting a traditional therapeutic focus, 36.5% strongly disagreed with the notion that regular ulcer monitoring is unnecessary. Time investment was seen as a significant concern, with 57.4% agreeing that care requires considerable effort; however, only 10.8% considered it secondary to other duties. Approximately 25% of participants were inclined to avoid working with such patients, whereas 35.4% explicitly stated the opposite. Regarding patient counseling, nearly 40% disagreed with the claim of insufficient time for individualized guidance, and a quarter reported no such issue. Over one-third (36.5%) emphasized personal responsibility for educating patients on

preventing ulcer recurrence, with only 9–13% holding a negative view on this aspect.

Conclusion: The findings indicate that nurses recognize the importance of diabetic ulcer care and acknowledge their role in patient education, but they also acutely perceive the high labor intensity and emotional burden associated with this activity.

Keywords: Nurse, diabetic foot ulcers, type 2 diabetes mellitus, attitudes.

INCREACING THE EFFICIENCY OF PEDIATRIC OUTPATIENT DENTAL INSTITUTIONS THROUGH THE DIGITALIZATION OF MEDICAL DOCUMENTATION

J.K. Botirov
Andijan State Medical Institute, Andijan, Uzbekistan
Department of Pediatric Dentistry
Scientific supervisor: C.M.Sc., Associate Professor **S.Kh. Alimova**

Background: In Uzbekistan, digital reforms in healthcare are a priority for state policy: the president has repeatedly emphasized the need for accelerated digital transformation of the sector, as reflected in relevant decrees and resolutions. The purpose of this study is to analyze the current state of diagnostic processes in dentistry and justify the need to implement a structured digital diagnostic

Objective: To assess the state of diagnostic processes in dentistry and to substantiate the implementation of a unified digital diagnostic protocol.

Materials and methods: The study included patients aged 5–15 years who sought dental care. The examination comprised clinical assessment, orthopantomography, cone-beam computed tomography, as well as analysis of data from the DMED system and medical records. Comparative analysis methods were applied to evaluate traditional and digital diagnostic approaches in terms of accuracy, time expenditure, and efficiency. Statistical data processing made it possible to determine the advantages of the digital approach.

Results and discussion: The implementation of a digital diagnostic protocol increased the detection rate of hidden dental pathologies: diagnostic accuracy improved by up to 18% compared to traditional methods. Digital image analysis reduces subjectivity in the interpretation of radiographic data. The use of CBCT provides a more accurate assessment of root canal anatomy and bone structures, reducing the risk of complications. Standardization of the diagnostic process reduced the duration of the initial appointment by 12%, thereby improving resource efficiency. In addition, digitalization enhances interaction between medical institutions by providing access to a unified patient medical record.

Conclusion: The implementation of digital technologies in dental diagnostics and documentation aligns with the objectives of healthcare modernization in Uzbekistan. It contributes to improving the quality of diagnosis and treatment, as well as to the development of preventive medicine.

Keywords: Digital dentistry, diagnostic protocols, healthcare digitalization.

ANALYSIS OF ORAL MANIFESTATIONS OF COVID-19

M.Kh. Huseynova, S.A. Mamedova, F.Y. Mamedov,
P.A. Ahmadbeyli, Sh.R. Yusubova
Azerbaijan Medical University, Baku, Azerbaijan
Department of Therapeutic Dentistry

Background: March 11, 2020 marked a turning point for humanity, when the World Health Organization declared a pandemic of the acute respiratory disease COVID-19 caused by the SARS-CoV-2 virus. SARS-CoV-2 enters human cells through angiotensin-converting enzyme 2 (ACE2) receptors, which are expressed in various tissues, including the oral mucosa, particularly the epithelium of the tongue and salivary glands. Therefore, the oral cavity may serve as a potential target for SARS-CoV-2 infection, leading to the development of primary and secondary oral lesions.

Objective: To assess the prevalence of clinical manifestations of COVID-19 in the oral cavity.

Materials and methods: The study included 200 patients aged 18–65 years. Among them, 150 patients were treated in a modular hospital in Baku, while 50 patients were examined during the post-COVID period in an outpatient setting. Primary oral lesions in hospitalized patients were evaluated using a structured questionnaire survey. Secondary oral lesions in outpatients were assessed through clinical examination at the Department of Therapeutic Dentistry of Azerbaijan Medical University. In addition, international literature data from PubMed and Google Scholar were analyzed and compared with the authors' own clinical observations.

Results and discussion: Oral manifestations in patients with COVID-19 were diverse. Taste disorders (dysgeusia) were observed in 35.0% of patients, xerostomia in 25.0%, oral candidiasis in 25.0%, aphthous lesions in 11.5%, and other oral mucosal lesions in 8.5% of cases. It should be noted that some patients presented with multiple oral manifestations simultaneously; therefore, the cumulative prevalence exceeded 100%. Taste disturbances were among the earliest oral symptoms, while xerostomia often persisted for 3–6 months during the post-COVID period. A relationship between the severity of COVID-19 and the intensity of oral lesions was observed.

Conclusion: The presence of ACE2 receptors in the oral mucosa explains its susceptibility to SARS-CoV-2 infection. Oral lesions associated with COVID-19 may be primary, resulting from direct viral effects, or secondary, related to treatment and immune responses. Assessment of oral manifestations is important for the diagnosis, management, and post-COVID rehabilitation of patients.

Keywords: COVID-19, oral cavity, ACE2 receptors, oral lesions.

PREDICTORS AND DETERMINANTS OF PANCREATIC CANCER

A.M. Iskakova, A.E. Duambekova, D.M. Baibosynov
Astana Medical University, Astana, Kazakhstan
Department of Epidemiology and Biostatistics
Scientific supervisor: D.M.Sc., Senior Lecturer **D.M. Baibosynov**

Background: Pancreatic cancer (PC) is one of the most common oncological problems in modern medicine, characterized by an extremely unfavorable course and low five-year survival rate. Non-modifiable and modifiable risk factors play

an important role in the pathogenesis. Screening patients with a high risk of developing the disease due to genetic mutations, a history of the disease, or a combination of clinical predictors can enable timely diagnosis and ensure a favorable prognosis. According to the WHO Pancreatic cancer is the sixth leading cause of death among all types of cancer, with nearly 470,000 deaths in 2022, and the number is projected to increase. The current study aims to review the literature on this topic.

Objective: Analysis of pancreatic cancer risk factors and comparison of the effectiveness of different predictors to help in planning, coordinating, and evaluating.

Materials and methods: A search and review of current scientific articles on early diagnosis of pancreatic cancer that were published between 2021 and 2026 was conducted in the MEDLINE, Willey, Cochrane, and eLIBRARY databases. Data associated with the difference of biomarkers were collected from a meta-analysis involving 19,326 participants with 2,749 patients having stage I or II pancreatic cancer. The main predictors miRNA Biomarkers, Protein Biomarkers, Metabolite Biomarkers, ctDNA Biomarkers were evaluated by sensitivity, specificity, DOR 72.68 (95% CI 26.64-198.24) and AUC indicators. A literature review was used to confirm such a risk factor as heredity in Familial Pancreatic Cancer. It included 1,325 families and 4,267 patients from 2013 to 2023 BRCA mutations in male or female FPC patients.

Results and discussion: A literature review showed a 2.26-10-fold increase in risk among first-degree relatives due to BRCA1/2 mutations. BRCA2 showed a statistically significant association with increased risk (OR = 1.68; p = 0.04), while BRCA1 did not. The most promising is miRNA in terms of sensitivity, integral diagnostic accuracy and specificity (88%, 0.95, 91%), followed by protein markers (79%, 0.90, 88%) and metabolites (84%, 0.90, 85%), but ctDNA is higher in terms of specificity (94% vs. 91%). At the same time, the use of CA 19-9 in combination with new biomarkers increases diagnostic accuracy.

Conclusion: Genetic factors, in particular BRCA2 mutations, combined with new circulating biomarkers may improve early detection and risk assessment of pancreatic cancer. The use of biomarkers in conjunction with CA 19-9 increases diagnostic accuracy, which will improve the early diagnosis of pancreatic cancer.

Keywords: Pancreatic cancer, biomarkers, risk factors.

DISTRIBUTION OF SPECIES OF THE GENUS *TRAGOPOGON* L. IN THE REPUBLIC OF KAZAKHSTAN

A.E. Jussupkaliyeva
Medical University Astana, Astana, Kazakhstan
Department of Pharmaceutical Disciplines
Scientific supervisor: PhD, Associate Professor **Sh.L. Akhelova**

Background: The genus *Tragopogon* L. (Asteraceae) includes about 150 species distributed in temperate regions of Eurasia. Some species are used in traditional medicine for inflammatory, liver, gastrointestinal, skin, and oncological diseases due to the presence of antioxidant and anti-inflammatory compounds. Their pharmacological properties are associated with the content of flavonoids (apigenin, luteolin, quercetin), terpenoids, and phenolic acids. In despite of this, data on the distribution of *Tragopogon* species in the Republic of Kazakhstan

remain incomplete and insufficiently systematized, which makes it difficult to assess their regional range and pharmacological significance.

Objective: Analysis and systematization of data on the presence of species of the genus *Tragopogon* L. in biosphere reserves of the Republic of Kazakhstan.

Materials and methods: Open data from the Kazakh National Committee of the MAB Programme, which is a structural subdivision of the National Commission of the Republic of Kazakhstan for UNESCO and ISESCO, were used. A content analysis of published floristic lists of 15 biosphere reserves was carried out to identify mentions of species of the genus *Tragopogon*. The data obtained were systematised in a table showing the distribution of species across the protected areas of Kazakhstan.

Results and discussion: According to published data, 13 species of the genus *Tragopogon* L. have been identified in the biosphere reserves of the Republic of Kazakhstan, registered in 11 reserves of the country. The greatest species diversity is noted in the Aksu-Zhabagly, Almaty, Charyn, and Alakol reserves. The distribution of species is uneven: *T. ruber* is the most widely represented. Representatives of the genus *Tragopogon* are not listed in the official floristic lists of the Kurgaldzhinsky, Akzhaiksky, Burabaysky, and Karatau reserves.

Conclusion: The systematization of published data has made it possible for the first time to summarize information on the distribution of species of the genus *Tragopogon* L. in the biosphere reserves of the Republic of Kazakhstan. Their uneven distribution and the lack of data on a number of reserves in Central and Western Kazakhstan have been established.

Keywords: *Tragopogon* L., biosphere reserves, Republic of Kazakhstan, species distribution.

HIGH ANTIBIOTIC RESISTANCE OF ESCHERICHIA COLI IN CHILDREN WITH ACUTE INTESTINAL INFECTIONS IN KAZAKHSTAN

A.D. Kazhieva, A.A. Nassimuldinova
Astana Medical University, Astana, Kazakhstan
Department of Epidemiology and Biostatics
Scientific supervisors: D.M. Sc., Professor **A.A. Musina**,
Senior lecturer **S.A. Zhizhila**

Background: Acute intestinal infections (AII) in children under 5 years of age rank second among infectious diseases in Kazakhstan after acute respiratory viral infections. In Almaty between 2023 and 2025 years, Escherichia Coli (E. Coli) was detected in 62-68% of bacterial AII cases. The most common strains were enter toxigenic (ETEC) – 38-41%, followed by enter pathogenic (EPEC) – 15-22%, enter invasive (EIEC) – 12-18%, and enter aggregative (EAEC) – 8-11% (Rakhimova G.A., 2023; Ministry of Health of the Republic of Kazakhstan, 2024). Increasing resistance to commonly used antibiotics such as ampicillin, co-trimoxazole and ceftriaxone often prolongs hospitalization of children by 5-7 days.

Objective: To assess the current antibiotic resistance of E. Coli strains isolated from children with acute intestinal infections in Kazakhstan and compare these data with reports from other countries.

Materials and methods: A literature review of studies published between 2015 and 2025 was conducted using PubMed, CyberLeninka and Elibrary, as well as official reports of the Ministry of Health of the Republic of Kazakhstan. Only studies where antibiotic susceptibility was tested by standard laboratory methods (disk diffusion or MIC) according to EUCAST or CLSI guidelines were included.

Results and discussion: Studies from Kazakhstan (Astana, Almaty and other regions, 2020-2025) show high levels of resistance among E. Coli strains: ampicillin – 78-92%, amoxicillin/clavulanate – 54-68%, co-trimoxazole – 64-79%, ceftriaxone – 38-56%, cefepime – 28-41%, gentamicin – 18-32%, ciprofloxacin – 21-39%, while resistance to meropenem remains low (0-2%). ESBL-producing strains accounted for 44-58%, and multidrug-resistant (MDR) strains for 68-78% (Bekbosynova A.K., 2020; Rakhimova G.A., 2023; Nikolaeva I.V., 2020). In comparison, resistance to ceftriaxone in Estonia and the Netherlands was only 8-14%. Higher resistance in Kazakhstan may be associated with self-medication, antibiotic use in agriculture, and relatively low rotavirus vaccination coverage.

Conclusion: E. Coli strains isolated from children with AII in Kazakhstan demonstrate high resistance to commonly used antibiotics, while carbapenems and amikacin remain highly effective (>95%). Strengthening antibiotic stewardship and surveillance of antimicrobial resistance is necessary.

Keywords: Escherichia coli, antimicrobial resistance, acute intestinal infections, Kazakhstan, children, ESBL, multidrug resistance.

LYMPHOPROLIFERATIVE SYNDROME AS A MANIFESTATION OF IMMUNODEFICIENCY

E.A. Kirkalova, A.A. Novikov, S.O. Sharapova
Belarusian State Medical University
Republican Scientific and Practical Center for Pediatric Oncology, Hematology and Immunology Minsk, Republic of Belarus
Department of Children's Diseases No. 2
Scientific supervisor: C.M.Sc., Associate Professor **A.A. Ustinovich**

Background: Primary immunodeficiencies (PIDs) are genetically determined disorders of the immune system. The phenotypic manifestations of PIDs are associated with different pathogenic variants in specific genes. Mutations in the STAT3 GOF, PI3KCD, or PI3KR1 genes may clinically present as APDS/PASLI syndrome (activated phosphoinositide 3-kinase delta syndrome), which is characterized by impaired receptor signaling in T and B lymphocytes. Pathogenic variants in the FAS, CTLA4 and LRBA genes manifest as ALPS (autoimmune lymphoproliferative syndrome) the key mechanism of which is the blockade of T- and B-lymphocyte apoptosis.

Objective: To investigate the relationship between the phenotypic manifestations of APDS/PASLI and ALPS syndromes and abnormalities in the genes determining these diagnoses.

Materials and methods: A total of 59 medical records were reviewed, including records of patients aged 5 to 16 years with verified PID (7 boys and 6 girls) and healthy children (n = 46).

Results and discussion: A statistically significant increase in lymph node size

was identified in patients with diagnosed PID compared with the control group. Lymph node hypertrophy was observed in 72.3% of cases, and at the time of PID manifestation the mean increase in lymph node size, relative to the control group, was >=30% (r = 0.82). The localization of lymphadenopathy was heterogeneous: 87.5% of patients had enlarged abdominal lymph nodes, 68.8% had cervical lymph node enlargement, and 50.0% had enlarged thoracic lymph nodes. In ALPS, lymphadenopathy was observed in 70.2% of patients, whereas in APDS/PASLI it was found in 77.8%. Hepatosplenomegaly was diagnosed in 86.4% of patients: isolated hepatomegaly was identified in 11.5%, and isolated splenomegaly in 15.8%. When patients were stratified by clinical syndrome, a statistically significant increase in spleen size was found in 91% of patients with APDS/PASLI (r= 0.71), whereas hepatosplenomegaly predominated in ALPS, being observed in 45.5% of patients (r = 0.76).

Conclusions: In patients with ALPS, lymphadenopathy was observed in 72.3% of cases. The frequency of splenomegaly was higher in APDS (91%), whereas hepatosplenomegaly was more common in ALPS (45.5%). The study provides a basis for further research in the clinical immunology.

Keywords: Immunodeficiency, ALPS syndrome, APDS/PASLI syndrome.

EVALUATION OF SURGICAL INTERVENTIONS USING ARTERIAL AND VENOUS ALLOGRAPHS

P.D. Korneva
Belarusian State Medical University, Minsk, Republic of Belarus
Department of General Surgery
Scientific supervisor: C.M.Sc., Associate Professor **N.A. Rogovoy**

Background: Vascular allografts can be used instead of autovenous ones if there are factors limiting its use (lack of autologous vena due to earlier withdrawal, varicose veins, small diameter), as well as a replacement for synthetic prostheses (for example, in case of paraprosthetic infection). Currently, there is no literature data on the preference of using donor vessels in a particular clinical situation, and there is no analysis of the long-term results of their use, which determines the relevance of the topic.

Objective: To evaluate the results of surgical interventions using arterial and venous allographs in the long-term postoperative period.

Materials and methods: A retrospective analysis of medical histories was performed, examination of patients with atherosclerotic disease who underwent reconstruction of the main arteries of the lower extremities using allographs at the 4 Savchenko State Clinical Hospital in Minsk for the period from 08/01/2019 to 01/01/2026. During this period, 40 primary transplantation operations were performed in 40 patients (the study included only patients with chronic arterial insufficiency grade 3 on Fontaine-Pokrovsky). The total number of vascular transplants was 231. The average age of the subjects was – 67,5+/- 6,9 years old. The patency of the shunts was assessed using instrumental imaging techniques (ultrasound Dopplerography results/CT angiography), preservation of the supporting function of the lower extremities.

Results and discussion: 231 allographs were used during reconstructive operations on the arteries of the lower extremities, of which 29% (67) were BSV

allographs and 71% (164) were arterial. Bypass patency after 6 months is 79.5%. After 1 year – 66.66%, 2 years – 64%, 3 years – 64%, 4 years – 60%, 5 years – 38.5%; a capillary pulse of up to 2 seconds and the absence of pain at rest in 90% of observations indicate relief of the phenomenon of lower limb ischemia; the 50th percentile of pain–free walking distance is 100 meters; the average secondary patency of the shunt – 15 +/- 2,5 a month.

Conclusion: at the time of the study, the lower limb was preserved in 22 patients (55%); critical ischemia was stopped; the average secondary patency of the shunt – 15+/-2,5 months; the average distance of pain–free walking after surgery is 100 meters.

Keywords: Allograft, transplantation.

HYPERCALCAEMIA – A DIAGNOSTIC CONUNDRUM

Dr. T. Lavanya
Billroth Hospitals, Chennai, India
Department of Internal Medicine

Background: Hypercalcaemia occurs in up to 4% of the population in association with malignancy, primary hyperparathyroidism, ingestion of excessive calcium and/or vitamin D, ectopic production of 1,25-dihydroxyvitamin D and impaired degradation of 1,25(OH)2D.1Cancer associated hypercalcaemia and primary hyperparathyroidism are the most frequent causes of hypercalcaemia.

Materials and methods: A 58-year-old lady, known to have type 2 diabetes mellitus, chronic kidney disease and dyslipidaemia came with complaints of decreased food intake and generalised tiredness for 2 days. She was admitted at an outside centre with a history of decreased response and urinary incontinence, CT brain done was normal. She also had history of chronic cough since 6 months with weight loss of about 6 kg. On examination, she was irritable, drowsy, afebrile. Blood pressure was elevated (170/80 mmHg). Rest systemic examination was normal, no focal neurologic deficits.

Lab investigations done showed hypercalcaemia (15.2 mg/dL), hyperuricaemia, hypokalaemia, hypophataemia, hypomagnesaemia with raised creatinine. Liver function tests done raised ALP and A/G reversal. She was started on antihypertensives, IV fluids with correction of dyselectrolytaemia and other supportive measures. She had multiple episodes of seizures with decreased response and was intubated, mechanically ventilated. MRI brain done showed Posterior reversible encephalopathy syndrome. Endocrinology opinion sought Calcitonin and Denosumab given. Work up for hypercalcaemia – vitamin D (25 hydroxy-141.7 nmol/L), parathyroid hormone (15.6 pg/mL), urine calcium, serum protein electrophoresis were normal. CT chest showed discrete sub pleural nodules in bilateral upper lobes and right middle lobe. Pulmonology opinion sought to rule out Sarcoidosis as serum ACE (85.6 U/L), ESR (104 mm/h) was elevated. Bronchoscopy done, BAL positive for Influenza A. Transbronchial Lung biopsy was planned, but deferred. Haematology opinion sought, bone marrow biopsy, work up for multiple myeloma done. Immunofixation electrophoresis, free kappa, lambda chains, beta 2 microglobulin were normal. Bone marrow aspirate showed paucicellular marrow with 8% plasma cell. Bone marrow biopsy

was normal. Her blood calcium levels had a rising trend, IV steroids given.PET scan done showed no FDG avid lesions. Autoimmune workup was inconclusive. Patient sensorium improved, was obeying commands and extubated successfully. 1,25 dihydroxy vit D level was elevated (391 pmol/L-toxic level)3. Since all the work up for hypercalcaemia (granulomatous disease, malignancy workup) was negative, a possibility of Hypervitaminosis D was considered. Repeat labs done showed normalised calcium values, rest parameters were within acceptable limits and she was discharged.

Conclusion: Our case was a diagnostic challenge considering there was no documented evidence of significant vitamin D supplementation. A stepwise approach ruling out all the possibilities including malignancy aided in clinching the diagnosis. It brings light to the fact that increased intake of vitamin D supplements by the general population and a growing number of prescriptions of therapeutic doses without proper medical monitoring might result in a greater risk of exogenous hypervitaminosis D, with symptoms of hypercalcaemia. The presentation of our case highlights the importance of calcium level screening prior to vitamin D supplementation.

Keywords: Hypercalcaemia, CT brain, hypervitaminosis, transbronchial lung biopsy.

ORAL HEALTH STATUS AND HYGIENE DETERMINANTS IN CHILDREN: STUDY OE THE 4–12 AGE GROUP

M.T. Mamayunusova
Andijan Branch of Kokand University, Andijan, Republic of Uzbekistan
Department of Therapeutic Dentistry
Scientific supervisor: Assistant **M.A. Aripov**

Background: The dental well-being of the pediatric population directly correlates with the quality of individual oral hygiene, the foundation of which is established in early childhood. Parental involvement and awareness of oral care protocols play a pivotal role in this process. The rising incidence of dental caries and periodontal pathologies is currently linked to excessive dietary sugar consumption and a lack of systemic hygienic control. In the Republic of Uzbekistan, public health protection is a priority, as reflected in several Presidential decrees aimed at developing the healthcare system, disease prevention, and the implementation of modern medical approaches.

Objective: To conduct a comprehensive assessment of oral hygiene status in children under 12 years of age and to identify the determinants influencing these levels.

Materials and methods: The study involved 60 children (age range: 4–12 years), categorized into preschool and primary school-age groups. The hygienic status was assessed using the Simplified Oral Hygiene Index (OHI-S). Additionally, a parental survey was conducted to identify the frequency of hygienic procedures, dietary habits, and the level of parental supervision regarding the child's oral care.

Results and discussion: The study demonstrated that an optimal level of hygiene was characteristic of only a minority of participants. The majority

exhibited “satisfactory” or “unsatisfactory” indicators. Furthermore, a lower level of hygiene was more frequently observed among preschool children compared to primary school students. The primary factors contributing to the deterioration of oral health include irregular tooth brushing, insufficient parental control, and frequent consumption of sugary foods. It was established that active parental involvement in the formation of hygienic habits significantly improves oral health outcomes.

Conclusion: The current level of dental hygiene among children necessitates the intensification of preventive measures. The primary resource for improvement lies in modifying behavioral habits and increasing the medical literacy of families and the attentiveness of specialists. Behavioral factors and the maturity of oral care skills exert a substantial influence. Consequently, there is a need for preventive programs aimed at enhancing the dental literacy of the population. This aligns with the priority areas of state healthcare policy outlined in the decrees of the President of the Republic of Uzbekistan, including the development of preventive medicine and the digitalization of the healthcare system.

Keywords: Oral hygiene, pediatric dentistry, OHI-S index, parental involvement.

IMPACT OF ENVIRONMENTAL FACTORS ON MORBIDITY OF THE POPULATION IN THE KARAGANDA REGION

Zh.D. Nurmuhammedova
Karaganda Medical University, Karaganda, Republic of Kazakhstan
Department of Public Health
Scientific supervisor: C.M.Sc., Professor of the School of Public Health **F.M. Shaizadina**

Background: The Karaganda region stands as one of the most industrially developed territories within the Republic of Kazakhstan. This extensive industrialization results in a significant anthropogenic burden on the environment, subsequently exerting an adverse impact on public health outcomes.

Objective: To evaluate the correlation between environmental determinants and the incidence of morbidity among the population of the Karaganda region.

Materials and methods: A retrospective observational analysis was conducted, utilizing official longitudinal statistical datasets regarding public morbidity rates and environmental contamination indices.

Results and discussion: Industrial emissions in the Karaganda region significantly exacerbate public health risks, primarily driving the pathogenesis of respiratory, cardiovascular, and neurological disorders. Atmospheric monitoring revealed critical exceedances of Maximum Permissible Concentrations (MPC) for particulate matter (PM2.5 and PM10), surpassing norms by 26.6 and 14.2 times, respectively. Furthermore, toxic concentrations of hydrogen sulfide, carbon monoxide, and various carcinogenic heavy metals were recorded. Aquatic degradation is equally severe, with over 47% of w r bodies requiring intensive treatment and 11% deemed entirely non-potable. Contamination by nitrates (>50mg/L), heavy metals, and pathogens directly correlates with increased gastrointestinal diseases and specific risks like

infantile methemoglobinemia. Soil analysis reveals a hazardous accumulation of heavy metals, dioxins, and polycyclic aromatic hydrocarbons. These contaminants undergo trophic transfer through the food chain and infiltrate the human body via direct contact, precipitating systemic toxicity and elevating oncological risks. Furthermore, statistical modeling demonstrates that even a marginal 10 mg/m3 increment in PM2.5 exposure is positively correlated with a significant rise in cardiovascular mortality. Prolonged exposure to sublethal concentrations contributes to chronic intoxication, suppresses immunity, and shortens life expectancy.

Conclusion: Environmental quality serves as a critical determinant of public morbidity and mortality rates. Mitigation of anthropogenic pressures, enhancement of ecological monitoring systems, and rigorous quality control of air, water, and soil resources are imperative.

Keywords: Environmental factors, population morbidity, atmospheric pollution, water quality, soil contamination.

ETIOLOGICAL AND PATHOGENETIC ROLE OF OBESITY IN CARDIOVASCULAR DISEASE

S. D. Oripova
Bukhara State Medical Institute, Bukhara, Uzbekistan
Department of Clinical Pharmacology
Scientific supervisor: PhD, Associate Professor **V.Z. Jalalova**

Background: Obesity is a common chronic metabolic disorder that significantly impacts the cardiovascular system and other chronic diseases. Changes in diet and sedentary lifestyles have increased its global prevalence, affecting 1.7 billion people worldwide in 2012 (WHO). Obesity-related conditions – such as excess visceral fat, inflammation, and metabolic dysfunction – promote insulin resistance, hypertension, and atherosclerosis. Early detection, personalized treatment, and effective preventive measures are therefore essential in modern medical practice.

Objective: To investigate the epidemiological characteristics of cardiovascular diseases associated with obesity and to evaluate the effectiveness of preventive measures.

Materials and methods: For the study, 100 patients with type I obesity and a predisposition to ischemic heart disease were enrolled. Their height and weight were measured using anthropometric methods, and body mass index (BMI) was calculated. Blood tests included lipid profile, endothelin-1 levels, and platelet aggregation. Additionally, all patients underwent echocardiography (ExoKG) to assess cardiac function.

Results and discussion: Considering the association between ectopic fat tissue and cardiovascular risk, various interventions to reduce it were evaluated. While pharmacological agents exist for reducing body fat, lifestyle interventions (physical activity, diet) aimed at preventing obesity also showed effective results. Randomized controlled trials demonstrated that exercises performed 3–5 times per week over 12–52 weeks reduced visceral fat compared to control groups without exercise. Meta-analyses indicated that even without weight loss, exercise reduced visceral fat by an average of 6.1%.

Conclusion: Obesity is one of the major risk factors for cardiovascular disease development. In this study, an epidemiological analysis of 100 patients assessed the relationship between obesity and cardiovascular diseases. Clinical indicators such as BMI, blood pressure, lipid profile, and cardiac function were analyzed. Statistical methods confirmed the impact of obesity on heart disease. Early prevention through healthy lifestyle, diet, and physical activity proved effective. The results indicate that reducing obesity can significantly lower cardiovascular disease risk.

Keywords: Obesity, cardiovascular disease, risk factors, body mass index, blood pressure, lipid profile, cardiac function, prevention, lifestyle, physical activity.

ANALYSIS OF HAND HYGIENE ADHERENCE AMONG MEDICAL STAFF IN A PSYCHIATRIC HOSPITAL

A.Q. Otebayeva
Karaganda Medical University, Karaganda, Kazakhstan
Scientific supervisor: C.M.Sc., Associate Professor **F.M. Shaizadina**

Background: Infection control in psychiatric hospitals is of particular importance due to the closed nature of the wards, long-term patient stays, and their reduced ability to maintain personal hygiene. This increases the risk of healthcare-associated infections. Hand hygiene among staff remains the simplest and most effective preventive measure; however, adherence is complicated by high workload and the specific nature of working with psychiatric patients. Regular compliance monitoring is necessary to develop measures to improve infection safety.

Objective: To assess the level of adherence to hand hygiene rules among medical staff in the Regional Center for Mental Health.

Materials and methods: A covert structured observation was conducted during December 2025 in round-the-clock wards. Nurses and junior medical staff participated. Hand hygiene moments were recorded according to the WHO observation form ("Five Moments"). The number of performed hand hygiene actions and the type of hygiene (alcohol-based hand rub or handwashing with soap) were assessed. Analysis was performed by staff categories and shifts.

Results and discussion: A total of 542 hand hygiene opportunities were recorded. The overall compliance rate was 58%. Hand hygiene was most frequently observed after contact with biological fluids (82%) and after contact with the patient (71%). The lowest rates were noted before contact with the patient (41%) and before aseptic procedures (38%). After contact with the patient's surroundings, the rate was 52%. Nurses adhered to the rules more frequently (63%) than junior staff (49%). In 87% of cases, alcohol-based hand rub was used.

Conclusion: An insufficient level of hand hygiene was identified, particularly during "protective" moments, which poses risks to patients. The results justify the need to implement a multifaceted improvement program: training, visual information, provision of antiseptics, and regular audit with feedback.

Keywords: Hand hygiene, psychiatric hospital, infection safety.

GAIT DECLINE AND THICKENED SPINAL CORD, A DIAGNOSTIC CONUNDRUM

Dr. Pattabiraman Ragul
St. Peter's Medical College, Hospital and Research Institute,India
Department of Orthopedics and Spine Surgery

Background: A 64-year-old Caucasian, smoker, recovery mechanic, previously independent, with a background of recent deep vein thrombosis, was admitted to the neurosurgical ward, with a 2-month history of rapidly progressive gait decline with back and lower limb pain.

On examination, there was subtle encephalopathy, areflexic lower limbs with paresthesia under the level of T10 dermatome and power 2/5 in the lower limbs. MRI spine showed diffuse leptomeningeal enhancement from basal meninges including Vth and VIIth nerves all the way caudally to conus and grossly thickened cauda equina. Multiple attempts at lumbar puncture were unsuccessful, including XRay guided. CT thorax abdomen pelvis was largely unremarkable.

Materials and methods: Further investigations over the following two weeks revealed slightly raised Calcium levels (2.70–2.90), raised IgM (7.5), mildly raised CA 19-9 (64) and positive Syphilis antibodies and Syphilis Treponema pallidum particle agglutination assay (TPPA), which could be either treated or untreated previous syphilis infection, but history could not be obtained from the patient given progression of his encephalopathy. Nerve conduction studies did not entirely exclude CIDP (Chronic inflammatory demyelinating polyradiculoneuropathy).

Three weeks into his admission, given fast clinical deterioration with complete loss of power in the lower limbs and progressive encephalopathy, he was started on high dose steroids.

There was remarkable improvement of the patient's clinical condition, with encephalopathy fully resolving within only 3 days of steroids. When the confusion resolved, the patient confirmed he was successfully treated for syphilis at 18 years of age.

Four days after being on steroids, the electrophoresis result came back showing biclonal IgM kappa paraprotein bands. The patient was referred to haematology, which performed a bone marrow biopsy. The bone marrow biopsy came back the following week suggestive of Waldenstrom's macroglobulinaemia. Surgical biopsy of the lumbar spine was as well performed and showed likely diffuse large B cell lymphoma (DLBCL). He was then transferred to the haematology cancer centre for starting chemotherapy.

Discussion: Diffuse large B cell lymphoma is the most common form of high grade non-Hodgkin lymphoma among adults.1 Cases initially involving the central nervous system have very poor prognosis due to rapid tumour growth and lack of effective treatment.2 However, primary DLBCL of the spinal cord is rare (≤1% of all lymphomas), with 25–30% 5-year survival rate if treatment is started early, which emphasises the importance of timely diagnosis.

In this case, the patient´s initial diagnosis was challenging given the fast progression and many possible differentials (dural AV fistula, sarcoid, CIDP, syphilis or malignancy). Once the treatment was started, there was some initial

improvement, however the patient later progressed to paraplegia secondary to lymphomatous invasion of cauda equina and was palliated 4 months after the initial diagnosis.

Conclusion: This was a challenging case, with many initial plausible differentials that delayed the final diagnosis of primary DLBCL of the spinal cord. Early recognition of clinical features and biochemical markers is critical as it minimises diagnostic delay, ensuring timely management for a favourable prognosis in these patients.

Keywords: Syphilis antibodies, cell lymphoma, limb pain.

FUNCTIONAL RECOVERY IN LUMBOSACRAL DORSOPATHY: MODERN REHABILITATION STRATEGIES

A.I. Qurbonova
Bukhara State Medical Institute, Bukhara, Uzbekistan,
Department of Clinical Pharmacology
Scientific supervisor: PhD, Associate Professor **M.R. Rakhmatova**
Tashkent State Medical University, Tashkent, Uzbekistan
Scientific advisor: PhD, Associate Professor **Y.M. Isamukhametova**

Background: Lumbosacral dorsopathy is one of the pressing issues in modern medicine, widely affecting the working-age population. This condition not only limits physical activity but also negatively impacts the psycho-emotional state of patients. These factors contribute to the chronic progression of the disease and its frequent recurrence. Early initiation and properly organized rehabilitation programs play a crucial role in restoring patients' work capacity, preventing complications, and improving quality of life.

Objective: To evaluate the effectiveness of comprehensive rehabilitation methods in ensuring functional recovery in patients with lumbosacral dorsopathy.

Materials and methods: The study included 40 patients aged 25–55 years. They were divided into two groups: the main group (20 patients) and the control group (20 patients). The main group received a comprehensive rehabilitation program, while the control group received standard treatment. The comprehensive program included therapeutic physical exercises (5 times per week, 30 minutes), electrophoresis, magnetotherapy (10 sessions), manual therapy (2 times per week), and kinesiotherapy. Patients' conditions were assessed using the Visual Analog Scale (VAS) for pain intensity, Schober's test for range of motion, and the Oswestry Disability Index (ODI) for functional status.

Results and discussion: After treatment, pain intensity in the main group decreased from 7.2±0.8 to 2.9±0.6 on the VAS, while in the control group it decreased from 7.1±0.7 to 4.8±0.9. Schober test results improved in the main group from 3.1±0.5 cm to 4.6±0.4 cm, compared to 3.0±0.6 cm to 3.8±0.5 cm in the control group. The ODI score in the main group decreased from 48% to 22%, indicating significant functional improvement, while in the control group it decreased from 47% to 34%.

Conclusions: Comprehensive rehabilitation methods are more effective than standard treatment for patients with lumbosacral dorsopathy. This approach helps reduce pain, restore mobility, and improve patients' quality of life.

Keywords: Lumbosacral dorsopathy, functional recovery, rehabilitation, therapeutic exercise, manual therapy, kinesiotherapy, pain management, Oswestry Disability Index

ACUTE URINARY RETENTION AND CONSTIPATION CAUSED BY MULTI-DERMATOMAL HERPES ZOSTER IN AN IMMUNOSUPPRESSED PATIENT

Dr. Raja Mohamed Fahadh
Bharathi Rajaa Multispecialty Hospital and Research centre, Chennai, India
Department of Infectious Diseases

Background: Herpes zoster (HZ, shingles) is the result of the reactivation of latent varicella zoster virus (VZV) within the dorsal root ganglia. It most commonly manifests as a painful, vesicular eruption confined to a single dermatome. We report on the case of an immunosuppressed patient with multi-dermatomal, lumbar HZ presenting with the rare complication of acute urinary retention and constipation.

Materials and methods: A 71-year old female with a background of rheumatoid arthritis treated with methotrexate, leflunomide, upadacitinib (JAK-inhibitor), and long term steroid therapy presented with a 10-day history of unilateral, painful, vesicular rash in the L1–L4 dermatomes associated with mild fever. Prior to admission, she had been taking simple analgesia and oral aciclovir. Her CRP was elevated at 200 and she was treated as HZ with a superadded bacterial cellulitis with regular analgesia, flucloxacillin and intravenous aciclovir. She reported difficulties with micturition in the 24 h prior to admission and a bladder scan confirmed a residual urine volume of 700 mL. A urinary catheter was inserted with good effect and urine culture was negative. She also reported constipation for the past 3 days. This responded to regular laxatives and phosphate enemas and eased after a few days. Once her neuralgia improved, she was discharged with a temporary catheter for 3 weeks. Follow-up in the urology clinic a month later showed full recovery of bladder function.

Discussion: HZ is caused by reactivation of the varicella zoster virus and those older than 60 years are at much higher risk due to waning cell mediated immunity as one gets older. Immunosuppression is also a risk factor and it is a common side effect of JAK inhibitors. Lumbar and sacral involvement accounts for 8% and 4% of all HZ cases respectively.

Most reported cases of HZ-associated bladder and bowel dysfunction involve the sacral dermatomes. Pathophysiology in these cases includes involvement of the sacral parasympathetic fibres, resulting in detrusor areflexia, reduced colonic peristalsis and anal sphincter dysfunction.1,2 Reports of lumbar HZ associated urinary and bowel problems as in our case are rare and relevant aetiology is less clear. Possible mechanisms include involvement of the lumbar sympathetic nerve fibres, which play an important role in regulating micturition and colonic motility.

Urinary retention typically occurs at the time of rash eruption or 1 week later. Voiding function can take 4–6 weeks to recover and removal of urinary catheter should not take place until the infection has completely resolved.7 Although prognosis is usually excellent with complete recovery of bladder and

bowel function following conservative management, more severe complications including bladder rupture and colonic pseudo-obstruction have been reported although exceedingly rare.

Conclusion: HZ is not always a purely cutaneous eruption, and in the lumbosacral region it is important for the clinician to be aware of the potential urological and gastrointestinal complications especially in the elderly and immunosuppressed patients. Prompt recognition and treatment will improve prognosis and prevent more severe complications such as organ rupture.

Keywords: Lumbosacral region, dermatome, methotrexate, varicella zoster virus.

CEREBRAL VENOUS SINUS THROMBOSIS A DIAGNOSTIC DILEMMA IN AN UNCOMMON PRESENTATION

Dr. Sajitha Begum
AJ Subaitha Medical Centre, Chennai, India
Department of (Neurology) – Neuro Science

Background: Bacterial meningitis is a potentially fatal illness, characterised by high morbidity and mortality rates, with Pneumococcal meningitis being a prominent cause. Although pneumococcal meningitis can result in a range of neurological issues, cerebral venous sinus thrombosis (CVST) is relatively rare. A nationwide prospective cohort study conducted in the Netherlands over 12 years reported the incidence of CVST at 1%.2 This case study highlights a deceptive clinical presentation of CVST secondary to pneumococcal meningitis, emphasising the diagnostic challenges and the importance of early recognition and management.

Materials and methods: A 52-year-old female presented with sudden loss of consciousness following 3 days of headache, earache, and intermittent confusion. Initial examination revealed no obvious cause for her coma, and routine laboratory tests were unremarkable. A computed tomography (CT) scan of the brain revealed multiple ill-defined hypodense areas implying toxoplasmosis, encephalitis or infarction as a diagnosis. A subsequent lumbar puncture done to rule out infective causes turned out to be positive for Pneumococcal meningitis (WBC of 320 cells/ μL, protein of 1.9 g/L, RBC 640, Glucose 0.8, Gram-positive cocci on Gram stain) Further MRI and MR Venogram (MRV) were performed to assess for complications, revealing diffusion restriction indicative of infarction and persistent filling defects in cerebral sinuses suggestive of CVST. Echocardiogram showed vegetation on her mitral valve with mild MR and a diagnosis of subacute bacterial endocarditis was made.

Results and discussion: The multidisciplinary team (MDT) outlined a treatment plan spanning 4 weeks for infective endocarditis, with an additional 2 weeks dedicated to addressing the intracranial infection. Treatment consisted of intravenous vancomycin and gentamicin to target infective endocarditis, alongside chloramphenicol to address the intracranial infection and treatment dose enoxaparin for CVST. Clinical improvement was observed with minimal residual deficit post-therapy completion. She underwent outpatient rehabilitation with the Neuro-therapy team to aid in the restoration of her physical strength.

Conclusion: Cerebral venous sinus thrombosis represents a rare yet potentially life-threatening complication of bacterial meningitis. Recognising its diverse clinical presentations, including deceptive manifestations, is crucial for timely intervention. Clinicians must maintain a high index of suspicion for CVST in patients with meningitis, especially when clinical features deviate from typical presentations. Early diagnosis and effective therapeutic interventions are imperative for optimising patient outcomes and minimising long-term neurological sequelae.

Keywords: CVST, endocarditis, thrombosis, pneumococcal meningitis.

STRESS-ASSOCIATED NOSOLOGIES. IN-VIVO OBSERVATIONS

M.U. Samatov, A.B. Iminova
Andijan Branch of Kokand University, Andijan, Uzbekistan
Department of Dentistry

Background: Stress-related nosologies retain high scientific and practical significance. According to global estimates, approximately 35% of the world's population regularly experiences stress, with a higher rate among women (36.1%) compared to men (33.6%). This high prevalence of stress emphasizes the need for targeted interventions that take into account gender and socioeconomic factors. Finally, stress-associated disorders – including those associated with increased overall mortality and suicide risk, making the need for their research and intervention a public health issue.

Objective: to assess the number of stress-associated nosologies in patients with serum cortisol levels above 40 mcg/ dL.

Material and methods: 37 patients who took a test to determine the level of cortisol from serums blood on an empty stomach were examined at the Kokand University of the Andijan branch (KUAF) at the Department of Normal Physiology. Average age of the patients compiled 37.2±2.2 years.

Results: it was found that 12 patients (32.4%) had gastric ulcer and duodenal ulcer, 7 patients (18.9%) had central serous chorioretinopathy and 3 patients (8.1%) had diabetes mellitus. Also 15 patients (40.5%) had not serious somatic disorders.

Conclusion: The data obtained confirm the key role of chronic stress and hypercortisolemia in formation of wide spectrum of pathological conditions. From a practical point of view, monitoring the level is necessary.

Keywords: Cortisol, stress, central serous chorioretinopathy, gastric ulcer and duodenal ulcer.

PERIODONTIUM AND ITS ROLE IN TOOTH PRESERVATION

M.U. Samatov, Z.V. Usmanova
Andijan Branch of Kokand University, Andijan, Uzbekistan
Department of Dentistry

Background: The periodontium is a complex of tissues that surround and support the tooth in the alveolar socket. The main components of the periodontium include the gingiva, periodontal ligament, cementum of the tooth root, and

alveolar bone. These tissues perform supportive, protective, and trophic functions, ensuring the stability of teeth and the proper functioning of the dentoalveolar system. The condition of the periodontium plays a crucial role in maintaining oral health.

Objective: To study the structure and functions of the periodontium and to determine its role in the preservation of teeth and prevention of dental diseases.

Material and methods: The study was based on the analysis of scientific dental literature, the examination of the anatomical and histological structure of periodontal tissues, and the generalization of data regarding the functions of the periodontium and the causes of its diseases.

Results: The analysis showed that periodontal tissues perform several important functions: they fix the tooth in the alveolar bone, provide shock absorption during chewing, participate in the nutrition of tooth tissues, and protect them from pathogenic microorganisms. Poor oral hygiene and bacterial activity can lead to inflammatory periodontal diseases such as gingivitis and periodontitis, which may result in the destruction of tooth-supporting tissues.

Conclusion: The periodontium plays a key role in the preservation of teeth and the maintenance of oral health. Timely prevention, proper oral hygiene, and regular dental check-ups help prevent periodontal diseases and ensure long-term tooth preservation.

Keywords: Periodontium, gingiva, periodontal ligament, alveolar bone, oral health, periodontal diseases.

ARTIFICIAL INTELLIGENCE IN DENTAL CARIES DIAGNOSIS

M.U. Samatov, B.N. Kambarov
Andijan Branch of Kokand University, Andijan, Uzbekistan
Department of Dentistry

Background: Dental caries is one of the most common oral diseases. The early stages of the disease often go undetected by traditional diagnostic methods, complicating timely treatment. The introduction of artificial intelligence technologies, particularly machine learning and convolutional neural networks, opens up new possibilities for analyzing dental images and improving the accuracy of early caries diagnosis. This helps reduce diagnostic errors and improve the effectiveness of clinical decisions, making the use of digital technologies in modern dentistry highly relevant.

Objective: To evaluate the effectiveness of artificial intelligence in the diagnosis of dental caries.

Materials and methods: The study utilized current scientific publications and dental X-ray image databases dedicated to caries diagnosis using artificial intelligence. Machine learning algorithms, including convolutional neural networks, were used to automatically detect carious lesions. The effectiveness of the AI was assessed by comparing it with clinical diagnostics and traditional methods, which allowed us to determine the accuracy and potential of AI technologies in early caries diagnosis.

Results: An analysis of literature and clinical studies revealed that the use of artificial intelligence algorithms, particularly convolutional neural networks, sig-

nificantly improves the effectiveness of dental caries diagnostics using radiographic images. According to various studies, the sensitivity of AI systems ranges from 88–95%, and the specificity from 85–92% which is comparable to and, in some cases, superior to traditional clinical diagnostics. Artificial intelligence technologies are particularly valuable in detecting the early stages of dental caries, which often go undetected during visual examination or standard radiography. Automated analysis of dental images improves the accuracy of diagnostic data interpretation, reduces analysis time, and reduces the likelihood of subjective diagnostic errors.

Conclusion: The use of artificial intelligence technologies in caries diagnostics demonstrates high accuracy in detecting dental lesions, including early stages that often go undetected by traditional visual and radiographic diagnostics. Machine learning algorithms, particularly convolutional neural networks, provide effective analysis of radiographic images, reducing the likelihood of subjective diagnostic errors and speeding up data interpretation.

Keywords: Artificial intelligence, caries, diagnostics, machine learning; radiography; high-precision neural networks.

ANALYSIS OF PREFERENCES OF FUTURE DENTISTS IN CHOOSING A NARROW SPECIALIZATION

Samatov U.A., Samatov M.U.
Andijan Branch of Kokand University, Andijan, Uzbekistan
Department of Dentistry and Normal Physiology

Background: An analysis of the professional preferences of future dentists shows that when choosing a subspecialty in dentistry, prosthetic dentistry is of greatest interest to bachelor's degree graduates. The development of professional preferences is largely determined by intrinsic motivation. For many students, the decision to pursue a career in dentistry is conscious and is made long before graduation. As they master clinical disciplines, interest in specific areas intensifies and becomes more clearly defined. Moreover, the opinions of faculty members play a significant role in the selection process.

Objective: To determine the level of demand for various areas of dentistry among bachelors of the Andijan branch of Kokand University.

Materials and methods: Survey of 300 undergraduate students in the Faculty of Dentistry at the Kokand University, Andijan Branch (KUAF), was conducted regarding their preferences and future career paths.

Results and discussion: After a thorough data analysis, it was found that 252 students (84%) chose adult dentistry and 48 students (16%) chose pediatric dentistry. Regarding the specifics, 51.6% of participants chose prosthetic dentistry, 25% therapeutic dentistry, 13.4% orthodontic dentistry, and only 10% chose surgical dentistry. 67% of future doctors are interested in working in private clinics, and only 33% of dentists are willing to work in public institutions. After graduation, 50% of students expressed a desire to enroll in a master's program to acquire basic scientific knowledge, and 50% of doctors would like to continue their studies in residency, 15% of which would be abroad. Only 10% of participants expressed a desire to enroll in basic doctoral studies after completing either a master's degree or residency.

Conclusions: The most in-demand field among future dentists is prosthetic dentistry, followed by therapeutic and orthodontic dentistry. A significant proportion of graduates are focused on working in private dental clinics, reflecting current socioeconomic trends in the healthcare system. The choice of specialization is influenced by a combination of factors, among which personal motivation, recommendations from faculty, clinical experience, and prospects for professional development play a key role.

Keywords: Respondents, dentists, master's degree, residency.

OCCURRENCE PERIODONTITIS IN PERSONS WITH SUGAR DIABETES II- TYPE

U.A. Samatov, S.A. Avazbekova
Andijan Branch of Kokand University, Andijan, Uzbekistan
Department of Dentistry

Background: Diabetes mellitus is an endocrine disease characterized by hyperglycemia, which is disadvantage secretions insulin, actions insulin or both. Periodontitis is an inflammatory disease of the periodontal tissues, which in turn leads to tissue atrophy. The incidence of various stages of periodontitis in patients with type 2 diabetes ranges from 12.2% to 25.6%.

Objective: To identify frequency occurrence various stages periodontitis in patients with type II diabetes mellitus

Materials and methods: On base of Andijan branch of Kokand University 100 patients with periodontitis and type II diabetes were examined. For this, we used periodontal depth measurement pocket, definition mobility tooth, polarography method and capillaroscopy method.

Results: During the study, we found that mild periodontitis occurred in 57% of cases, moderate periodontitis in 33% of cases, and severe periodontitis in 10% of cases. Periodontal pocket depth in periodontitis easy degrees varied from 3 to 4 mm, at periodontitis average in the first degree, tooth mobility varied from 4 to 6 mm, and in severe cases, from 6 to 8 mm. In most cases, patients with type 2 diabetes had grade 2-3 tooth mobility.

Conclusions: Like this way periodontitis different degrees occurs in type II diabetes mellitus very often. Further research is needed to determine the correlation.

Keywords: Diabetes mellitus, periodontitis, capillaroscopy, polarography.

ASSESSMENT OF KNOWLEDGE ABOUT CARIES PREVENTION AND ORAL HYGIENE IN STUDENTS 1 COURSE DENTISTRY FACULTY

U.A. Samatov, A.B. Iminova
Andijan Branch of Kokand University, Andijan, Uzbekistan
Department of Dentistry

Background: Modern dentistry reached significant level of development that allows providing doctors, students and patients with the necessary knowledge about the etiology, pathogenesis, and treatment of major dental diseases. However, despite on the progress made, truly effective methods for preventing the most common oral diseases such as dental caries and inflammatory periodontal diseases have not yet been developed.

Objective: To analyze Kokand university Andijan branch (KUAF) 1st students of the Faculty of Dentistry level of knowledge on the rules of oral hygiene and risk factors for the development of carious cavities.

Materials and methods: 73 first-year students from the Faculty of Dentistry at the Andijan branch of Kokand University (KUAF) were surveyed. The questionnaire included 17 questions on preventive dentistry, healthy lifestyle, and oral health.

Results: The data collection revealed that of all the toothpastes, students preferred Colgate (61%), Blendamed (25%), Lacalut (11%), and others (3%). Among toothbrushes, the leading brand was Oral-B (43%), followed by Colgate (41%) and others (16%). The survey revealed the following bad habits: regular cigarettes (21%), Smoking nasvay (9%) and the absence of bad habits (70%). The survey revealed that 30% practice proper hygiene, 50% occasionally, and 20% do not practice it at all.

Conclusion: KUAF 1st year students of the Faculty of Dentistry demonstrated a high level of knowledge on the issue's preventive dentistry. When conducting analysis of result, it's clear, what at training it follows to introduce interactive teaching methods.

Keywords: Survey, hygiene, caries.

SEVERE HYPOALBUMINEMIA WITH ASCITES, PLEURAL EFFUSION, AND ANASARCA FOLLOWING SPONTANEOUS BACTERIAL PERITONITIS (CASE REPORT)

Dr. Sindhu Prasanna, Dr. Sathees Kumar
Government General Hospital, Sangareddy, Telengana, India
Department of General Surgery
Scientific supervisors: Head of the department, MBBS, MS **Dr. Vinay Sagar**, Associate professor, MBBS, MS **Dr. Ravi Kumar,** Assistant professor, MBBS, MS **Dr. Santhosh Patil**, Assistant professor, MBBS, MS **Dr. Nikith Patil**

Background: Spontaneous bacterial peritonitis, although excluding surgically treatable intra-abdominal pathology, is not devoid of morbidity. Peritoneal handling, postoperative inflammatory response, and aggressive fluid resuscitation may precipitate significant hypoalbuminemia. This can lead to third-space fluid accumulation manifesting as ascites, pleural effusion, and generalized edema.

Case presentation: We report a case of an elderly patient presented to casualty with complaints of abdominal pain with distention, fever, guarding and rigidity on clinical examination. Ultrasound abdomen s/o ascites and suspicious of perforation peritonitis following which emergency exploratory laparotomy was done.

Intra operatively 500ml of pus was present in the peritoneal cavity with no perforation or other surgically treatable intra-abdominal pathology was identified. We suspected it to be spontaneous bacterial peritonitis due to decreased immunity and elderly age. Peritoneal lavage was done and bilateral ADK drains placed to help the patient to drain out the collection. Post operatively patient was started on higher antibiotics.

In the postoperative period, the patient developed progressive abdominal drain collection, bilateral pleural effusion, generalized edema (anasarca). Laboratory investigations revealed significantly reduced serum albumin levels with preserved hepatic function. Cardiac and renal function analysis remained within normal limits. Inflammatory markers were not suggestive of ongoing sepsis. After excluding other etiologies, postoperative hypoalbuminemia was considered the primary contributing factor.

Materials and methods: The patient was managed conservatively with:

– Intravenous 20% human albumin infusion combined with loop diuretics

– High-protein nutritional supplementation

– Maintaining negative fluid balance by strict fluid input–output monitoring

Therapeutic pleural tapping was performed for symptomatic relief. Serial monitoring demonstrated gradual correction of serum albumin levels results in progressive resolution of ascites, pleural effusion, and peripheral oedema.

Conclusion: Severe hypoalbuminemia following exploratory laparotomy can occur secondary to postoperative inflammatory capillary leak and protein redistribution. This may result in significant third-space fluid accumulation. Early recognition, prompt nutritional rehabilitation, and judicious oncotic correction are critical to prevent unnecessary re-intervention prolonged morbidity and improve clinical outcomes.

Keywords: Fluid resuscitation, hypoalbuminemia, ascites.

COMPARATIVE ANALYSIS OF SURGICAL INTERVENTION OUTCOMES IN ANAL FISSURES

M.F. Seyidov, V.A. Rahimov, J.N. Ramazanov
Azerbaijan Medical University, Baku, Azerbaijan
3rd Department of Surgical Diseases
Scientific supervisor: C.M.Sc., Associate Professor **V.A. Rahimov**

Background: Anal fissure ranks third in frequency among colorectal pathologies, following hemorrhoids and colitis. A primary challenge in surgical treatment is accurately determining the indications for sphincterotomy or deciding when to forgo the procedure.

Objective: To improve treatment outcomes for patients with anal fissures by employing an individualized approach to the indications and contraindications for various surgical intervention methods.

Materials and methods: A retrospective analysis was conducted on the examination and treatment of 263 patients with acute and chronic anal fissures. The cohort consisted of 169 females and 94 males. Location of the fissures was distributed as follows: 84.2% posterior, 9.6% anterior, and 6.2% a combination of both. Additionally, 84 patients (21.7%) presented with concomitant proctological conditions (hemorrhoids, chronic paraproctitis, rectal fistulas, or colonic polyps) requiring simultaneous surgical correction. Treatment efficacy was evaluated based on clinical data and follow-up ambulatory observations.

Results and discussion: Conservative Treatment: Of the 27 patients with acute fissures, 20 (74.07%) achieved recovery through complex conservative therapy, including myotropic antispasmodics, non steroidal anti-inflammatory

drugs (NSAIDs), and local nitroglycerin ointment. Surgical Intervention: A total of 237 patients (90.11%) underwent surgery. In 28 cases (11.81%) where persistent internal sphincter spasm was absent, the fissure was excised without sphincterotomy. Sphincterotomy Techniques: Among the 209 patients who underwent sphincterotomy: 86 received lateral "closed" calibrated sphincterotomy. 44 received posterior "open" calibrated sphincterotomy. 79 patients with a history exceeding six months, persistent pain, and internal sphincter hypertonicity underwent calibrated sphincterotomy combined with the excision of the fissure, the causative crypt, and the "sentinel" pile via two crescentic incisions. 192 patients (91.87%) showed no signs of recurrence, though some experienced mild pain, anal itching, discomfort, or signs of cryptitis and proctitis. For 30 patients (14.35%), these complaints resolved with conservative measures within 3 months, while 8 patients (3.83%) had persistent proctalgia or itching. Recurrence occurred in 17 patients (8.13%) within 3–12 months. The best functional results were observed following lateral "closed" calibrated sphincterotomy. Notably, no patients exhibited clinical signs of fecal or gas incontinence.

Conclusion: Surgical intervention is indicated when the medical history exceeds 3 months and conservative treatment for 2 weeks proves ineffective. Calibrated sphincterotomy is a vital component of surgical treatment when sphincter hypertonicity is present. Calibrated incision and partial denervation of the internal sphincter facilitate rapid wound healing, reduced pain intensity, and early rehabilitation. Individualized indications and adherence to technical precision significantly reduce the risk of postoperative incontinence.

Keywords: Anal fissure, anal sphincter, colorectal, calibrated sphincterotomy.

FEATURES OF MICROBIAL CONTAMINATION OF PRESERVATIVE SOLUTIONS FOR ORGAN AND TISSUE PRESERVATION

A.M. Shestiuk, A.S. Karpitski, R.P. Lavrinuk
Brest Clinical Regional Hospital, Brest, Belarus

Introduction: Tissue and organ transplantation remains the primary method of treating various diseases, and the effectiveness of transplantation can range from saving lives (e.g., in cases of catastrophic burns, terminal forms of heart or liver disease) to improving quality of life. Microbial contamination of donor organs and tissues is one of the most controversial and ambiguous aspects associated with both the process of preparing brain-dead patients for explantation and the procurement and storage of donor material. Contamination of the preservation solution can occur at different stages of donor conditioning, which may be due to hidden infections in the donor, as well as contamination from the environment, including materials and reagents used for treatment.

Objective: To investigate the microbiological landscape of preservation solutions for organs and tissues obtained during multi-organ procurement.

Materials and methods: Samples of the preservation solution used to store (at a temperature of approximately +4°C) 51 pulmonary artery grafts obtained from donors during multi-organ procurement were analysed. These vascular grafts were initially placed in a preservation solution "Custodiol" immediately after organ procurement. Prior to organ and tissue procurement, potential donors were

in the intensive care unit. Two days after placement in the solution, samples of the same fluid were tested for the presence of microorganisms.

Results and discussions: It was found that in 11 of the 51 samples tested (21.5%), the preservation medium was infected. A more detailed bacterial analysis identified the following pathogens:

• In 4 cases (7.7%), the bacterium Klebsiella pneumoniae was detected.

• In 3 cases (5.8%), Acinetobacter baumannii predominated.

• In 2 cases (4%), Enterococcus faecalis was detected.

• In 2 cases (4%), mixed infection was observed: Staphylococcus haemolyticus and Enterococcus faecalis simultaneously.

Brain death triggers numerous pathological processes that directly disrupt homeostasis and inevitably lead to failure of organs intended for transplantation. These processes are likely to be compounded by the length of time the patient spends in specialised units where intensive medical care is provided. In our observations, contamination of the preservation solution with Ac.baumannii was detected on the 7th day (95% CI 7.2-7.7) of the donor's stay in the intensive care unit, and Kl.pneumoniae on the 8th day (95% CI 7.5-8.5), which differed significantly from sterile samples – 3 days (95% CI 2-5) (Pearson's chi-square, p=0.010) and indicates perimortem bacteraemia.

Conclusions: The species spectrum of microbial contamination of the preservative solution is mainly realised through bacterial contamination with microorganisms such as Kl. pneumoniae and Ac. baumannii, especially when the donor is kept for a long time in wards with highly aggressive, invasive medical care.

Keywords: Pulmonary artery, preservation solution, microbial contamination.

OUTCOMES OF SURGICAL TREATMENT OF PATIENTS WITH LUNG CANCER DEPENDING ON THE LEVEL OF REGIONAL LYMPH NODE INVOLVEMENT IN THE PRESENCE OF TUMOR INVASION OF THE PULMONARY ARTERY

A.M. Shestiuk, A.S. Karpitski, I.N. Piskunovich
Brest Clinical Regional Hospital, Brest, Belarus

Background: Mortality from malignant neoplasms of the bronchopulmonary system exceeds the total number of deaths caused by colon and rectal cancer, breast cancer, and prostate cancer. Currently, the most effective strategies for increasing the life expectancy of patients with this disease are early detection and prompt removal of the tumor in the early stages of development. At the same time, the effectiveness of treatment for locally advanced forms of lung cancer, particularly when the pulmonary artery is affected, has been little studied.

Objective: To evaluate the outcomes of surgical treatment of patients with lung cancer involving the pulmonary artery depending on the level of regional lymph node involvement.

Materials and methods: The treatment outcomes of 2,365 patients with lung cancer (LC). Among the 2,365 patients diagnosed with LC, 184 (7.8%) had pulmonary artery involvement. Of the 184 patients, 51 (27.7%) underwent surgical treatment.

Results and discussion: In the absence of metastatic disease in the regional lymph nodes (descriptor N0), radical surgery was performed in 7 of 51 patients (13.7%). The mean age was 64.01±7.77 years. The mean survival time was 1103.8±123.4 days.

Among patients with LC involving the pulmonary artery in combination with metastases in the ipsilateral peribronchial and/or ipsilateral hilar lymph nodes and intrapulmonary nodes (descriptor N1), surgery was performed in 27 (52.9%). The mean age was 65.06±8.17 years. The mean survival time was 1513.7±212.0 days.

Metastases in the ipsilateral mediastinal and/or subcarinal lymph nodes, corresponding to the N2 criterion, were treated with radical surgery in 17 patients (33.3%). The average patient age was 63.53±6.43 and the average survival time was 872.7±116.7 days.

Surgery was not performed when the N3 descriptor was established. The average survival time was 190.6±43.7 days.

Conclusions: Involvement of the mediastinal and/or subcarinal lymph nodes due to tumor invasion of the pulmonary artery in cases of lung cancer leads to a decrease in the average survival time after surgery.

Keywords: Pulmonary artery, lung cancer, lymph nodes.

BONE OSTEOPENIA ON THE BACKGROUND OF CA-P DEFICIENCY

Sultanova Gunel
Azerbaijan Medical University, Baku, Azerbaijan
Department of Pathological Physiology

Background: Today, diabetes is not a serious problem and its importance is showing day by day. Diabetes mellitus (DM) remains a medical and social problem for healthcare systems around the world. In modern times, there is a rapid spread of DM, an increase in disability and mortality due to this disease. The disease has a number of chronic exacerbations, of which osteopenia is the least studied, and therefore a new perspective on pathogenesis is essential. One of the main mechanisms of cell damage is the intensification of free radical reactions, which occurs as a result of an imbalance between prooxidants and antioxidants. Ultraviolet radiation as a prooxidant factor can be cited as an example of vitamin D depletion and Ca-P insufficiency. An example of a non-enzymatic antioxidant is ECA, while an example of an enzymatic antioxidant is glutathione and catalase. Normal levels of vitamin D and Ca-P play an important role in preventing the development of metabolic disorders. Vitamin D is involved in regulating blood sugar levels and increases the function of pancreatic cells and their sensitivity to insulin.

Objective: Obtaining a diabetes model using alloxan and determining concentration Vit D, Ca-P, MDA and catalase in blood and lymph and interrelation among of them.

Materials and methods: Materials and methods. First, the relevant indicators in blood and lymph were studied in rabbits included in the I control group. In the next stage, these examinations were performed on rabbits in which the DM (diabetes mellitus) model was created (II control group). Then, the effect of the application of antidiabetic properties on the studied indicators in blood and lymph was studied

in the DM modeled rabbits included in the experimental groups (experimental groups 3,4,5) During the studies, 5% alloxan monohydrate solution was injected into the peritoneal cavity of experimental rabbits at a dose of 100 mg/kg to create a diabetes model.

Results and discussion: During the study, after the complex administration of the drugs used in the treatment of animals with DM (diabetes mellitus), changes in the level of oxidative stress indicators were determined in both fluid environments of the animals. As a result of the complex treatment, a continuous decrease in the level of MDA and an increase in the level of catalase were observed in both the blood and lymph of rabbits with DM. In the experiment, an increase in velocity of lymph was also observed in the thoracic lymph flow after the complex administration of the drugs used in the treatment of animals modeled with DM.

Conclusion: Oxidative stress indicators increase in diabetes mellitus, and treatments aimed at the pathogenesis result in weakening the process. Adding Vit D, Ca and P to food for pathogenetic correction in experimental animals results in an increase in antioxidative indicators.

Keywords: Diabetus Mellitus, osteopenia, Ca-P.

ENVIRONMENTAL SITUATION IN SEMIPALATINSK AFTER NUCLEAR TESTS

Tileumuratkyzy Altynai
Astana Medical University, Astana, Kazakhstan
Department of Medical Ecology
Scientific supervisors: **G. Asankyzy, G. Bolshevikova**

Background: The Semipalatinsk nuclear test site in Kazakhstan worked from 1949 to 1989. Over 450 nuclear tests happened during this time. As a result of these analyses, radioactive and chemical substances remained in the soil, water and plants. Many of these substances stay in the environment for long periods of time and slowly accumulate in ecosystems. In some places, air pollution levels are 10–15 times higher than normal. Chemical and radioactive elements can move through plants and animals, and can affect the food we eat. Because of this, the environment and the people who live in this area suffer. Even after many years, this land remains dangerous. The highest levels of pollution are found in the northern and central parts of the test site.

Objective: The goal of this study is to identify the most polluted areas and measure the levels of radioactive elements in soil, water, and plants. This will help understand the state of the environment in the region.

Materials and methods: The information was taken from scientific articles and government reports. Soil, water and plant samples were collected in the northern, central and southern zones of the experimental site. The study measured concentrations of cesium-137, strontium-90 and iodine-131. Samples are collected in different seasons. Radiation was measured using portable dosimeters and spectrometers. The data were analyzed using basic statistics. Maps were created to show how pollution spread. The northern zone accounts for approximately 45% of contaminated areas, the central zone for 35%, and the southern zone for 20%.

Results and discussion: The northern zone has the highest contamination levels: cesium-137 is approximately 200 Bq/kg, strontium-90 is 50 Bq/kg, and

iodine-131 is 15 Bq/kg. In the central zone, contamination levels are lower: cesium-137 is 150 Bq/kg, strontium-90 is 35 Bq/kg, and iodine-131 is 10 Bq/kg. Pollution levels are lowest in the southern zone. Plants absorb some of the radioactive elements, up to 30–40% of their soil concentration. Maps and statistics show how contamination spreads across the site. These results confirm the long-term environmental impact.

Conclusion: The Semipalatinsk test site has caused serious environmental contamination. Radioactive substances remain in the soil, water, and plants, affecting ecosystems and food chains. Regular environmental monitoring and nature restoration programs are crucial for the future of the region.

Keywords: Nuclear tests, Semipalatinsk, radioactive contamination.

IMPACT OF ENVIRONMENTAL POLLUTION ON PULMONARY DISEASE, AND PNEUMONIA: EPIDEMIOLOGICAL AND CLINICAL ANALYSIS

M.R. Tukhtaeva
Bukhara State Medical Institute, Bukhara, Uzbekistan
Department of Clinical Pharmacology
Scientific supervisor: PhD, Associate Professor **M.R. Rakhmatova**

Background: Respiratory diseases such as bronchitis, chronic obstructive pulmonary disease (COPD), and pneumonia remain highly prevalent worldwide. Increasing air pollution and environmental degradation are recognized as important contributors to their incidence, severity, and progression.

Objective: To evaluate the impact of environmental factors (air pollution, industrial and transport emissions) on the prevalence and clinical-epidemiological characteristics of bronchitis, COPD, and pneumonia.

Materials and methods: A comparative study was conducted among adults (≥18 years) diagnosed with bronchitis, COPD, or pneumonia in regions with different levels of environmental pollution. Clinical data, medical history, and disease duration were analyzed. Environmental data were obtained from official monitoring systems. Statistical and epidemiological methods were used to assess associations between pollution levels and disease indicators.

Results and discussion: The study showed that regions with high environmental pollution have more patients with bronchitis, chronic obstructive pulmonary disease, and pneumonia. Air pollution and industrial and transport emissions were strongly linked to greater disease severity, chronic progression, and recurrence.

In environmentally stable regions, patients generally had milder courses with fewer chronic and recurrent cases. In highly polluted areas, dyspnea, severe cough, and reduced pulmonary function were more common.

Environmental factors also affected overall patient condition, disease stage, and response to preventive measures, highlighting their major role in respiratory disease prevalence and clinical course and the need to consider them in regional prevention and treatment strategies.

Conclusion: Environmental factors, particularly air pollution and industrial emissions, significantly influence the prevalence and clinical course of bronchitis,

COPD, and pneumonia. Consideration of regional environmental conditions is essential for effective prevention and management strategies.

Keywords: Environmental factors; air pollution; bronchitis; chronic obstructive pulmonary disease; pneumonia; respiratory diseases; epidemiology; pulmonary function; public health.

ANTHROPOMETRIC PARAMETERS OF BONE TISSUE AND THEIR CLINICO-PHARMACOLOGICAL SIGNIFICANCE

M.T. Tursunbaeva
Bukhara State Medical Institute, Bukhara, Uzbekistan
Department of Clinical Pharmacology
Scientific supervisor: C.M.Sc., Associate Professor **M.R. Rakhmatova**

Background: Bone tissue is a dynamic structure supporting the body and regulating mineral metabolism. Its anthropometric traits – length, thickness, density, and morphology – reflect individual status and affect drug response. Assessing these parameters guides personalized prevention and treatment of skeletal disorders.

Objective: To study anthropometric parameters of bone tissue and their individual variations to determine clinico-pharmacological relevance, including assessment of bone health, metabolism, and drug response for personalized prevention and therapy.

Materials and methods: Morphofunctional properties of bone tissue and their pharmacological significance were assessed through literature analysis, physical activity evaluation, anthropometry, bioimpedance analysis, and osteodensitometry. Data were statistically analyzed considering internal factors (age, sex, hormonal status, genetic predisposition) and external factors (physical activity, environmental influences). Clinico-pharmacological approaches were used to evaluate individual drug efficacy and effects on bone condition. This methodology allowed detailed analysis of bone changes and development of personalized pharmacological recommendations.

Results and discussion: Bone anthropometric characteristics – length, thickness, density, and morphological proportions – are significantly influenced by individual factors, including age, sex, hormonal status, physical activity, and environment. Bioimpedance and densitometry data helped identify pathological changes in bone mass and density, as well as individuals at high risk of osteoporosis and osteoarthritis. Key challenges included accounting for individual variability in drug response, complex multi-factorial environmental effects, and limitations in clinical observation for pharmacological evaluation.

Conclusion: Anthropometric parameters of bone tissue define its morphofunctional status and serve as critical indicators of individual drug response. Bioimpedance, osteodensitometry, and clinico-pharmacological assessment provide an evidence-based framework for the prevention of skeletal disorders and the development of personalized therapeutic strategies.

Keywords: Bone tissue, anthropometric parameters, skeletal system, osteoporosis, factors, physical activity, bone health, individual, pharmacological interventions.

MICRONUTRIENT DEFICIENCY IN WOMEN OF REPRODUCTIVE AGE IN ENVIRONMENTALLY UNFAVORABLE REGIONS

M.T. Tursunbaeva
Bukhara State Medical Institute, Bukhara, Uzbekistan
Department of Clinical Pharmacology
Scientific supervisor: PhD., Associate Professor **V.Z. Jalalova**

Background: Micronutrient deficiency in women of reproductive age remains an important issue, especially in environmentally disadvantaged regions. Deficiencies of iron, iodine, vitamin D, zinc, and selenium increase the risk of anemia, reproductive disorders, and reduced immunity. Studying this problem is essential for developing effective preventive and health-promoting measures.

Objective: To summarize existing data on micronutrient deficiency in women of reproductive age in the Priaralye region and environmentally disadvantaged areas of Azerbaijan, and to assess preventive and health-promoting strategies.

Materials and methods: This review analyzed recent publications (10–15 years) on micronutrient deficiency in women of reproductive age living in the Priaralye region and environmentally disadvantaged areas of Azerbaijan. Focus was on the prevalence of key micronutrient deficiencies (iron, iodine, vitamin D, zinc, and selenium), risk factors, and potential preventive and health-promoting strategies. Both descriptive and comparative studies, as well as reviews, were included to identify current trends and practical recommendations.

Results and discussion: Literature analysis shows a high prevalence of deficiencies in iron, iodine, vitamin D, zinc, and selenium among women of reproductive age in the Priaralye region and environmentally disadvantaged areas of Azerbaijan. Key risk factors include environmental pollution, poor nutrition, and stress. These deficiencies are associated with anemia, reproductive disorders, and reduced immunity. Preventive measures, such as balanced nutrition, phytotherapy, and specialized phyto-complexes, can improve health outcomes. Regular monitoring and screening in these regions are essential for early detection and planning of health-promoting programs.

Conclusion: Micronutrient deficiency is common among women of reproductive age in the Priaralye region and environmentally disadvantaged areas of Azerbaijan. Deficiencies in iron, iodine, vitamin D, zinc, and selenium highlight the need for prevention, regular monitoring, and health-promoting interventions.

Keywords: Micronutrient deficiency, iron-deficiency anemia, iodine-vitamin D, zinc, selenium, women of reproductive age, environmental stress, traditional medicine.

ATRIAL FIBRILLATION IN ARTERIAL HYPERTENSION AND OBESITY: CLINICAL FEATURES

R.S. Tursunov
Bukhara State Medical Institute, Bukhara, Uzbekistan
Department of Clinical Pharmacology
Scientific supervisors: PhD, Associate Professor **K.I. Juraeva,**
PhD, Associate Professor **N.X. Muminova**

Background: Atrial fibrillation is one of the most common arrhythmias and often associated with arterial hypertension and obesity. The combination of these conditions aggravates the disease, increasing the risk of thromboembolic

complications and cardiovascular mortality. Understanding the characteristics of atrial fibrillation in this patient group is crucial for optimizing diagnosis, treatment, and prevention of complications.

Objective: To investigate the clinical features of atrial fibrillation in patients with arterial hypertension and obesity.

Materials and methods: The study included patients with atrial fibrillation and concomitant arterial hypertension and obesity. Clinical history, blood pressure, body mass index, electrocardiography, echocardiography, and laboratory parameters were assessed. The course of the disease, the frequency of complications, and the administered were analyzed.

Results and discussion: In patients with atrial fibrillation, arterial hypertension, and obesity, worsening of the disease course, an increase in the frequency of hospitalizations and complications (strokes, heart failure) were observed. Body mass index (BMI) correlated with the severity of atrial fibrillation and the effectiveness of antiarrhythmic therapy. Most patients experienced left ventricular dysfunction and development of heart failure. Standard treatments, including anticoagulation and antiarrhythmic therapy, have not always produced satisfactory results, highlighting the need for an individualized approach to treatment these patients.

Conclusion: Atrial fibrillation in patients with arterial hypertension and obesity is associated with worsening of the condition and an increase in the number of complications. Body mass index affects the severity of the disease and the effectiveness of treatment. An individualized approach to treatment improves the prognosis and preventing complications.

Keywords: Atrial fibrillation, arterial hypertension, obesity, body mass index, antiarrhythmic therapy, heart failure, stroke, anticoagulation therapy, complications, clinical features.

CLINICAL AND DERMOSCOPIC CHARACTERISTICS OF NEVI IN CHILDREN

N.M. Vokhidova
Tashkent State Medical University, Tashkent, Uzbekistan
Department of Dermatovenerology
Scientific supervisor: C.M.Sc., Associate Professor **A.V. Mun**

Background: Melanocytic nevi are common in childhood and demonstrate age-related clinical changes. The increase in their number with age and the potential risk of malignant transformation of some types necessitate timely diagnosis. The use of dermoscopy improves the accuracy of nevi assessment and plays an important role in the early detection of pathological changes and optimization of treatment in children.

Objective: The aim of the study is to examine the available data on the clinical and dermatoscopic characteristics of nevi in children as well as to assess the role of dermoscopy in diagnosis and monitoring.

Materials and methods: This review analyzes publications from the last 10–15 years devoted to the clinical and dermatoscopic characteristics of nevi in children from PubMed, Scopus, and Web of Science databases. The focus was on the types of nevi, age characteristics and the role of dermoscopy in diagnosis and monitoring.

Results and discussion: An analysis of the literature data shows that the most common types of nevi patterns in children are spherical, reticular, homogeneous, and star-shaped. In young children, spherical structures predominate while reticular and mixed types increase with age. Dermoscopy allows for a more accurate assessment of the morphology, identification of atypical features, and reduction of unnecessary excisions. Although melanoma is rare, it can present with atypical clinical and dermatoscopic features, highlighting the importance of regular surveillance. Overall, understanding age-related dermatoscopic changes is critical for early diagnosis and optimal follow-up in pediatric practice.

Conclusion: Moles in children demonstrate age-related clinical and dermatoscopic changes. Dermoscopy improves diagnostic accuracy, helps identify atypical features, and optimizes follow-up, reducing unnecessary interventions. Understanding the dynamics of age-related nevi is important for the early detection of pathological changes.

Keywords: Pediatric nevi; clinical characteristics; dermoscopy; pigmentation; clear borders; cobblestone pattern.

PROSTATE-SPECIFIC ANTIGEN IN PROSTATE CANCER DIAGNOSTIC FOR PATIENTS FROM REPUBLIC OF BELARUS

K.S. Vorobyova
Belorussian State Medical University, Minsk, Belarus
Department of Pathological Anatomy and Forensic Medicine
with Advanced Training Courses and Retraining
Scientific supervisor: C.M.Sc., Associate Professor **T.A. Letkovskaya**

Background: Prostate cancer (PCa) is the second most common cancer among men worldwide in 2022. According to WHO projections, by 2050, incidence and mortality from PCa will increase by 1.9 and 2.4 times, respectively. The introduction of PSA screening and expanded screening using MRI by 2025 reduced the underdiagnosis of aggressive forms of PCa by 5-10%. However, the problem of overdiagnosis of PCa is becoming increasingly common. PSA density (PSAD) is a diagnostic indicator proposed in the 1990s. PSAD is calculated as the ratio of PSA in ng/mL to prostate volume in cm^3. This criterion allows one to presume the presence of PCa when the detection level is >0.15 ng/mL/cm^3, but its accuracy depends on the patient's age and ethnicity.

Objective: To clarify the need to change the threshold value of PSAD for the diagnosis of prostate cancer for patients from the Republic of Belarus.

Materials and methods: The study was conducted using data from 70 inpatient medical records at the Republican Scientific and Practical Center of Oncology and Medical Radiology for the period from 2023 to 2025, including data from the Cancer Registry of the Republic of Belarus, as well as histological specimens. The specimens were examined using a light microscope, as well as high-quality digital copies obtained using a KF PRO 400 KFBIO histology scanner. Research methods included morphological and statistical analysis. Data processing was performed using Excel.

Results and discussion: The average age of patients was 61.42±0.61 years. Average PSA value in patients was 12.56±1.54 ng/ml. The average prostate volume in the study was 59.56±9.31 cm^3. According to the pTNM classification, patients were classified as T2c (44/62.9%), T3a (14/20.0%), and T3b (13/18.6%). Fluctuations in PSAD were observed within the range from 0.03 to 1.16 ng/ml/cm^3 (mean value – 0.27±0.03 ng/ml/cm^3).

Conclusion: PSAD fluctuations differ significantly from the pan-European threshold of 0.15 ng/mL/cm^3. Therefore, the PSAD criterion requires recalculation for the cohort of patients from the Republic of Belarus.

Keywords: Prostate cancer, prostate-specific antigen, PSA density.

ASSESSING THE RISK OF MOBILE ADDICTION AMONG MEDICAL STUDENTS

A.A. Yakubouskaya
Belarusian State Medical University, Minsk, Belarus
Department of Pathological Physiology
Scientific supervisor: Senior Lecturer **E.N. Chepeleva**

Background: Smartphones are currently an integral part of everyday life for people of all ages. Excessive smartphone use can lead to addiction and its potentially detrimental impact on health and academic performance. Smartphone addiction is associated with a wide range of negative consequences, including decreased self-esteem and self-control, sleep disturbances, and deterioration in academic performance.

Objective: To assess the risk of mobile addiction among medical students.

Materials and methods: To assess the level of mobile addiction, an anonymous survey was conducted among 49 third-year students at the Belarusian State Medical University. The respondents' ages ranged from 18 to 23 years (mean age: 19.69±0.59 years). The "Mobile Addiction Risk Assessment" test, widely available in open online sources, was used as a diagnostic tool. The questionnaire included 21 questions; each affirmative answer was worth 1 point. The total score is directly proportional to the risk of developing mobile addiction. Statistical processing of the results was performed using Microsoft Excel 2024.

Results and discussion: Fifteen (30.6%) young men and 34 (69.4%) young women participated in the study. The average score on the "Mobile Addiction Risk Assessment" test was 8.2±3.4, which corresponds to a predominantly low risk of developing addiction. The distribution of respondents by risk categories was as follows: low risk (less than 6 points) – 28.6% (n=14); low risk (7–12 points) – 61.2% (n=30); Moderate risk (13–18 points) – 10.2% (n=5). No cases of high risk of mobile addiction (19–21 points) were recorded in the survey sample.

Conclusion: It was found that 28.6% of respondents had a low risk of developing mobile addiction, 61.2% had a negligible risk, and 10.2% had a moderate risk of developing mobile addiction.

Keywords: Mobile addiction, smartphone, medical students.

PREVALENCE AND PATTERN OF EYE (VISUAL) SYMPTOMS ASSOCIATED WITH LONG-TERM MOBILE DEVICE USE AMONG MEDICAL STUDENTS

A.A. Yakubouskaya
Belarusian State Medical University, Minsk, Belarus
Department of Pathological Physiology
Scientific supervisor: Senior Lecturer **E.N. Chepeleva**

Background: Despite the expanding functionality of smartphones, which significantly facilitates the daily lives of modern people, their long-term use is associated with the development of headaches, fatigue, neurological disorders, and visual impairment.

Objective: To assess the prevalence and pattern of eye (visual) symptoms associated with long-term mobile device use among medical students.

Materials and methods: An anonymous survey was conducted among 71 Bashkir State Medical University students aged 18–23 years. After excluding 23 respondents with existing visual impairments (before using mobile phones), data on the duration of smartphone use and associated ophthalmological symptoms were analyzed.

Results and discussion: The gender distribution of the surveyed students was as follows: 23 (47.9%) men and 25 (52.1%) women. It was found that 37.5% of the surveyed medical students use mobile phones for more than 6 hours per day. The following ophthalmological symptoms were observed among the surveyed medical students when using smartphones: fatigue was noted in 23 people (47.9%), lacrimation in 13 people (27.1%), dry eyes in 12 people (25.0%), and itching in 10 people. (20.8%), redness – in 10 people (20.8%), fog (veil) before the vision – in 4 people (8.3%), double vision – in 2 people (4.2%). The absence of any visual symptoms was observed in 20 people (41.7%), of which 7 people (35.0%) used a mobile phone daily for 6-8 hours and 2 people (15.0%) used it for more than 8 hours.

Conclusion: The most common visual symptoms associated with smartphone use in the studied medical students were fatigue (47.9%), lacrimation (27.1%), dry eyes (25.0%), itching (20.8%), and redness of the eyes (20.8%).

Keywords: Mobile phones, eye and vision symptoms, medical students.

ASSESSING THE RELATIONSHIP BETWEEN THE DURATION OF MOBILE PHONE USE AND THE INCIDENCE OF SLEEP DISORDERS IN MEDICAL STUDENTS

A.A. Yakubouskaya
Belarusian State Medical University, Minsk, Belarus
Department of Pathological Physiology
Scientific supervisor: Senior Lecturer **E.N. Chepeleva**

Background: Mobile phones have become indispensable tools for communication and daily activities. One well-studied negative consequence is disruption of sleep patterns and quality. Insufficient sleep is associated with a number of health problems (cardiovascular diseases, mental disorders, etc.).

Objective: To assess the impact of mobile phones on sleep disorders in medical students.

Materials and methods: To study the impact of mobile phone use on sleep disorders, 48 students of the Belarusian State Medical University were anonymously surveyed. The study utilized a questionnaire for assessing subjective sleep characteristics proposed by Ya. I. Levin. It includes the following characteristics, assessed on a 5-point scale: time to fall asleep; sleep duration; number of nighttime awakenings; sleep quality; number of dreams; and quality of morning awakening. A score greater than 22 is considered normal, with 19-21 points considered borderline, and a score less than 19 indicating insomnia.

Results and discussion: The gender distribution of the students surveyed was as follows: 47.9% men and 52.1% women. It was found that the average daily duration of smartphone use among the medical students surveyed was up to 2 hours (4.2%), 29.2% (2-4 hours), 29.2% (4-6 hours), 20.8% (6-8 hours), and 16.7% (more than 8 hours). Thus, 37.5% of respondents use mobile phones for more than 6 hours a day. According to the results of the survey using the questionnaire for scoring the subjective characteristics of sleep proposed by Ya. I. Levin, among the medical students surveyed, insomnia was detected in 64.6%, a borderline state in 22.9%, and the norm was observed in only 12.5%.

Conclusion: Among the medical students studied, symptoms of insomnia were found in 64.6% of cases, borderline sleep disturbances were observed in 22.9%, and normal sleep patterns were observed in only 12.5% of respondents.

Keywords: Mobile phones, sleep disorders, medical students.

POTENTIAL OF PHYTOTHERAPEUTIC INTERVENTION IN HYPERTENSIVE RETINOPATHY

N.M. Yuldasheva
Bukhara State Medical Institute, Bukhara, Uzbekistan
Department of Ophthalmology
Scientific supervisors: PhD, Associate Professor **R.R. Boboeva,**
PhD, Associate Professor **M.R. Rakhmatova**

Background: Currently, arterial hypertension affects not only the heart and kidneys but also the microvessels of the eye. Hypertensive retinopathy – morphological changes in the blood vessels caused by high blood pressure – can lead to vision loss or blindness. In addition to conventional therapy, phytotherapeutic approaches with antioxidant, angioprotective, and anti-inflammatory properties show promise for preventing and managing retinal vascular changes.

Objective: The aim of the study is to investigate structural changes in retinal vessels in hypertension and to evaluate the effect of phytotherapeutic approaches on these changes.

Materials and methods: The study involved 40 patients aged 45-65 (20: standard treatment + phytotherapy; 20: standard treatment only). The condition of the retinal vessels was assessed using ophthalmoscopy, fundus photography, and OCT, the diameter, wall thickness, ratio of artery-vein, and microaneurysms were determined. Phytotherapy consisted of licorice root decoction (100 ml twice

daily) and “RetinaHerb” compresses (licorice + chamomile) three times daily for 8 weeks, with regular clinical monitoring.

Results and discussion: In the phytotherapy group (licorice root decoction + “RetinaHerb” compresses), retinal vessel diameter increased, wall thickness decreased, A/V ratio improved, and microaneurysms reduced, while no significant changes occurred in the control group. Subjective improvement in symptoms was observed in 85% of patients compared with 30% in the control groups. OCT and fundus photography confirmed normalization of vessel morphology and microcirculation. Overall, the stabilization was observed, in contrast to the control group.

Conclusion: Phytotherapy (licorice root decoction + “RetinaHerb” compresses) in patients with hypertensive retinopathy improved retinal vessel morphometry, reduced microaneurysms, and alleviated subjective symptoms. No significant changes were observed in the control group, confirming the effectiveness of phytotherapy as supplement to standard treatment.

Keywords: Hypertensive retinopathy, phytotherapy, retinal vessel morphometry, licorice root decoction, “RetinaHerb” compresses, OCT, fundus photography, antioxidant effect, angioprotection, microcirculation.

EARLY MORPHOLOGICAL OCT CHANGES IN PATIENTS WITH SYSTEMIC TOXOPLASMOSIS

A.F. Yusupov, M.Kh. Karimova, Sh.A. Djamalova, M.U. Samatov
Republican Specialized Scientific
and Practical Medical Center of Eye Microsurgery,
Tashkent, Uzbekistan

Background: In patients with confirmed systemic toxoplasmosis, despite the absence of complaints and obvious ophthalmoscopic manifestations, optical coherence tomography (OCT) may reveal initial pathological changes in the retinal and choroidal structures. These may include isolated areas of destruction of the junction of the outer and inner photoreceptor segments, changes in the thickness of the macular zone, hyper reflective inclusions in the inner and outer nuclear layers of the retina, decreased visualization of the choriocapillaris, and thinning of the choroid.

Objective: To evaluate the initial clinical changes according to OCT data in patients with systemic toxoplasmosis.

Materials and methods: Seventy-three patients (146 eyes) with systemic toxoplasmosis and no significant visual complaints were examined at the Republican Specialized Scientific and Practical Medical Center of Eye Microsurgery. All patients underwent standard, specialized, and laboratory testing. Optical coherence tomography was included in the specialized testing.

Results and discussion: It was revealed that in 19.2% of cases (28 eyes) hyper reflective inclusions in the retinal layers were detected, in 15.0% of cases (22 eyes) destruction of photoreceptors, in 18.5% of cases (27 eyes) thickening of the macular zone, in 21.2% of cases (31 eyes) thinning of the choroid with reduced visualization of the choriocapillaries , in 11.6% of cases (17 eyes) local atrophy of the RPE with the effect of reverse shadowing and in 5.5% of cases (8 eyes) the presence of idiopathic ERM.

Conclusion: OCT can detect early latent changes in the retina and choroid in patients with generalized toxoplasmosis. The findings suggest the need to incorporate OCT into a comprehensive examination of this patient population for early diagnosis and timely monitoring of morphofunctional changes in the visual organ.

Keywords: Optical coherence tomography, systemic toxoplasmosis, morphological changes of the retina.

CLINIVAL APPLICATION OF DIRECT COMPOSITE RESIN RESESTORATIONS FOR CARIOUS LESIONS

Zhao Tianfan
International Medical University "Avicenna", Bishkek, Kyrgyzstan
Department of Dentistry
Scientific supervisor: Teacher ***A.I. Dautova***

Background: Dental caries is a common chronic oral disease caused by acidic demineralization of teeth, leading to structural defects that affect their function and aesthetics. Traditional materials such as amalgam have disadvantages such as poor aesthetics and invasive preparation, while direct composite resins are preferred for small to medium -sized carious lesions due to good aesthetic compatibility and gentle preparation requirements.

Objective: To examine the indications, clinical techniques, material selection and complications of direct composite resin restorations, and provide practical clinical recommendations.

Materials and methods: The retrospective study analyzed 247 clinical cases treated between 2021 and 2024, with an observation period of 12 to 36 months. The following materials were used: three types of composite resins (nanohybrid, microhybrid, packable), adhesive systems, light-curing units, liners and polishing instruments. Materials included three types of composite resins (nanohybrid, microhybrid, packable), adhesive systems, light-curing units, liners and polishing tools. Clinical procedures involved cavity preparation (removing infected dentin while preserving sound tissue), pulp protection for deep cavities, adhesive bonding (acid etching or self-etch application), incremental composite placement (≤2 mm per layer, 20–40s light – curing per layer), and occlusion adjustment and polishing.

Results and discussion: The 24-month survival rate was 92.3% (95.1% for anterior teeth, 89.4% for posterior teeth). Complications included secondary caries (3.6%, linked to bonding moisture contamination), postoperative sensitivity (7.7%, resolving in 2–4 weeks) and restoration chipping (4.1%, common with low-fill composite restorations). Nanohybrid composites had the highest survival rate of 94.8%. These results confirm the efficacy of direct composite resin restorations for small and medium sized carious lesions; monohybrid composites are optimal due to their balance of strength and aesthetics. Strict moisture control and standardized methods are critical to maximizing longevity, and for posterior teeth, which are high-stress areas. Self-etch adhesives are convenient, but etch-and-rinse systems provide a more predictable bond for high caries-risk patients.

Conclusion: Direct restorations with composite resins are a safe, aesthetic and gentle option for small and medium-sized carious lesions.

Keywords: Direct composite resin, dental caries, restorative dentistry, adhesive systems, clinical protocol.

CONTENTS

THE INTERNATIONAL SCIENTIFIC CONFERENCE FOR STUDENTS AND YOUNG RESEARCHERS IN ENGLISH «TOPICAL ISSUES OF MEDICINE»

(*ABSTRACTS*)

МЕЖДУНАРОДНАЯ НАУЧНАЯ КОНФЕРЕНЦИЯ СТУДЕНТОВ И МОЛОДЫХ УЧЕНЫХ НА АНГЛИЙСКОМ ЯЗЫКЕ «АКТУАЛЬНЫЕ ВОПРОСЫ МЕДИЦИНЫ»

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