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COGNITIVE FUNCTION AND INTERNET USE AMONG ADOLESCENTS: A CROSS-SECTIONAL STUDY IN YEREVAN SCHOOLS

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Keywords: Adolescents, Internet Use, Cognitive Function, Anxiety, Public Health

Introduction. Over the past two decades, internet technologies have become an essential part of daily life. While they provide vast educational and communication opportunities, their excessive use can have negative impacts on mental health and cognitive development (1-2). Adolescents represent one of the most vulnerable groups, as their cognitive and emotional systems are still developing. Students aged 13–15 years are particularly susceptible to distractions, reduced attention span, and anxiety linked to uncontrolled online activity. This study aimed to assess the relationship between daily internet use and changes in cognitive function and anxiety levels among 7th–9th grade students in Yerevan. The research also sought to identify how internet use influences students' academic performance and to explore teachers' perceptions of these effects.

Materials and Methods. A mixed-method cross-sectional study design was applied, combining quantitative and qualitative approaches. The quantitative component included 196 students from four schools in Yerevan. Self-assessment questionnaires were used alongside internationally validated tools; the Mini-Mental State Examination (MMSE) for cognitive evaluation and the Hamilton Anxiety Rating Scale (HAM-A) for anxiety assessment. The qualitative component consisted of semi-structured interviews with 15 teachers. Interviews explored their observations about students' attention, behavior, and academic performance in relation to internet use. Quantitative data were analyzed using SPSS software, applying descriptive statistics and correlation analysis, while qualitative data were analyzed through content analysis to identify recurring themes.

Results. Among the surveyed students, 70.5% reported going to bed after 11:00 PM, and 52.5% spent more than 3 hours online daily. According to MMSE results, 60.2% of respondents showed mild to moderate cognitive impairment. The HAM-A scale revealed that 17% experienced moderate to high anxiety. Among those who spent over 3 hours online daily, 83.3% demonstrated mild or moderate cognitive impairment, 37.9% reported moderate anxiety, and 14.8% experienced high anxiety levels. Teachers confirmed similar trends, noting reduced memory, shorter attention spans, and a decline in academic performance and social interaction. Comparative analysis showed a negative correlation between daily internet use and MMSE scores, and a positive correlation between internet use and anxiety levels.

Conclusion. The study demonstrated that excessive internet use among adolescents is significantly associated with decreased cognitive performance and increased anxiety. Students using the internet for learning and communication within reasonable limits (up to 2 hours daily) maintained better cognitive function and lower anxiety levels. However, prolonged and uncontrolled usage negatively affected academic outcomes and emotional well-being. These findings highlight the need for targeted digital hygiene education for students, teachers, and parents, and the inclusion of media literacy and self-regulation skills in school curricula. Promoting balanced online behavior and structured leisure activities may protect adolescents' cognitive health and academic success.

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NEUROPATHIC PAIN MANAGEMENT BY NEW SYNTHESIZED GABA AND PYROGLUTAMIC ACID SHORT PEPTIDES

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Keywords: neuropathic pain, short peptides, GABA, pyroglutamic acid, antinociceptive activity.

Introduction: Based on the high importance of GABA-glutamate balance in pain processing, as well as on the use of GABA analogues and GABA-ergic compounds in the correction of neuropathic pain, new synthesized GABA and pyroglutamic acid-containing short peptides was investigated, as a promising agent for neuropathic pain management.

Materials and methods: In the investigation, two models were used: a model of acute impairment of cerebral blood flow (CBF) caused by the right common carotid artery occlusion, a model of neuropathic pain caused by chronic constriction injury (CCI) of the sciatic nerve,

The pharmacological activity of studied short peptides was evaluated using: non-invasive laser-Doppler flowmetry for the registration of local CBF, "tail flick" test to assess nociception, "hot plate" test to assess thermal hyperalgesia, morphological examination with H&E staining. By *in silico* modeling using docking analysis techniques, the protein-ligand interactions of short peptides were investigated with GOLD and AutoDock Vina software to identify possible targets of their pharmacological action.

Results: Docking analysis discovered that GABA-B receptors, GAT1 transporter and GABA-AT enzyme could be potential pharmacological targets for short peptides.

The cerebrovascular activity of pyroglutamylGABA (20 mg/kg, intraperitoneally) was revealed by its ability to restore impaired local CBF by 78.6%. The antinociceptive activity was assessed in the "tail flick" test for individual peptides and their combinations with pregabalin. Hence, monitoring of the tail flick latency after the pyroglutamylGABA administration (20 mg/kg, intraperitoneally) demonstrated a maximum increase in the indicator after 60 minutes, exceeding the control group data by 20%. PyroglutamylGABA ethyl ester showed an earlier onset of action (after 30 minutes of administration), persisting until the 90th minute of experiment. Pyroglutamyl diGABA caused an increase in action at the 60th, 90th and 120th minutes of observation by 17%, 21% and 25%, respectively, compared to the control group corresponding data. Combinations of each peptide with pregabalin demonstrated summation or potentiation on pregabalin's antinociceptive activity. This feature opens up the possibility for a reduction in the prescribed dose of pregabalin and, for lowering of side effects, such as sedation. In the CCI model of neuropathic pain, the analgesic efficacy of the peptide–pregabalin combinations were revealed in the "hot plate" test. Pain-related behaviors (frequency and latency of licking paws, frequency and latency of jumping, as well as animals' locomotor activity and latency of movements) were assessed before the CCI and on days 3, 5, and 7 after surgery. The combined treatment produced marked analgesia, accompanied by increased locomotor activity, indicating weakening of pregabalin's sedative effect. Morphological studies have shown the possible neuroprotective activity of pyroglutamylGABA ethyl ester by its ability to correct structural changes in the sciatic nerve caused by CCI. The results suggest that observed neuroprotection may contribute to the analgesic effects.

Conclusion: Thus, the study of the pharmacological properties of GABA and pyroglutamic acid-containing short peptides has shown that they can correct impaired CBF, exhibit an antinociceptive effect, and regulate neuropathic pain in the case of combined use with pregabalin without the sedative effect.

IMPROVEMENT OF ISCHEMIC CEREBRAL CIRCULATION BY NICOTINOYL L-PROLINE

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Keywords: cerebral circulation, nicotinoyl L-proline, cortical microcirculation, antihypoxic activity

Introduction: Among the pharmacological agents used for the correction of impaired cerebral circulation, great interest is drawn to short peptides designed on the basis of endogenous compounds. In view of this, the cerebrovascular effects of a new dipeptide, Nicotinoyl L-proline (NLP), were studied. For this purpose, the effects of NLP on local cerebral blood flow, the microcirculatory network of the cerebral cortex, the contractility of isolated vessels, and its antihypoxic activity were investigated.

Materials and methods: Experiments were carried out in inbred male white rats weighing 170-230 g. Acute ischemia was modeled by common left carotid artery occlusion (LCAO); chronic ischemia was mediated by movement restriction of the experimental animals during 15 days. It was evaluated for local cerebral blood flow by laser-Doppler-flowmeter, arterial blood pressure by the noninvasive "tail-cuff" test, cerebrocortical microcirculatory network by the calcium adenosinetriphosphate method, vasodilatory activity by the registration of contractility of isolated vascular segments, and antihypoxic activity in different hypoxia models (normobaric, cytotoxic, and hemic).

Result and discussion: It was demonstrated that NLP injection (10 mg/kg, i/p) is accompanied by an increase of cerebral blood flow by 45% compared with the ischemic value registered in the LCAO model. Under the condition of chronic ischemia, caused by locomotor activity restriction, the mentioned dipeptide at the same dose led to improvement of cerebral circulation by 41%. Cerebrovascular effects of NLP are not accompanied by statistically significant changes in systemic blood pressure and heart rate.

The cerebrovascular activity of NLP was confirmed by investigation of the brain cortical microcirculatory bed in rats. It was demonstrated that under acute ischemia following LCAO, there was registered a decrease in the number of functioning capillaries and an increase in the number of constricted and only plasma-permeable capillaries. NLP's injection (10 mg/kg, i/p), accompanied by an increase in the average diameter of cortical capillaries, increases the number of functioning capillaries and decreases the number of constricted and only plasma-permeable capillaries. Registration of isolated vascular segment constriction data is evident that NLP appears to direct vasodilatation, which was demonstrated by its ability to decrease the tone of isolated norepinephrine-contracted vessels. Using three different models of experimental hypoxia in mice, it was demonstrated that in a model of hemic hypoxia induced by sodium nitrite (300 mg/kg, i/p), NLP increases the survival time of mice by 28.53%. A comparative analysis of the cerebrovascular activity of NLP with its structural analog nicotinoyl-GABA revealed that the cerebrovascular activity of the proline derivative was more pronounced, while the direct vasodilation ability was more expressed for the GABA derivative.

Conclusion: Thus, the presented data is evident that nicotinoyl L-proline improves disordered cerebral circulation, stimulates the microcirculatory bed of the cerebral cortex, and relaxes isolated blood vessels, as well as exerts an antihypoxic activity, which indicates searching for an effective agent for pharmacological correction of injured cerebral circulation among the nicotinoyl L-proline analogs.

GENDER DISPARITIES IN THE MENTAL HEALTH OF GIFTED ADOLESCENTS

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Keywords: gifted adolescents, Mental Health, Stress Index, Gender Disparities, Personality Characteristics

Introduction: Many studies have shown that gifted individuals experience mental health problems, including depression, anxiety disorders, ADHD, immune disorders. This study aims to provide a comprehensive assessment of the mental health of gifted adolescents, focusing on psychological and psychophysiological dimensions, and to explore correlations between these components. The research emphasizes gender differences, highlighting disparities in personality traits, anxiety levels, psychosocial adaptation, and the functional state of the organism among gifted adolescents under stress.

Methods: The research was conducted in schools of Yerevan, RA. The initial sample consisted of 500 high school students aged 16-18. Renzulli's Three-Ring Conception (cognitive abilities (IQ range was 130-144), creative thinking, academic motivation) of Giftedness was used to reveal gifted adolescents. During the study 35 participants were defined as gifted. A quasi-experimental design was used with 35 participants in each of the comparison and experiment groups. Mental Health is assessed at two levels - psychological and psychophysiological. Based on APA mental health criteria, psychosocial adaptation, anxiety and personality traits are distinguished as psychological mental health criteria. Stress resistance (Stress Index) is distinguished as a psychophysiological criterion. Independent T-Test, with $p < .05$, using SPSS 26 was conducted for the comparative analyses. Assessment of functional state of the organism (Stress Index) under potential stressor was done using cardiograph signal analysis software developed at the L. A. Orbeli Institute of Physiology NAS RA. As a potential stressor, the intellectual workload was selected. The ECG indicators have been recorded for 5 minutes each before and after the intellectual workload. Studies on psychological and psychophysiological components were conducted using correlation and regression methods.

Results: As a result, gifted girls display personal traits such as high levels of neuroticism (.001***), anxiety (.000***), depression (.000***), self-criticism (.020*), emotional lability (.001***), low excitement-seeking (.013*), lack of empathy (.009**), low conscientiousness (.006**), self-discipline (.011**), order (.041*), and low fantasy (.038*), feelings (.003**). Gifted boys display neuroticism (.032*), self-criticism (.027*), and emotional lability (.034*). In the context of psychosocial adaptation, gifted girls show emotional discomfort (.004**), while gifted boys exhibit maladjustment (.002**), emotional discomfort (.003**), and internality (.030*). The Assessment of functional state of the organism under potential stressor showed high Stress Index results among gifted adolescents, indicating psycho-emotional tension and stress. In contrast to the control group, the Stress Index of gifted adolescents is higher than the norm. The results showed strong significant correlation between psychological and psychophysiological components among gifted adolescents. Before and after the intellectual workload, the spectral power of gifted girls (0.08-0.1 Hz) was higher than that of gifted boys. Despite this, after the task, the boys' performance showed a significant change.

Conclusions: Psychological characteristics: high levels of personal and reactive anxiety, neuroticism (anxiety, depression, self-criticism, emotional lability, and impulsivity), emotional discomfort, and maladjustment; and psychophysiological characteristics: a high Stress Index, all increase the mental health risks among gifted adolescents, particularly gifted girls. While boys are more sensitive to failure, girls exhibit persistent neuroticism.

THE STUDY OF THE QUALITATIVE AND QUANTITATIVE COMPOSITION OF CERTAIN BIOACTIVE SUBSTANCES IN RAW MATERIALS HARVESTED FROM THE PLANT SPECIES NEPETA MUSSINII (SPRENG.) AND NEPETA SULPHUREA (C. KOCH.) GROWING IN VARIOUS REGIONS OF ARMENIA

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Keywords: Nepeta Mussini, Nepeta sulphurea, aminoacids, tannic acid, vitamin C.

Introduction. One of the important sections for the pharmacognostic study of the herbal medicinal product is the phytochemical investigation of the raw plant material, including the identification and study of biologically active substances, organic acids, amino acids, tannins, and vitamin C, which were carried out in accordance with the WHO guideline (1). From this point of view are notable *Nepeta* species wild growing in the Armenian flora. The Armenian landscape is characterised by an abundance of *Nepeta* species (2), which have yet to undergo comprehensive scientific investigation. Populations of these species are observable throughout the entire country. A lot of species of this genus are used in folk medicine for the antiseptic and astringent properties as tropical remedy in children's cutaneous eruptions, snakes and scorpion bites; orally, they are utilized as anti-tussive, anti-spasmodic, anti-asthmatic, febrifuge and diuretic. The aim of our study is determination of qualitative and quantitative analysis of some biological active substances of raw material of Armenian *Nepeta* species.

Materials and methods. As research materials *Nepeta Mussini* harvested from Aparan and Vayots Dzor areas and *Nepeta sulphurea* from the bank of Mantash river were selected. The processing was carried out according to WHO guidelines. Herbarization and identification of collected herbs were done in the Institute of Botany after Takhtajyan. The qualitative and quantitative analysis of the amino acid composition in the samples were performed using a 'Shimadzu Nexera X2' amino acid analyzer with a pre-column derivatization method. The quantities of tannic acid, rutin, quercetin, luteolin, gallic acid, organic acids, and vitamin C were determined by the HPLC method using a Water separation Module 2695 (USA) instrument in the laboratory of "Armbiotechnology" scientific and production center.

Results. Eight amino acids in the air-dried raw materials of *Nepeta* collected from various regions of Armenia were identified in all samples - aspartic acid, glutamic acid, serine, alanine. Glycine was identified in Vayk sample. Three essential amino acids were identified in Tsaghkahovit sample (Isoleucine), in Mantash and Vayk samples (Leucine), and in Mantash and Tsaghkahovit samples (Lysine). Tannic acid was found in all studied samples, rutin in the samples from Tsaghkahovit and Vayk, and quercetin was not detected in any sample. Among the organic acids, the following were detected in the studied samples: oxalic acid in the Tsaghkahovit sample, and succinic acid in the Mantash sample. Vitamin C was found in all studied samples.

Conclusion. Thus, the research results showed that the *Nepeta* species found in Armenia are rich in biologically active substances, such as essential and conditionally essential amino acids and phenolic compounds which define the biological activity of the plant raw materials.

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LESSONS LEARNED FROM ACTIVE PHARMACOVIGILANCE APPLIED IN PHARMACOTHERAPY OF RIFAMPICIN-RESISTANT TUBERCULOSIS

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Key words: pharmacovigilance, shorter regimens, safety, rifampicin-resistant tuberculosis

Introduction. The current decade has been marked by the emergence of new and repurposed anti-tuberculosis drugs, which necessitates the development of novel pharmacotherapy regimens for rifampicin-resistant tuberculosis (RR-TB), as well as the evaluation of the safety and effectiveness of new drug combinations. This research is devoted to the modified all-oral shorter regimens (mSTRs) and the role of pharmacovigilance in evaluation and refinement of the abovementioned pharmacotherapy schemes.

Study materials and methods. The whole Republic of Armenia served as a study site. In total, 211 patients were engaged in the research. Eighty patients were enrolled in the prospective cohort treated with the mSTRs during the period from 2020 to 2023. The retrospective reference cohort consisted of 131 patients who started conventional longer treatment for RR-TB between 2017 and 2018. Eighty patients enrolled in the mSTR cohort received the following drug combinations: levofloxacin (Lfx) - bedaquiline (Bdq) - linezolid (Lzd) - clofazimine (Cfz) - cycloserine (Cs) or levofloxacin (Lfx) - bedaquiline (Bdq) - linezolid (Lzd) - clofazimine (Cfz) - delamanid (Dlm). For the first time, the shorter regimens composed of the second-line TB-drugs from groups 'A' and 'B' were evaluated based on the findings of active pharmacovigilance. The impact of halving the duration (compared to conventional therapy) of treatment for RR-TB on the safety and effectiveness of pharmacotherapy was assessed. The influence of adverse events (AE) on treatment effectiveness was studied, as well as the potential for modifying shorter regimens.

Results. The shorter schemes provided 23% ($p=0.0007$) higher 'treatment success' compared to long-term regimens: 78.8% (95% CI 69.8-87.7) against 55.7% (95% CI 47.2-64.2). The mSTRs were successfully combined with treatment of HIV, viral hepatitis C and diabetes. Adverse events and insufficient radiological dynamics were identified as the main causes of 'treatment failures'. The baseline involvement of three or more pulmonary lobes with tuberculous infiltration was associated with insufficient radiological improvement and failure to complete the mSTRs within the nine-month period. The mSTRs were beneficial in terms of AEs such as amplification of drug resistance, nausea or vomiting, central neurotoxicity and ototoxicity, compared to traditional long-term regimens.

A total of 51 adverse events were observed in the patients exposed to the mSTRs, with 50%, (95% CI 39%-61%) patients reporting at least one adverse event. The safety profile of shorter regimens revealed a predominance of arthralgia and peripheral neuropathy, as well as a disproportional occurrence of these AEs compared to other TB-treatment schemes. Arthralgia and peripheral neuropathy were attributed to levofloxacin and linezolid respectively. A previously unreported serious AE (lymphoproliferative skin lesion) was also attributed to linezolid.

Among patients at high risk for developing linezolid-related AEs, the following modifications of mSTRs were recommended: 5Lfx-Bdq-Lzd-Cfz-Cs/4Lfx-Bdq-Cfz-Cs and 5Lfx-Bdq-Lzd-Cfz-Dlm/4Lfx-Bdq-Cfz-Dlm. When the use of levofloxacin was restricted, the following modifications with moxifloxacin (Mfx) were proposed: Mfx-Bdq-Lzd-Cfz-Cs and Mfx-Bdq-Lzd-Cfz-Dlm.

Conclusion. The shorter regimens proved to be safe and effective for treatment of RR-TB. During the application of mSTRs, recorded and unreported 'serious' AEs are expected, the timely detection and effective management of which is possible only with active pharmacovigilance.

ENHANCING HYPERTENSION CONTROL AND PATIENT OUTCOMES WITH THE INVOLVEMENT OF COMMUNITY PHARMACISTS

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Keywords: self-medication, pharmacists' role, hypertension management

Introduction: Self-medication among individuals with hypertension remains a serious concern, as the condition continues to be a leading global cause of morbidity and mortality. Many patients manage their treatment independently, without adequate medical supervision. Since antihypertensive drugs are prescription-only, pharmacists play a crucial role in ensuring their rational and safe use through proper dispensing, patient counseling, and monitoring of self-medication practices. Their knowledge and communication skills are essential for guiding patients and supporting public health.

Goal: This study aimed to examine how pharmacists regulate the circulation of antihypertensive medications and to identify strategies for preventing self-medication errors with these drugs.

Method: A cross-sectional study was conducted in Yerevan, Armenia, among 219 pharmacy employees to assess the management of antihypertensive drug use. The sample size was calculated using Cochran's formula with a 90% confidence level and a 5% margin of error. The study was conducted from November 2024 to June 2025 under the supervision of three trained pharmacists, achieving a 99.2% response rate. Data were analyzed using SPSS (version 23.0).

Results: The participants included pharmacy technicians (62%), pharmacists (18%), postgraduate pharmacists (5%), and students (20%). When a loyal customer requested a higher dose of their usual medication, most pharmacists (69%) and postgraduate pharmacists (63%) preferred to clarify the reason before dispensing, while pharmacy technicians (31%) and students (40%) tended to provide the medication immediately. Postgraduate pharmacists (27%) were the most likely to request a prescription. In cases of antihypertensive medication ineffectiveness, pharmacists (63%) and postgraduate pharmacists (86%) primarily referred patients to a physician, whereas pharmacy technicians (47%) and students (51%) more often recommended increasing the dosage of the same active ingredient. Suggesting alternative medications was less common across all groups. When faced with a patient presenting with high blood pressure, 42% of pharmacists, 48% of postgraduate pharmacists, 36% of technicians, and 47% of students indicated they would recommend a doctor visit. Prescribing medication was reported by 14%, 8%, 36%, and 24%, respectively. Attempting to determine the cause of high blood pressure was noted by 33%, 41%, 27%, and 22%, while assessing its frequency was the least common action.

Conclusions: Most pharmacists and postgraduate pharmacists demonstrated a responsible attitude by referring patients to physicians and clarifying the reasons for medication requests, indicating strong professional awareness of prescription regulations. However, a considerable proportion of pharmacy technicians and students tended to provide medications or adjust dosages without medical consultation, reflecting a gap in knowledge and adherence to professional standards. Strengthening pharmacist-led counseling, continuous education, and stricter regulatory control over prescription-only drugs are essential to minimize self-medication risks and improve hypertension management outcomes.

OUR EXPERIENCE WITH ANDERSON–HYNES OPEN PYELOPLASTY WITHOUT INTERNAL STENT IN CHILDREN

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Introduction. Uretero-pelvic junction obstruction (UPJO) is one of the most common pathologies in pediatric urology practice, representing a leading cause of hydronephrosis and impaired urinary drainage in infants and children. Despite the introduction of laparoscopic and robot-assisted pyeloplasty, open pyeloplasty remains relevant at the present time because of its high success rate, technical simplicity, and wide applicability, especially in small children. At the same time, the question of the method and necessity of postoperative drainage of the upper urinary tract is still an important and debatable issue in contemporary pediatric urology.

Objective. To evaluate the results of open pyeloplasty without internal stent from the point of view of its acceptability for all types of UPJO. Additionally, to assess perioperative outcomes, the duration of operations, hospitalization time, and possible complications associated with this approach.

Material and Methods. Retrospective research was made between January 2012 and December 2015. A total of 163 pyeloplasties were performed in our service. All operations were carried out by experienced pediatric urologists using the classical Anderson–Hynes dismembered technique. Clinical, ultrasound, and radiological characteristics of patients, as well as the surgical technique and its results, were taken into account. Patients were evaluated preoperatively by ultrasonography, intravenous urography, or renal scintigraphy, and postoperative follow-up included imaging and clinical assessment of urinary drainage and kidney function.

Results. Out of 163 patients, 116 (71.2%) were male. 96 (58.9%) had left-sided UPJO, 12 (7.36%) had bilateral UPJO, and 2 (1.2%) had a single functioning kidney. In 6 (3.7%) patients, horseshoe kidneys were revealed, in 4 (2.6%) – duplication, and in 1 (0.6%) – ectopic kidney. The patients' mean age was 60.2 months (2–215). Only 60 (36.8%) patients underwent surgery in the first year of life. PDS II 6.0 sutures were used for all cases. The duration of operations varied depending on anatomical complexity and patient age. The average operation time was 90.7 minutes (45–300), and the mean hospital stay was 5.3 days (4–19). A bladder catheter was placed in all patients (≤ 1 day). An external drain was removed on average after 4.3 days (3–18). Urinary excretion from drainage was observed in 6 (3.7%) patients. 2 (1.2%) patients required ureteral catheter or stent placement during the postoperative period. Importantly, none of the patients developed significant postoperative bleeding, urinary leakage, or wound infection. Postoperative and intraoperative complications (bleeding, UTI, etc.) or repeated operations due to re-obstruction were not noted. During long-term follow-up, all patients demonstrated satisfactory drainage and regression of hydronephrosis on ultrasound.

Conclusion. Open pyeloplasty without stent is a safe and effective procedure in all age groups of children and in all types of UPJO, showing excellent functional outcomes and low complication rates. This approach eliminates the need for internal stenting, thus reducing the risks of stent-related discomfort, urinary infection, and the necessity for additional anesthesia during stent removal. Therefore, open pyeloplasty without internal stent can be considered a reliable, well-tolerated, and cost-effective alternative in pediatric urology, especially in centers where minimally invasive techniques are not routinely available. Our experience confirms that, with proper surgical technique and careful postoperative management, the outcomes of this method are comparable to those achieved with stented procedures.

EMOTIONAL TEMPERAMENT, PERSONAL RESPONSE CHARACTERISTICS AND THE LEVEL OF DEPRESSION OF MEDICAL WORKERS PROVIDING PROFESSIONAL ASSISTANCE IN EMERGENCY SITUATIONS (USING THE EXAMPLE OF TREATING PATIENTS WITH BURN INJURIES)

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Keywords: Emotional temperament, emergency situations, depression

Background and aims: The purpose of the research work is to evaluate models of emotional reaction, types of emotional temperament, and self-assessment of the level of depression in emergency situations among medical workers of the “National Burn Center” of the Ministry of Health of the Republic of Armenia.

Materials and methodology: The medical staff of the "National Burn Center" of the Ministry of Health of the Republic of Armenia participated in the study, in particular, 6 doctors, 11 nurses, 4 sick-nurses. Methods used during the study:

- 1. The TEMPS-A questionnaire by Akiskal H.S.:** In accordance with this question, we identify 5 emotional temperaments of a person.
- 2. The Luscher Color Test** The Luscher Test is trustworthy and gives reliable results in the study of mental states.
- 3. Zung Self-Rating Depression Scale:** As a result, we get an indicator of the level of depression, which implies the following levels:
- 4. The Z test** was used to assess the reliable difference between the groups.

The article analyzes the mental health indicators of medical personnel who suffered burns of varying degrees and complexity as a result of an explosion at a gas station in Artsakh on September 26, 2023 and have been fighting for the health of citizens for months. In this regard, health system employees are among the most vulnerable in defect-related situations. The choice of methods was due to the fact that such emergencies affected people's mental health in different ways, due to types of temperament, character traits, problems, their worldview and some other factors.

Results: Summarizing the data of the study of medical workers of “The National Burn Center” of the Ministry of Health of the Republic of Armenia, who work with patients who have suffered burn injuries in emergency situations. The highest rate in the study was for the Hyperthymic type of emotional temperament - 57%, Dysphoric - 35%, and Anxious - 14%, while the cycloid and irritable types had no emotional temperament. The emotional temperament is not registered in Cycloid and Irritable types. The indicators of efficiency and purposeful activity are high, doctors are most effective in emergency situations: as a result of uncontrolled and ineffective activities, they lose no more than 20% of their energy. The least effective in extreme situations are nurses and sick-nurses: about half of whose energy is spent on uncontrolled and inefficient activities. 33 % of surveyed have no depression in emergency situations, 62 % have mild depression, and only 5 % have a moderate level. Severe depression was not detected.

Conclusion: We can conclude that, based on highly professional knowledge and skills, people in this field are relatively little exposed to stress in emergency situations. In order to maintain the productivity of medical personnel in uncontrolled conditions, it is necessary, especially for nurses and sick-nurses, to organize an early study of their mental state, personal reaction, characteristics, conduct lectures, trainings, individual consultations, preventing the development of post-traumatic stress disorders, increasing the level of depression.

SELF-LIMITED EPILEPSY WITH CENTROTEMPORAL SPIKES: OPTIMIZING ANTISEIZURE MEDICATION THERAPY IN CHILDREN

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Keywords: SeLECTS, self-limited epilepsy, centrotemporal spikes, antiseizure medication.

Introduction: Self-limited epilepsy with centrotemporal spikes (SeLECTS), previously known as benign childhood epilepsy with centrotemporal spikes (or Rolandic epilepsy), is a self-limited epilepsy syndrome that occurs in otherwise healthy children, most commonly during early school age. It's not known exactly what causes SeLECTS, but genetic factors are thought to play a part. Seizures are brief bulbar and hemifacial sensorimotor seizures that can evolve to focal to bilateral tonic-clonic seizures. They typically remit spontaneously by puberty. Electroencephalography (EEG) generally shows a normal background with characteristic high-amplitude centrotemporal epileptiform discharges, which are activated during drowsiness and sleep. Traditionally, antiseizure medication (ASM) has been discontinued only after EEG normalization and at least two years of seizure freedom. The aim of this study is to evaluate seizure and EEG outcomes in two patient groups—those with normal EEG and those with persistent epileptiform activity at the time of ASM withdrawal—and, based on these findings, to optimize clinical decision-making regarding the duration of ASM therapy in children with SeLECTS.

Materials and Methods: Children diagnosed with SeLECTS according to International League Against Epilepsy criteria will be included. A total of approximately 100 patients are planned to be enrolled. Patients must be seizure-free for at least two years while on ASM. Participants will be divided into two groups according to EEG findings at the time of ASM withdrawal: normal EEG (n=50) and abnormal EEG (n=50). They will be followed for one year after withdrawal of ASM.

Results and Discussion: To date, 40 patients have been enrolled (29 male, 11 female). The median age at seizure onset was 7.17 years (range: 2–11 years). During treatment, 29 patients (72.5%) received carbamazepine; other medications included levetiracetam, valproic acid, lamotrigine, topiramate, phenobarbital, clobazam, and methylprednisolone.

Initial awake EEG showed epileptiform discharges in 35 patients, was normal in 2 patients, demonstrated non-specific changes in 2 patients, and was unavailable in 1 patient. In 36 patients, epileptiform abnormalities were activated during sleep or occurred exclusively during sleep during the disease course. EEG abnormalities were predominantly bilateral (synchronous or asynchronous), and unilateral discharges were seen in only 4 patients (2 right-sided, 2 left-sided). ASM has been withdrawn in 20 patients so far, including 10 children who still had persistent epileptiform discharges at the time of withdrawal. These data represent ongoing prospective enrollment, and many patients have not yet reached the withdrawal phase.

Further analysis will evaluate additional EEG features, including background slowing and other non-specific abnormalities, duration of seizure freedom before withdrawal, and potential associations between age of onset and persistence of epileptiform activity. Study results will be compared with international data.

Conclusion: We anticipate that the findings of this study may support reconsideration of traditional, and potentially unnecessarily prolonged, ASM therapy in SeLECTS. Identifying reliable criteria for earlier medication withdrawal could reduce exposure to medication-related adverse effects while maintaining favorable seizure outcomes.

THE PROBLEM OF DISTORTION OF EXPERT EVALUATION UNDER THE INFLUENCE OF THE PHENOMENON OF PARENTAL ALIENATION

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Keywords: parental alienation, forensic psychological examination, reliability of testimony, false memories.

Background and aims. The paper refers to the problem of parental alienation as a psychological and legal phenomenon capable of distorting expert evaluation within forensic psychological expertise (FPE). Based on the analysis of clinical and expert cases the mechanisms are studied through which a child develops a persistent negative attitude toward one parent under the manipulative influence of the other parent. Particular attention is paid to the difficulties in interpreting children's statements in cases of prolonged alienation and the absence of objective evidence of abuse. The author emphasizes that long-term parental alienation may lead to the formation of false memories, emotional distortion, and a decrease in the reliability of expert conclusions. The paper substantiates the need for unified approaches to the diagnosis of parental alienation and the development of ethical and procedural standards for forensic psychological practice.

The issue of **parental alienation** arises in cases where one parent systematically fosters a **negative attitude** in the child toward the other parent, depriving the latter of the opportunity for proper communication. This leads to the development of an **inner conflict** in the child the so-called "**loyalty conflict**", in which the child feels pressured to maintain a positive relationship with both parents.

Such situations are challenging for **expert evaluation**, since the child's emotional responses may be the result of **suggestion** rather than a reflection of actual events.

Methods. The **case analysis** (a professional review of an expert conclusion) presented in this study illustrates the consequences of **prolonged parental alienation**: beginning at the age of two, the child spent more than three years in isolation from the father after the mother relocated with the child from the UK to Armenia. During the FPE, the child categorically refused to communicate with the father, and the expert **erroneously concluded** that the father had been violent, without **objective evidence**. Meanwhile, the available materials (photographs, testimonies) indicated that the relationship had been **positive and healthy** prior to the onset of alienation. International studies show that children who have been under the prolonged influence of one parent often express opinions **not based on their own experiences**, but rather reflecting **implanted beliefs and attitudes**. In cases of **high-conflict divorces**, children's statements may be "*extremely unreliable*".

Results. **Parental alienation** is regarded as a form of **psychological abuse**, as it violates the child's **right to maintain an emotional bond with both parents** and **distorts the child's understanding of family roles**. Within the framework of the **agreement between YSMU and the Investigative Committee of the RA (2018–2025)**, more than **30% of the FPE** conducted by the authors involved issues related to **disputes concerning the child's place of residence** or **one parent turning the child against the other**.

Conclusion.

1. **Parental alienation** is a significant factor that can **distort expert evaluations** in the investigation of family cases.
2. It is necessary to develop **standardized methods** for the **diagnosis of alienation** and the **evaluation of the reliability of children's testimonies**.
3. **International experience** demonstrates the effectiveness of **comprehensive programs** aimed at **restoring parent-child relationships**.

PHYTOCHEMICAL COMPOSITION AND BIOLOGICAL ACTIVITY OF THE HYDROSOL FROM *CHAEROPHYLLUM BULBOSUM* L. GROWING IN THE APARAN REGION OF ARMENIA

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Keywords: *Chaerophyllum bulbosum* L., hydrosol, extract, Pulegone, biological activity

Introduction. Many edible plants are valuable natural resources with a rich history of traditional use. Their medicinal properties, which range from fighting infections to treating chronic diseases, highlight their significance in modern medicine. The presence of key bioactive compounds further enhances their potential in the pharmaceutical and food industries. From this perspective, the plant species of the Apiaceae family, widely used by the population as vegetables, are quite remarkable. This family includes around 200 genera and 2900 species. Particularly notable are chervil of the Armenian flora, which are widely used as edible plants. However, according to some scientific data, caution is needed as the leaves and roots contain certain toxic substances. International scientific publications frequently discuss the chemical composition and biological activity of chervils from the Apiaceae family, collected from various climatic zones. According to one of the reports, the essential oils derived of chervil (*Chaerophyllum bulbosum* L.) collected from different climatic regions are abundant in valuable biologically active substances. In particular, the essential oil of this plant growing in Iran contains: (E)- β -Farnesene, (Z)- β -Ocimene, Myristicin. These compounds are responsible for the significant antimicrobial activity of this plant's raw material against Gram-positive bacteria. According to another study, the widely utilized species *Chaerophyllum libanoticum* Boiss. et Kotschy in food is noteworthy. The main components of this oil are β -Phellandrene, Limonene, β -Pinene, and Sabinene, which are responsible for the plant's biological properties. Given the widespread use of these plants in Armenia for food purposes, our research focused on analyzing the phytochemical composition of hydrosol derived from the aerial parts of this promising plant species. Additionally, we examined their biological effects.

Material and methods. The herb specimen was collected from Aparan region of Armenia in June 2025 at the beginning of its flowering period. The preparation of the raw material was carried out following the guidelines provided by the WHO. The identification of the species was conducted at the Institute of Botany of the NAS RA. The essential oils from Chervil herb were extracted from the aerial parts of the plants using the hydro-distillation method. The chemical composition of hydrosol was analyzed by GC-MS method. The antimicrobial activity of the hydrosol was evaluated using the disk diffusion method on Mueller-Hinton agar against *Escherichia coli* ATCC 8739, *Enterococcus faecalis* ATCC 29212, *Staphylococcus aureus* ATCC 25923, *Streptococcus mutans* ATCC 35668, *Lactobacillus salivarius*, and *Candida albicans*. The diameters of the growth inhibition zones were measured after incubation.

Results. The study results showed that the hydrosol isolated from herbs raw material consists of 75% oxygenated monoterpenes, 20% monoterpenes, 5% sesquiterpenoids.

The dominant compounds are: Pulegone (24.39%), Piperitenone (23.80%), Piperitone (11.81%).

The hydrosol demonstrated significant activity against all Gram-positive bacteria and moderate inhibitory activity against Gram-negative bacteria and fungi.

Conclusion. The raw material of chervil herb grown in Armenia is not only of nutritional importance but also a valuable source of bioactive compounds, and the aromatic water obtained from it can be successfully used not only in medicine but also in various industrial fields (food, cosmetics and others).

MICROSCOPICAL AND PHYTOCHEMICAL ANALYSIS OF FERULA RIGIDULA GROWING IN BYURAKAN

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Keywords: *Ferula rigida* L., anatomical diagnostic features, essential oil, GC-MS

Introduction. Many medicinal plants are used in the formulation of various drugs and the treatment of some diseases due to their pharmacological properties, and *Ferula* is included in this category. Due to Zolotnistkaya (2014), 4–5 species of the plant are found in Armenia. It is rich in umbelliferone, gum-resins, and essential oil, which contains azulenes. According to scientific sources, galbanic acid has been obtained from the root resin of the species *F. gumosa* and *F. galbaniflua*, which possess antibiotic activity. According to the results of some studies, the Central Asian species of ferula (*F.karatavica*, *F.samarkandica*, *F. tschimganica*) are considered alkaloids containers (1).

This plant boasts numerous properties, including antiseptic, expectorant, memory enhancement, alleviation of kidney-related pains, digestion improvement, rheumatism treatment, relief from flatulence, bronchitis treatment, anticoagulation, anti-tumor and cough relief (2,3). In addition, these medicinal plants are also used in the food industry and food additives due to their properties, especially of its oleo-gum resin *Ferula* is mainly used as a flavoring agent (4). In Armenia, the species *F. rigidula* and *F. szowitsiana* are of interest, which are found in the regions of Byurakan and Artashat. The aim of our study is the determination of anatomical diagnostic features and the phytochemical evaluation of essential oil of the herb *Ferula rigidula* growing in Byurakan.

Material and methods. The raw material of *Ferula rigidula* was collected from Byurakan in the flowering stage. The primary processing and drying of a raw material and microscopic examination were carried out by WHO instructions. The aerial parts were extracted by the hydro-distillation method. The composition of the essential oil isolated from dried herb was analyzed by the GC-MS method.

Results. Anatomical diagnostic features of *Ferula* herbs were revealed which primarily characterize the family Apiaceae, especially the genus *Ferula*, and are conditioned by climatic factors. More than 50 compounds were found in the essential oil. Major components were monocyclic and bicyclic monoterpenes. Oxygenated and other types of sesquiterpenes were found.

Conclusion. The results of our study confirm that the natural climatic factors significantly influence the anatomical structure, the tissue peculiarities and the chemical constituents.

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AGE DIFFERENCES IN ACE2 EXPRESSION IN INFANTS: IMPLICATIONS FOR VIRAL SUSCEPTIBILITY AND PEDIATRIC HEALTH

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Key words: Angiotensin-converting enzyme 2 (ACE2) receptor, children, Covid19

Background: The angiotensin-converting enzyme 2 (ACE2) receptor has garnered significant attention for its critical role as the primary entry point for the SARS-CoV-2 virus, which causes COVID-19. ACE2 is widely expressed in various tissues, including the respiratory system, and has been identified as a key factor in viral infection, particularly in the nasal and respiratory epithelial cells.

Methods: A hospital-based analytical cross-sectional study design was used to analyze the presence of angiotensin-converting enzyme 2 (ACE2) in infants, depending on their demographic and selected medical history characteristics. Data were extracted from the medical records of 60 infants from Yerevan, all of whom had monthly visits to their family doctor at the "Muratsan" University Clinic. The "Muratsan" University Clinic is the main hospital serving children under one year old in Armenia. The study group included 60 children who were healthy at the time of the examination. Nasal swabs were taken from the nasal cavity of the children using a cotton swab.

Results: In the vast majority of cases (83.3%), the obstetric history of the infants' mothers was not loaded. The overwhelming majority of infants displayed characteristics indicative of favorable perinatal outcomes. This as evidenced by a significant proportion being born non-preterm (95.0%), having normal birthweight (96.7%), exhibiting normal growth parameters (95.0%), and obtaining high Apgar scores (96.7%). Furthermore, the vast majority of children (91.7%) did not exhibit congenital diseases, while over two-thirds (76.7%) had no prior hospitalizations. Additionally, nearly two-thirds of the infants (71.7%) were exclusively breastfed. The proportion of infants yielding a positive result on the angiotensin-converting enzyme 2 (ACE 2) test was 33.7%, whereas 66.7% of infants tested negative for the enzyme. Female infants exhibited a significantly elevated likelihood of testing positive for angiotensin-converting enzyme 2 (ACE 2) compared to males, with odds ratio (OR) of 3.1 (95%CI 1.1-9.5, p=0.045). None of the other variables under investigation demonstrated a statistically significant association with the likelihood of positive test results.

Conclusion. While the current study offers valuable insights into the relationship between gender and ACE2 expression in infants, further research is needed to explore the mechanisms behind these findings, investigate other potential influencing factors, and examine the clinical significance of these differences. This would help refine our understanding of ACE2 regulation and its implications for viral susceptibility, immune responses, and overall pediatric health.

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THE PALATABLE FOOD CONSUMPTION ESCALATES NEUROTRANSMITTER DEFICITS IN A RAT MODEL OF DEPRESSION

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Keywords: reward system, learned helplessness, depression, dopamine, serotonin

Introduction: Palatable food is among the major activators of reward circuits, a dense network of brain structures, involved in the control of learning and behavior. Sugar- and fat-rich, high-calorie food induces a set of peripheral and central events associated with the feeling of pleasure. Dopamine and serotonin are the principal neurotransmitters involved in central reward processing. Reduction of dopamine and serotonin levels is strongly associated with depression, a pathological condition characterized by altered mood and loss of interest in normally pleasurable activities. Binge eating or loss of appetite are typical manifestations of depression, and overeating might represent an attempt to increase serotonin and dopamine levels in reward circuits. In the present work, we aimed to evaluate the effect of palatable food consumption on dopamine and serotonin levels in reward-associated structures, including the hippocampus and striatum, in the learned helplessness model of depression.

Materials and Methods: Two-month-old male Sprague-Dawley rats were used. Animals were housed 5 per cage with unrestricted access to food and water. After 2 weeks of adaptation, the animals were randomly assigned into four groups (n=7): 1) Palatable + no depression (Control 1), 2) Ordinary + no depression (Control 2), 3) Palatable + depression, 4) Ordinary + depression. Ordinary groups received fresh vegetables and cereals, palatable groups additionally received sugar-, fat- and protein- rich food (meat, eggs, fast food, bread, pastries, fries, etc.). The diet continued until a statistically significant weight difference was detected (approximately 2 months). Depression was induced using the standard learned helplessness protocol and assessed by the wheel-turning box and behavioral tests. Exploratory behavior and anxiety-related responses were assessed using the Open Field and Elevated Plus Maze tests. Dopamine and serotonin levels in brain samples were quantified using ELISA. Behavioral tests were performed twice: before induction of depression and before sacrifice.

Results overview: At the first behavioral testing the palatable group demonstrated increased anxiety in the Elevated Plus Maze test and reduced exploratory behavior in the Open Field, compared to the ordinary group. In the learned helplessness test, the latency to become helpless was significantly shorter in the palatable group. In the palatable + no depression group, serotonin levels were reduced in both hippocampus and striatum, while dopamine was significantly lower in the striatum, with no significant hippocampal change. The palatable + depression group showed the lowest dopamine and serotonin levels in both structures, compared with the ordinary + depression group.

Conclusion: Based on these results, we conclude that uncontrollable consumption of palatable food does not improve dopamine and serotonin release under depression, but markedly reduces these neurotransmitters in reward-related brain regions.

These findings may contribute to improved strategies for depression management by highlighting the necessity of preventing palatable food overconsumption and its associated weight gain, particularly given the adverse modulatory effects of palatable food on reward-related neurotransmitter levels.

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THE IMPACT OF THE COVID-19 PANDEMIC ON STRUCTURAL DYNAMICS OF HEALTH PROGRAMS FINANCING IN ARMENIA DURING 2019–2024

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Keywords: healthcare, financing, COVID-19, public health

Introduction. The COVID-19 pandemic reshaped global health systems by prioritizing public health preparedness, infectious disease control, and health system resilience (1-2). Armenia was no exception: notable shifts occurred in the distribution of health program financing between 2019 and 2024. It is of paramount importance identification how the pandemic influenced the redistribution of health budget priorities and to determine emerging trends in the allocation of financial resources before, during, and after the pandemic. This study aimed to analyze the structural dynamics of Armenia's healthcare financing programs between 2019 and 2024, with particular emphasis on the impact of the COVID-19 pandemic.

Materials and Methods. The study was conducted based on official statistical data using descriptive statistics. Annual financial indicators of 12 key state-funded health programs within Armenia's healthcare budget were evaluated, including public health, primary care, maternal and child health, as well as the prevention and treatment of infectious and non-communicable diseases. The data were presented as percentage distributions for the years 2019–2024. Descriptive and comparative analyses were applied to identify trends in the structure of healthcare financing before, during, and after the COVID-19 pandemic.

Results. The share of public health programs rose markedly: from 5.1% in 2019 to 12.0% in 2022, reflecting enhanced focus on epidemiological surveillance, laboratory capacity, and national response coordination. After 2022, the share dropped to 4.4%, indicating a gradual return to standard funding levels. Interestingly, the share of infectious disease prevention programs declined from 2.8% to 1.4%, likely due to temporary reallocation of resources to emergency response and vaccination initiatives.

Meanwhile, the modernization and efficiency improvement program fell from 4.0% to 1.5%, and primary healthcare's share declined from 29.2% to 18.8%. This pattern suggests disruptions in routine services during lockdown periods and diversion of personnel toward COVID-19 related tasks.

Conversely, the non-communicable disease care program doubled: from 11.3% in 2019 to 23.6% in 2024, signaling a post-pandemic pivot toward managing chronic diseases and long-COVID complications. These include respiratory, cardiovascular, and neurological conditions whose prevalence increased after the pandemic. The maternal and child health program share dropped moderately (from 17.9% to 13.7%), reflecting temporary service reductions during restrictions. In contrast, medical assistance for socially vulnerable groups remained stable at 20–25%, underscoring sustained social protection priorities despite the crisis.

Conclusion. The COVID-19 pandemic acted as a catalyst for major structural changes in Armenia's health financing. During the pandemic, resources were concentrated on public health and emergency measures, while the post-pandemic period emphasized recovery, chronic disease management, and system resilience. The observed transition marks a strategic evolution of Armenia's health policy from short-term crisis response to long-term sustainability and prevention-oriented care.

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THE IMPACT OF IMMUNE ALARMINs ON CARDIAC FUNCTION. HORMONAL CORRECTION OF THEIR ACTION

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Keywords: heart, pro-inflammatory factors, calcium- regulating hormonal system

Introduction: The alarmins of immunity (HMGB1, S100A8/A9, HSP60, interleukins, bacterial lipopolysaccharides) belong to category of pro-inflammatory factors that trigger innate and adaptive defense mechanisms in tissues. However, their uncontrolled accumulation causes cell damage ("cytokine storm"). The aim of this study was to investigate the ionic mechanisms of alarmins action on the heart and possible correction of their harmful effects by calcium-regulating hormones.

Materials and Methods: Na^+ , K^+ , Ca^{2+} , and inorganic phosphate levels were determined in blood serum using an ionic-selective analyzer and spectrophotometer, respectively. Hormones of calcium-regulating system (parathyroid hormone calcitonin, vitamin D) and HMGB1 from the DAMPs (Damage Associated Molecular Pattern) group were detected using ELISA kits. The indicated parameters were assessed in three groups: individuals suffering from cardiomyopathy developing against the background of hypertension/myocardial ischemia: individuals in the acute phase of COVID-19 infection: two weeks after recovering from COVID-19 infection. The experimental part was conducted on an isolated frog heart model. Pacemaker activity and the amplitude of heart contractions were recorded by the deviation of the laser beam hitting the contracting heart. Mechanism of alarmins' action was investigated by the pharmacological analysis using blockers of various channels and cellular structures: Ca^{2+} - channels (verapamil), K^+ - channels (aminopyridine), phosphodiesterase (theophylline), Na-K-pump (ouabaine). Pacemaker activity and the amplitude of heart contractions were determined under the conditions of application on heart either single alarmin or alarmin in combination with one of the blockers, or alarmin in combination with one of the calcium-regulating hormones (parathyroid hormone calcitonin, vitamin D).

Results: Clinical observations revealed a high level of HMGB1 in blood serum of patients with cardiomyopathies, as well as during the development of COVID-19 infection and in the post-COVID period, accompanied by hypocalcemia, particularly pronounced in the acute phase of COVID-19 infection. In these conditions, there was a positive shift (within physiological values) in the concentrations of vitamin D and PTH, presumably aimed at maintaining calcium homeostasis, and consequently heart function. In the experiment, the primary focus was on studying the single effect of alarmins LPS (Pathogen Associated Molecular Pattern, PAMPs) and S100A8/A9 (DAMPs) on the functional parameters of the heart. Negative inotropic and chronotropic effects of alarmins were identified. Further, the role of the calcium-regulating hormonal system in correcting calcium homeostasis disturbances and the associated negative effects of alarmins on heart functional activity was investigated. Restoration of myocardial functional parameters by calcium-regulating hormones was demonstrated under conditions of disturbances in cardiac activity caused by alarmins.

Conclusion: The protective effect of the calcium-regulating hormonal system in the presence of alarmins is aimed at restoring the disturbed functional parameters of the heart. At the same time, the observed positive shift in the concentrations of vitamin D and PTH in cardiomyopathies and in COVID-19 infection presumably has a protective/modulatory effect aimed at maintaining calcium homeostasis and improving the activity of the heart weakened by increased concentrations of cytokines. Pharmacological analysis revealed the involvement of Ca^{2+} , phosphodiesterase, Na-K pump, and to a lesser extent K^+ in the realization of effects of LPS and S100A8/A9 on heart.

PREVALENCE OF AUTISM SPECTRUM DISORDERS IN CHILDREN POPULATION AGED 0-18 YEARS IN REPUBLIC OF ARMENIA

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Key words: Autism, ASD, Non-genetic factors

Introduction. Over recent decades, the understanding of autism spectrum disorders (ASD) has evolved substantially, reflecting its multifactorial and heterogeneous nature. Current researches suggesting that no single cause explains the disorder; rather, it arises from the interplay of genetic, neurobiological, and environmental factors. Prenatal and perinatal environmental influences, exposure to toxins have been implicated as modulators of risk.

Methods. This cross-sectional study involved parents of 105 children with ASD. Participants were recruited from specialized neurodevelopmental centers and provided informed consent prior to inclusion. Data were collected through a structured questionnaire of 145 questions, designed to explore potential etiological factors of ASD. The questionnaire included sections on demographic information, family medical history, prenatal and perinatal conditions, early developmental milestones, environmental exposures, and psychosocial background. All data were coded and analyzed using **SPSS software**, applying descriptive statistics and correlation analyses.

Results and discussion. Among non-genetic factors, advanced parental age is one of the most discussed contributors to ASD. In our study, the mean maternal age at childbirth was 27.6 ± 5.1 years (range 19–40). Most mothers (89.9%) gave birth before age 35, while only 2% were over 40. The mean paternal age was 31.4 ± 6.0 years (range 21–56); 42.4% were under 30, and only 3% over 45. Although no scientific evidence supports a link between vaccination and ASD, 75.2% of mothers reported full vaccination of their child; 30.4% noticed temporary regressions in speech or communication. In 59.4% of families, the ASD child was firstborn. The interval between pregnancies was one year for 66.3% of mothers, two years for 10.5%, and over five years for 12%, both short and long intervals being described as potential risks. Preterm birth (<37 weeks) occurred in 29% of cases; 48.5% of pregnancies had complications. Regarding birth weight, 84.6% of children were within normal limits (2500–4500 g), 14.4% were low birth weight, and 1% was over 4500g.

Conclusion. The findings of this study suggest that, although **genetic factors** play a central role in ASD, several **non-genetic and perinatal factors** may also contribute to its development. In the examined Armenian cohort, most ASD cases occurred among **younger parents**, indicating that advanced parental age may be a less prominent factor in this population. However, **low birth weight, preterm delivery, short or prolonged intervals between pregnancies, and pregnancy complications** were relatively frequent and may increase ASD susceptibility. While most children were fully vaccinated, no causal link with ASD was observed. Overall, these results highlight the **multifactorial nature of ASD** and underscore the need for further research focusing on **perinatal health, early screening, and preventive maternal care** to reduce potential environmental risks.

RAW MATERIAL OF VALERIANA CARDIOLA L. ACCLIMATIZED IN ARMENIA AS A SOURCE OF BIOLOGICAL ACTIVE SUBSTANCES

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Keywords: Valeriana cardiola L., bioresources, radionuclides, essential oil, valeranone.

Introduction. *Valerian* (*Valeriana officinalis*) is a perennial plant native to North America, Asia, and Europe, whose root is believed to have sedative properties. *Valerian* is one of the medicinal plants used to reduce anxiety and sleep disorders [1]. The bioactive compounds found primarily in the roots and rhizomes of *Valerian* include valepotriates, components of the volatile oil. Most monoterpenes, namely, borneol, bornyl acetate, and isobornyl acetate, exhibit various bioactivities [2]. From this perspective, acclimation of *Valeriana cardiola* species in the ecologically clean zone of Armenia, free from heavy metals and radionuclides became important for raw material base creation, standardization and production of native natural preparations.

Materials and Methods. As a material served *V. cardiola* (*Rhizomata cum radicibus Valerianae cardiola* L.) cultivated in Kotayk and Aragatsotn. The harvest and preliminary procurement of herbal raw materials was performed in accordance with WHO (3) instructions. For the standardization and assessment of ecological safety of *V. cardiola* was used resourcological, commodity and physicochemical methods.

Results and discussion. According to the results of resourcological studies, under the agroclimatic conditions of Kotayk and Aragatsotn, *Valeriana cardiola* species are cultivated very efficiently and the cultivated species are characterized by high source productivity with the highest amounts of bioresources, utilized resources and possible annual procuring volumes of these species.

Investigation results showed that the highest content of isovaleric acid was stated in the raw material of *V. cardiola* collected from Aparan.

The sesquiterpenes predominated in the essential oils of the raw materials of the *V. cardiola* species harvested in the Kotayk, and monoterpenes prevailed in the essential oil of the raw materials of the *V. cardiola* species collected from Aragatsotn. The biologically active Valeranone sesquiterpenoid was found in the *V. cardiola* raw material collected from Zovuni.

The results of the research showed, that the high content of macro-, micro- and ultra microelements was observed in the raw materials.

The results of spectrometric studies showed, that radionuclides (cesium-137, strontium-90) found in samples of collected raw materials of *V. cardiola* grown in Kotayk and Aragatsotn are quite low in content and do not exceed the established indicators of the 13th State Pharmacopoeia (2015) and European Pharmacopoeias (2013).

Conclusion. Thus, according to the research results, it can be stated that the collected raw materials of *V. cardiola* species acclimatized in various regions of Armenia, do not have any radiation contamination and due to its chemical composition can be used for various medical and pharmaceutical purposes.

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PREVALENCE OF TYPE 2 DIABETES MELLITUS COMPLICATIONS AMONG REGIONAL POPULATIONS IN ARMENIA

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Keywords: Type 2 Diabetes Mellitus, Complications, Angiopathy, Armenia

Introduction. Type 2 diabetes mellitus (T2DM) is a widespread metabolic disorder characterized by chronic hyperglycemia and severe micro- and macrovascular complications. Cardiovascular diseases, nephropathy, and neuropathy remain the leading causes of morbidity and mortality among diabetic patients, severely affecting their quality of life (1). According to official Armenian statistics, the prevalence of T2DM among adults in 2023 was 4,538.3 per 100,000 population, with significant interregional variations. The study aimed to assess the prevalence of complications among patients with T2DM in three Armenian regions and to evaluate behavioral and clinical factors influencing their occurrence.

Materials and Methods. A quantitative, cross-sectional study was conducted among adult T2DM patients receiving care at primary health centers in three Armenian regions; Syunik, Gegharkunik, and Armavir, representing diverse geographic and demographic conditions. A total of 468 participants were recruited proportionally to the number of registered diabetic patients in each region (Armavir 46.1%, Gegharkunik 28.7%, Syunik 25.2%). Data were collected via structured face-to-face interviews using pre-coded questionnaires ensuring participant confidentiality. The project was conducted within the framework of the Armenian EyeCare Project, supported by the World Diabetes Foundation. The survey included demographic data, duration of diabetes, behavioral risk factors, and the presence of macroangiopathic complications. Laboratory data on glycated hemoglobin (HbA1c) were used to evaluate glycemic control. Statistical analysis was performed using SPSS v27, employing both parametric and nonparametric tests. Descriptive statistics, extensive and intensive indicators, and comparative analyses were used to identify trends and associations.

Results. Among all participants, nearly half (49.7%) had been diagnosed with T2DM for more than 10 years, while 25.4% had a disease duration of 5–10 years. The prevalence of diabetic macroangiopathy was 39.6%, indicating a high burden of vascular complications among regional populations. Specific atherosclerotic conditions included: Coronary, carotid, or aortic atherosclerosis in 12.7% of cases, Peripheral vascular atherosclerosis in 7.6%, Cerebral vessel atherosclerosis in 6.3%, and Renal vessel atherosclerosis in 2.8%. Moreover, ischemic heart disease or angina pectoris was recorded in 22.7% of respondents, while myocardial infarction had occurred in 10.7%. Cardiosclerosis and cardiovascular failure were found in 9.7% of participants. Notably, the majority of complications were concentrated among patients with longer diabetes duration and insufficient glycemic control. The study also identified behavioral risk factors such as low physical activity and dietary non-compliance as contributing to the progression of vascular complications.

Conclusion. The findings reveal a high prevalence of macroangiopathic complications among Armenian patients with T2DM, particularly in long-term cases. Despite ongoing efforts to strengthen primary care services, there remains a substantial gap in early detection and prevention of diabetes-related vascular diseases. These results underscore the urgent need for targeted screening programs, lifestyle modification interventions, and improved glycemic management strategies at the primary healthcare level, especially in rural regions.

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BLADDER AUGMENTATION IN PEDIATRIC PATIENTS WITH NEUROGENIC BLADDER

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Introduction. Neurogenic bladder is one of the most complicated and problematic pathologies in pediatric urology, which is expressed with disorders of bladder functions that seriously affect the quality of life of the affected children and their families. This condition can result from various neurological diseases, spinal cord malformations, injuries, or congenital abnormalities, leading to abnormal storage and evacuation of urine. Bladder augmentation is an operation, also known as augmentation cystoplasty, the main aims of which are: excluding or postponing renal failure, eliminating incontinence, and lowering the patient’s dependence on medical staff and parents. In addition, the surgery helps to create a low-pressure reservoir, protect the upper urinary tract from further damage, and achieve better urinary continence.

Objective. The goal of the study is to analyze the results of children with bladder augmentation surgery, as well as to improve patient’s admission and its duration. Another important objective was to evaluate long-term outcomes, postoperative complications, and social adaptation after surgery.

Material and methods. We examined ten patients (6 boys, 4 girls), who were treated in our department over the last decade. The mean age was 233.7 months (135–348 months). The mean age of patients operated for augmentation was 137 months (83–215 months), and they were followed up within 15–252 months (mean period 96.7 m). The study was conducted using a statistical analysis method. Detailed clinical data, radiological findings, and laboratory results were reviewed. Factors that were taken into consideration during the study were: the frequency of pyelonephritis, the frequency of incontinence, the dynamic of renal pyelectasis, and the need for medication. All data were collected prospectively and analyzed retrospectively to determine trends and outcomes.

Results. During the follow-up period, 3 of 10 patients needed repeat surgeries. In all patients, enuresis has disappeared. In 7 patients, the pyelectasis of the upper urinary tract has diminished. In 8 patients, the frequency of pyelonephritis has diminished. The need for permanent use of medications has disappeared from everyone. Furthermore, bladder capacity and compliance significantly improved in all children. Social adaptation of patients improved. In 3 patients who had constipation and fecal soiling, all symptoms have completely disappeared. No mortality was recorded, and no cases of metabolic acidosis requiring intensive correction were observed.

Conclusion. Bladder augmentation is a highly effective method for restoring bladder function, protecting renal function, and improving continence. It is essential that all professionals who meet and deal with such patients provide information to the parents about the seriousness and importance of the disease, about the treatment and its results, as well as direct such children to pediatric urologists to examine, to follow-up, and possibly to have surgery. Comprehensive multidisciplinary management, including pediatric urologists, nephrologists, and rehabilitation specialists, is crucial to achieve optimal long-term results. Continuous follow-up and patient education ensure the best outcomes and improve overall quality of life.

ASSOCIATION BETWEEN HASHIMOTO THYROIDITIS AND MULTIFOCALITY IN PAPILLARY THYROID CARCINOMA

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Keywords: thyroiditis, papillary thyroid carcinoma, multifocal thyroid cancer Introduction

Introduction. Hashimoto thyroiditis (HT), first characterized by Hakaru Hashimoto in 1912, represents the most prevalent autoimmune disorder of the thyroid gland and a major cause of hypothyroidism. Histopathologically, HT is defined by diffuse lymphocytic infiltration, follicular cell destruction, and progressive glandular fibrosis. Papillary thyroid carcinoma (PTC) is the most common malignant neoplasm of the thyroid and constitutes the predominant form of endocrine cancer worldwide. The association between HT and PTC has been debated for decades initially described a histological coexistence between the two entities, suggesting a possible causal relationship. Subsequent studies have reported variable results—some indicating a higher prevalence of PTC among HT patients, Silva de Moraes N et al. (2019), while others found no significant correlation, Carvahlo MS et al (2017). In particular, the relationship between HT and tumor multifocality remains uncertain. The present study aimed to evaluate whether Hashimoto thyroiditis is associated with increased multifocality in papillary thyroid carcinoma, using clinicopathological data from a single tertiary surgical center.

Methods. A retrospective cohort study was performed, analyzing medical records of 263 patients who underwent total thyroidectomy—with or without neck dissection and postoperative radioiodine therapy—between January and December 2022. All surgeries were performed by the same endocrine surgeon to minimize procedural variability.

Preoperative findings (neck ultrasound, fine-needle aspiration biopsy, cytology), and postoperative histopathological characteristics were reviewed. Pathological parameters included the presence or absence of chronic lymphocytic thyroiditis, focality (unifocal or multifocal), and lymph node metastasis.

Patients were categorized into two groups based on histopathological evidence of HT:

- Group 1 (HT-positive): 91 patients (42 with multifocal PTC, 49 with unifocal PTC)
- Group 2 (HT-negative): 172 patients (71 with multifocal PTC, 101 with unifocal PTC)

Statistical analyses were performed using the chi-square (χ^2) and Fisher's exact tests to assess the relationship between HT and tumor multifocality. A p-value < 0.05 was considered statistically significant. Ethical approval was obtained, and the requirement for informed consent was waived due to the retrospective design and anonymized dataset.

Results: Among 263 evaluated patients, multifocality was present in 113 cases (42.9%), and unifocality in 150 cases (57.1%). In the HT-positive group, multifocality was observed in 46.1% (42/91), while in the HT-negative group, it occurred in 41.3% (71/172). Statistical analysis revealed no significant difference between groups regarding multifocality rates ($p = 0.53$; $\chi^2 = 0.395$).

Further evaluation of demographic and pathological factors demonstrated no significant association between HT and age, gender distribution, or lymph node metastasis. Thus, the presence of Hashimoto thyroiditis did not emerge as a predictive factor for multifocal tumor presentation in papillary thyroid carcinoma.

Conclusion. This study found no statistically significant relationship between Hashimoto thyroiditis and tumor multifocality in patients with papillary thyroid carcinoma. Despite prior reports suggesting a possible biological link between autoimmune thyroid inflammation and thyroid tumorigenesis, the current findings indicate that HT does not independently increase the risk of multifocal tumor formation. Larger, multicentric studies incorporating molecular and immunohistochemical profiling are recommended to further elucidate the complex interaction between chronic lymphocytic thyroiditis and thyroid carcinogenesis.

PHYTOCHEMICAL CHARACTERISTICS OF ARMENIAN FLORA SATUREIA HORTENSIS L. LEAVES AND WOUND HEALING ABILITY OF THE OINTMENT OBTAINED FROM ITS ESSENTIAL OIL

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Key words: *Satureia hortensis*, essential oil, ointment, wound healing ability, antimicrobial effect

Introduction. Drug discovery and development from herbal raw material continues to be one of the exploring directions of modern pharmacy. Therefore, the study of Armenian herbal resources and their rational use for the creation of new effective medicines is vital. *Satureia hortensis* (Summer Savory) belonging to Lamiaceae (Labiatae) family is valuable by its rich existence of essential oil, which has wide specter of activities. The aim of our research was to investigate Armenian flora *Satureia hortensis* leaves phytochemical properties and study its essential oil ointment wound healing ability.

Material and Methods. Plant microscopic study is one of the most important methods for determining the quality of crushed herbal raw material. It is based on the study of the leaf micro preparation, which was carried out by preliminary softening of the raw material by hot moistening. It has been studied using Pleuger XSZ107 light microscope. The essential oil was obtained from the leaves of *Satureia hortensis* by steam distillation. The quantitative content of the essential oil was detected by the Ginsburg method. The wound healing ability of the ointment obtained from essential oil has been studied under the conditions of thermal burn. It was carried out by assessing the control and tested groups animals wound surface burned areas sizes changes using the planimetric method. The burn surface pH was detected using a multitest IPL-112 (semico) pH meter. For microbiological study, the smear taken from the wound surface was placed in a sterilized labeled test tube and microbiological examination was performed.

Results. The plant raw material was obtained after drying under the appropriate conditions *Satureia hortensis* leaves, collected in the flowering period from the Masis region of the Republic of Armenia. The obtained raw material proper correspondence to the necessary requirements was confirmed based on the microscopic study results, which indicate the presence of numerous essential oil glands with a structure typical to the Lamiaceae family, as well as conical warty unicellular hairs spread along with the multicellular hairs with curved warty, dark pigmented content. The obtained essential oil is a light-yellow liquid with sharp, characteristic odor; the quantitative content of the separated essential oil is 2.9%. Carried out experiments concerning wound healing ability of Savory leaves essential oil ointment evident, that the wound area surface was decreased compared with the control group. It has been found out that noted ointment influences on some pathogenic bacteria, such as *Proteus mirabilis*, *Klebsiella*, *Escherichia coli*, in which result pH of burn surface is decreased on 14 day.

Conclusion. Thus, according to the obtained results the essential oil content is quite high in the plant and the tested ointment has the ability to regenerate damaged tissue in a thermal burn model by its ability to reduce wound surface area, prevent the increase in pH observed during burn wound formation, and inhibit bacterial growth. This may serve as a basis for recommending it as a potential agent in the treatment for tissue damage.

α_2 -ADRENOBLOCKERS MODULATORY EFFECT ON THE NOISE-MEDIATED SEVERAL BIOCHEMICAL AND MORPHO-IMMUNO-HISTOCHEMICAL CHANGES IN THE RAT'S BLOOD PLASMA AND TISSUES

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Keywords: Noise; α_2 -adrenoblockers; Ca^{2+} ; superoxide-producing associate; NADPH.

Introduction. Experimental studies of chronic noise exposure in modern urban life testified about oxidative stress due to the corresponding hormones effects leading to accumulation of ROS and endothelial dysfunction. Typically, O_2^- can be produced in the cell, usually in metabolic reactions when enzymes catalyze the transfer of an electron from NADPH to singlet oxygen. ROS production largely occurs in hepatocytes during metabolic and barrier activities in the mitochondrial respiratory chain, and can also be formed from NADPH oxidases. The prolonged stimulation of the adrenals causes pronounced impact to the whole organism, which boosts the risk for different disorders, such as: anxiety, cardiovascular disturbances, cognitive problems, etc. This study aims to evaluate the protective effect of α_2 -adrenoblockers to modulate oxidative stress and corticosterone levels due to chronic noise exposure. To achieve this, we examined the effects of beditin and mesedin, along with changes in corticosterone, Ca^{2+} content, and morphological alterations in various tissues under noise-induced stress. Beyond this, detection of immune-reactivity and proliferation of Galarmin-containing cells in adrenals, and isolation of the total fractions of superoxide-producing associate from the rat liver under noise exposure and the beditin and mesedin actions on them were pertinent.

Material and methods. Experiments were provided on the albino female rats divided into four groups: (1) control, (2) noise-exposed, (3) noise-exposed and beditin injected (2 mg/kg, i.p.), and (4) noise-exposed and mesedin-injected (10 mg/kg, i.p.) animals. The noise exposure was of 91dBA noise on 60 days with a daily duration of 8 h. Isolation and purification of above associates was carried out using the licensed method. The antioxidant activity of beditin and mesedin was determined by the Coomassie Brilliant Blue discoloration method. Quantitative shifts of $^{45}\text{Ca}^{2+}$ were observed in the heart mitochondria, endoplasmic reticulum, as well as in the liver and kidneys by Galoyan et al. method. The materials for morphological studies were the samples of tissues excised from the suprarenal glands of rats.

Discussion. For the first time, the total fractions of superoxide-containing associates were separated from the cell membranes of the rat liver tissue under the chronic noise stress conditions and the regulative effects of the α_2 -adrenoblockers. Increased $^{45}\text{Ca}^{2+}$ and decreased corticosterone levels in the mentioned tissues were observed under the chronic noise exposure. By influence of chronic noise stress, the adrenal gland of the 2nd group animals has had diffuse mild adrenal hypertrophy resulted in pronounced widening of the cortex and overall gland enlargement compared with intact normal adrenals. Compared to the 2nd group, in the 3rd and 4th groups the adrenal hypertrophic cells with enlarged nuclei occur in adrenal glands associated with increased maximal corticosterone responses to ACTH. It can be evolved as a result of the stress response.

Conclusion. Thus, selective postsynaptic α_2 -adrenoceptor blockers mediated responses may be potential anti-hypoxic and antioxidant drugs. So far, very few postsynaptic α_2 -adrenoceptor blockers are mesedin and beditin, as potent modern selective medication having different mechanisms of action: vasodilation, improved oxygenation, and antioxidant properties, thereby expanding the scope of their use.

THE SECONDARY LIVER DYSFUNCTION IN CRITICALLY ILL PATIENTS

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Keywords: secondary liver dysfunction, critically ill patients

Introduction. The aim of this study was to identify the most typical manifestations of secondary liver dysfunction in different categories of critically ill patients and to study the predominant role of various factors in the development of liver dysfunction in critically ill patients. The study included data from 200 patients (116 men and 84 women, whose average age was 59.48 ± 18.23 years) with various pathologies who were in critical condition and received treatment in the intensive care unit of University Hospital «Heratsi № 1» for the period 2014-2020. The severity of the general condition at the time of admission to the ICU was assessed using the APACHE II scale (the average indicator was 16,76). The degree of organ-system failure was determined by the SOFA II scale (the average indicator was 7,24). Mortal outcomes were recorded in 73 cases. In all patients, indices of conjugative, cytolytic, and synthetic liver functions were assessed at three stages of hospitalization in the intensive care unit (day 1, days 3–5, and the final day).

Materials and methods: According to the dominant pathology, patients were divided into five groups: group 1–63 patients with various brain diseases; group 2–40 patients with acute cardiovascular and/or acute respiratory failure; group 3–40 patients with severe multiple trauma; group 4–40 patients with acute abdominal surgical pathologies; and group 5–12 patients who required intensive care for other, relatively rare causes. In all patients, indices of conjugative, cytolytic, and synthetic liver functions were assessed at three stages of hospitalization in the intensive care unit (day 1, days 3–5, and the final day).

Results: Our study results allowed us to conclude that approximately 50% of critically ill patients exhibit some signs of liver dysfunction. For example, in patients with cerebrovascular accidents, disturbances of conjugative liver function were the most common; in those with cardiorespiratory pathologies, the most statistically significant changes appeared as disturbances of synthetic functions on days 3–5 and persisted until discharge; in patients with surgical pathologies, disturbances of synthetic, cytolytic, and cholestatic functions predominated, usually appearing from days 3–5 and persisting until discharge; and in patients with polytrauma, significant changes appeared as disturbances of synthetic and conjugative functions, which were most pronounced on days 3–5 and persisted until discharge.

Conclusion. We examined potential relationships between the development of liver dysfunction and various hypothetical predictors of clinical significance. These included demographic data (patient gender and age), preexisting medical conditions, hemodynamic data (systolic, diastolic, and mean arterial pressure), the presence of SIRS criteria (leukocytosis, temperature), indirect parameters of oxygenation impairment (blood lactate), the use of potentially nephrotoxic and hepatotoxic medications, and others. Based on a one-way analysis of variance (ANOVA) of the data obtained, it was established that independent predictors of the development of secondary liver dysfunction were: mean arterial pressure, presence of SIRS criteria and hepatotoxic medications.

APPLICATION OF ASSISTANCE MODES OF MECHANICAL VENTILATION ON PATIENTS WITH ABDOMINAL COMPARTMENT SYNDROME

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Key words: acute respiratory failure, abdominal compartment syndrome

Acute respiratory failure (ARF), caused by impaired abdominal compartment syndrome is a fairly common pathology in intense care practice. Abdominal compartment syndrome plays a significant role in the remodeling of the respiratory patterns, bringing regional restrictions on the type of expansion of the alveoli with a prevailing restrictive component and provokes respiratory function disorders.

We have been tasked to investigate the possibility of using the assistant modes of mechanical ventilation in the correction of hemodynamic and respiratory disorders in patients with abdominal compartment syndrome, and develop tactical approaches to non-traumatic weaning approaches from the respirator. Our studies have been carried out at the anesthesiology and intensive care department at University Medical Complex "Heratsi" №1 on 167 patients with diagnosed abdominal compartment syndrome. All patients studied had signs present of ARF and required prolonged mechanical ventilation. Patients' age ranged from 54 to 86 years old. Ventilation was carried out on the respirator model "Hamilton G5". During the treatment we observed continuous monitoring of respiratory mechanics, lung compliance, X-ray studies of the chest, blood gases, indicators of hemodynamics and status of neuro-muscular conduction.

The presence of one or multiple of factors caused dysfunction in the normal excursions of the diaphragm, thereby contributing to a significant increase in intrathoracic pressure. Clinical and diagnostic tests revealed that this was the main factor of restrictive hypercapnic disorders which lead to secondary arterial hypoxemia and right ventricular failure. We surveyed our patients who expressed symptoms of respiratory dysfunction manifested in the form of lower tidal volume ($V_t - 387 \pm 4,8$ ml), PaO_2 ($50,3 \pm 1,6$ torr), $Sat-aO_2$ ($79,6 \pm 2,3\%$), pulmonary compliance ($C_{pulm} - 57 \pm 0,6$ ml / torr), PaO_2 / FiO_2 ratio ($249,6 \pm 24,6$) and a rise in respiratory rate ($F - 44,5 \pm 1,8$ min), $PaCO_2$ ($69,5 \pm 2,1$ torr), airway pressure ($P_{ins} - 44,1 \pm 3,6$ cm H_2O), arterio-venous oxygen difference ($D(a-v)O_2 - 64,8 \pm 2,9$) and minute ventilation ($V_e - 13,3 \pm 0,7$ l/min). Similar presentations of respiratory dysfunction were accompanied by no less severe discomfort from the cardiovascular system in the form of increase in heart rate ($132,4 \pm 6,2$ beats/min) increase in mean arterial pressure ($126,2 \pm 1,7$ torr) and central venous pressure ($9,8 \pm 0,7$ torr).

In the correction of these disorders we attributed a significant role to assistance modes of mechanical ventilation: ensuring adequate oxygenation while minimizing the level of oxygen required, ensuring adequate frequency of mechanical breaths for correction of hypercapnic disorders, reduction of the work of respiratory muscles, elimination of areas of atelectasis, preservation of lung compliance, preservation of spontaneous breathing of the patient as much as possible, ensuring continuous positive pressure during both phases of the respiratory cycle, extension of the inspiratory period, elimination of hemodynamic disorders.

By applying different techniques and variations of the assistance modes of mechanical ventilation we achieved optimization of respiratory and hemodynamic parameters, which lead to earlier and non-traumatic weaning of patients from the respirator and a significant reduction in mortality.

THE IMPACT OF COVID-19 ON THE MENTAL HEALTH OF CHILDREN AND ADOLESCENTS

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Keywords: adolescences, children, mental health, COVID-19, FCV-19S, DASS-21

Introduction. Due to the COVID-19 health crisis various countries' governments adopted social distancing and quarantine measures. School closures led to a rapid school planning change from in-person to online. Coronavirus disease has significantly changed life and habits around the world. Several studies found high rates of depressive, anxiety and posttraumatic stress disorders (PTSD) symptoms in children and adolescents of all ages. School closures can be a risk factor for children and adolescents. The aim of the study was to estimate the prevalence of depression, anxiety, and stress symptoms, as well as overall life satisfaction, among school-aged children and adolescents in Armenia during COVID-19-related quarantine and school closures.

Materials and methods: A cross-sectional survey was conducted among 395 children aged 6–17 years attending secondary schools in Yerevan from March to April 2023. Sample characteristics: boys- 49.9% (n=197), girls- 50.1% (n=198). The Armenian version of the DASS-21 was used to measure psychological distress. The Fear of COVID-19 Scale (FCV-19S) and the Spielberger-Hanin anxiety test were also employed. Statistical analysis was performed using SPSS version 23.0. Descriptive and inferential statistics (t-test, ANOVA and chi-square test) were applied.

Results: Most schoolchildren demonstrated moderate levels of personal (48.1%) and situational (49.6%) anxiety. Girls showed significantly higher levels of both personal and situational anxiety compared to boys ($P < 0.05$). Mean anxiety scores were also higher in girls. According to DASS-21, symptoms of depression, anxiety, and stress were found in 59.9%, 57.2%, and 70.4% of participants, respectively, with the highest scores among adolescents aged 15–17. An increased level of anxiety may indicate insufficient emotional adaptation to certain social situations. According to the study the average level of personal and situational anxiety was higher among girls: personal anxiety- boys 45.2 ± 4.15 point, girls 51.3 ± 3.54 point; situation anxiety- boys 37.1 ± 3.74 point, girls 42.5 ± 4.38 point. Depression scores were significantly lower among schoolchildren aged 6–10 years and higher among schoolchildren aged 15–17 years. Anxiety scores were significantly higher among girls ($p < 0.01$). Stress scores were significantly higher among schoolchildren aged 15–17 years compared to schoolchildren aged 6–10 years ($p < 0.05$). Younger children (6–10 years) had the lowest levels of psychological distress. The FCV-19S scale showed no significant differences by age or gender and demonstrated good reliability in assessing fear of COVID-19.

Conclusions: DASS-21 demonstrated perfect age-group concordance, good predictive validity, and excellent internal consistency. Further evaluations of DASS-21 in different age groups are needed to optimize the scale. The international DASS-21 questionnaire is a sensitive and valid test for assessing depression, anxiety, and stress after COVID in school-aged children in Armenia.

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EVALUATION OF PREDICTORS OF COVID-19 SEVERITY IN INFANTS, REPUBLIC OF ARMENIA

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Keywords: COVID-19, predictors, infants, demographic and medical history characteristics.

Background: COVID-19 is an infectious disease of variable severity caused by a new coronavirus, Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2). There was no any information about the major predictors of COVID-19 severity in the RA children population.

Material and methods: Following a hospital-based, retrospective study design, data were extracted from medical records of infants hospitalized in “Muratsan” University clinic between January 1, 2020- December 12, 2021. Given that infants may be at higher risk of severe illness with COVID-19 than older children, all infants tested positive for COVID-19 were hospitalized in Armenia during the pandemic. The sample comprised infants with severe (n=141) and non-severe (n=171) COVID-19. As possible predictors of severe form of COVID-19, several demographic and medical history characteristics of infants, as well as vital signs and laboratory findings at admission to hospital were taken into account.

Results: Among the studied infants, 141 were diagnosed with severe COVID-19, while 171 had a non-severe form of the disease. The most frequently observed clinical manifestations included catarrhal symptoms (83.0%), cough (66.0%), and dyspnea (54.0%). In general, there were no statistically significant associations between the severity of the disease and infants’ median age of admission, mode of delivery, prematurity, feeding practices, weight, presence of comorbidities. Over a two-year period five cases of severe complications were recorded: two cases of ischemic stroke, one case of thrombocytopenia, and two cases of severe reactive thrombocytosis. Unfortunately, one infant died during the study period. As expected, the length of hospital stay was longer among infants with severe disease: the median duration was 8 days (IQR: 5–11 days), compared to 5 days (IQR: 4–6 days) in those with non-severe illness ($p<0.001$). There were no statistically significant associations between infants’ median age at admission, mode of delivery, prematurity, feeding practices, weight, presence of comorbidities, and the severity of illness. The risk of developing severe COVID-19 was 7.4 times higher among infants with an oxygen saturation lower than 92%. An increased risk of severe COVID-19 by 2.6 times was observed among infants with cough ($p<0.001$), by 4.0 times in those who had dyspnea, and by 1.1 times in those who had platelet count outside the norm. All significant factors were further analyzed using a multiple conditional logistic regression to conclude which factors could be the predictors of the development of severe COVID-19. Of these, saturation up to 92%, presence of dyspnea and platelet count outside the norm were found to be associated with increased risk of the development of severe form of COVID-19 in RA infants.

Conclusion. The study identified key clinical and laboratory predictors associated with severe COVID-19 among infants under one year of age hospitalized in Armenia. Oxygen saturation less or equal 92%, presence of dyspnea, cough, intercostal retractions, and abnormalities in white blood cell and platelet counts were independently associated with an increased risk of severe disease. These findings underscore the importance of early identification and close monitoring of specific clinical indicators to guide timely and effective management of COVID-19 in this high-risk pediatric population.

INVESTIGATION OF ACUTE GENOTOXICITY DURING BLUE LED PHOTOTHERAPY IN NEONATES

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Keywords: neonatal jaundice, LED phototherapy, DNA damage, comet assay, flow cytometry

Background: Phototherapy (PT) is the most common therapeutic intervention for treating hyperbilirubinemia in neonates. This therapy lowers serum bilirubin levels by transforming bilirubin into water-soluble isomers that can be eliminated without conjugation in the liver [1]. The use of fluorescent tubes and halogen lamps for phototherapy is known to induce oxidative DNA damage in newborns and has rarely been used in recent years [2]. They have been replaced by modern and more efficient blue light-emitting diodes (LEDs) the use of which is recommended by most modern protocols [3,4]. It is currently unknown whether BLED-PT causes DNA damage in newborns.

Objective: To study whether standard BLED-PT induces oxidative DNA damage in peripheral blood mononuclear cells of neonates with hyperbilirubinemia.

Methods: The study was performed in the Neonatal Intensive Care Unit at Erebound Medical Center, Yerevan, between December 2023 and June 2024. A total of 40 newborns (32-38 weeks of gestational age) with unconjugated hyperbilirubinemia received conventional BLED-PT in standard doses of 15-20 $\mu\text{W}/\text{cm}^2/\text{nm}$. The study groups did not differ statistically in terms of delivery method, feeding type, and duration of phototherapy. Blood samples were collected at 0 and 24 h of phototherapy and from the control group of healthy, non-jaundiced newborns. Acute genotoxicity was assessed using single-cell gel electrophoresis (comet assay) in peripheral mononuclear cells [5,6].

Results: Analysis of DNA damage in the leukocytes of neonates before and after BLED-PT failed to reveal a significant difference ($p>0.05$). The level of DNA damage in the control group was $4.32\pm0.55\%$, in the jaundiced group before PT it was $5.02\pm0.73\%$, and after PT $4.64\pm0.49\%$.

Conclusion: Our results show that conventional blue LED phototherapy at standard irradiances of 15-20 $\mu\text{W}/\text{cm}^2/\text{nm}$ does not induce DNA damage in newborns with unconjugated hyperbilirubinemia. Further studies may be needed in assessing the safety of intensive phototherapy using blue LED sources.

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COMBINED USE OF ETHANOL ABLATION AND RADIOFREQUENCY ABLATION IN THE TREATMENT OF BENIGN THYROID NODULES

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Keywords: Benign thyroid nodules, Ethanol ablation (EA), Radiofrequency ablation (RFA), Combined treatment

Introduction: The composition of thyroid nodules (TNs) plays a crucial role in determining the therapeutic strategy (1). Based on internal characteristics, thyroid nodules are generally classified as:

☐ Completely cystic: almost entirely fluid-filled.

☐ Mixed / Predominantly cystic:

- Solid component 0–10%
- Solid component 10–50%
- Solid component $\geq 50\%$

☐ Completely solid.

Ultrasonography (US) allows accurate assessment of the nodule's internal structure, cystic content, echogenicity, and vascularity (2). These features guide clinical decision-making—from simple observation to ablative interventions or thyroidectomy (3). International guidelines (e.g., ETA, KSThR) recommend the use of ablative methods only when the benign nature of the nodule has been confirmed by at least two fine-needle aspiration (FNA) biopsies and when clinical or cosmetic complaints are present (4). Among minimally invasive treatment options for benign thyroid nodules, ethanol ablation (EA) and radiofrequency ablation (RFA) are most widely used. EA is considered most effective for pure or predominantly cystic nodules, whereas RFA is more suitable for mixed or solid nodules (5).

Aim: To evaluate the effectiveness of different treatment modalities for benign mixed (predominantly cystic) thyroid nodules by comparing three approaches:

1. Ethanol Ablation (EA) only
2. Radiofrequency Ablation (RFA) only
3. Combined EA + RFA treatment

Materials and Methods: The study included 90 patients aged 18–55 years, all with benign nodules (confirmed by FNA) larger than 2 cm. Patients were divided into three equal groups:

☐ Group I (n=30): EA only

☐ Group II (n=30): RFA only

☐ Group III (n=30): Combined EA + RFA

The following parameters were evaluated:

☐ Changes in nodule volume one year after treatment

☐ Thyroid function indicators (TSH and fT4 levels)

Results

After one year, the average nodule volume reduction was as follows:

☐ EA group: 64.5% – 73.2%

☐ RFA group: 84% – 87%

☐ Combined EA + RFA group: 88% – 95%

The reduction in nodule size and the improvement of clinical symptoms were most pronounced in the combined treatment group. No cases of thyroid dysfunction were observed in any group (TSH and fT4 levels remained within the normal range).

Conclusion: The combined application of ethanol ablation and radiofrequency ablation demonstrates higher therapeutic efficacy compared to either method alone. These findings suggest that the combined ablative approach is the most advantageous option for the treatment of benign mixed (cystic-solid) thyroid nodules.

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THE EFFECTIVENESS OF RADIOFREQUENCY ABLATION IN THE TREATMENT OF BENIGN THYROID NODULES

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Keywords: Thyroid gland, radiofrequency ablation, benign nodule, non-surgical treatment

Introduction. Benign thyroid nodules are common in the general population, with a prevalence reaching up to 30%. In certain cases - depending on the nodule size (≥ 2 cm), cosmetic concerns, or the degree of compression on adjacent anatomical structures - thyroidectomy is performed even for cytologically confirmed benign nodules. However, surgery is frequently associated with postoperative complications such as hypothyroidism, recurrent laryngeal nerve injury, bleeding, and wound infection. Additionally, the resulting neck scars may cause cosmetic dissatisfaction. Over the past decade, in order to avoid these complications, minimally invasive non-surgical approaches such as radiofrequency ablation (RFA) have gained increasing popularity. The aim of this study was to evaluate the clinical efficacy and risk of complications of RFA in the treatment of benign thyroid nodules, comparing the outcomes with those of surgical intervention.

Materials and Methods. The study included 175 patients (145 females and 30 males) aged 18–65 years with benign thyroid nodules confirmed by fine-needle aspiration biopsy (FNAB). The size of the nodules exceeded 2 cm. During 2023–2024, 25 RFA procedures were performed, and all treated patients ($n=25$) were included in the study group. In the same period, 150 hemithyroidectomies were performed for benign nodules, and all cases were included in the comparison group ($n=150$).

Patients were divided into two groups:

1. Group I ($n=25$): Radiofrequency ablation
2. Group II ($n=150$): Hemithyroidectomy

RFA was performed under local anesthesia using a 17G electrode with an average operating temperature of 80–90°C.

The following parameters were compared between the groups:

3. Percentage reduction in nodule volume
4. Thyroid hormone levels
5. Frequency of complications

Statistical analysis was performed using SPSS 23.0 software.

Results. In the RFA group, 22 patients demonstrated a 71–90% reduction in nodule volume, and in the remaining 3 patients, a complete (100%) reduction was observed within 12 months ($\chi^2 = 175.000$, $p=0.000 < 0.05$). In the surgical group, nodules were completely removed (100%) in all patients; however, postoperative hypothyroidism developed in 42% of cases, whereas no cases of hypothyroidism were reported in the RFA group ($\chi^2 = 6.406$, $p=0.000 < 0.05$). The overall complication rate was 4% in the RFA group (skin burn) and 9.3% in the surgical group (including recurrent laryngeal nerve paresis confirmed by laryngoscopy, bleeding, hematoma, and wound infection). However, the difference between the two groups was not statistically significant ($\chi^2 = 0.778$, $p=0.378 > 0.05$).

Complications after RFA

Skin burn	1
Recurrent laryngeal nerve or adjacent structure injury	0
Nodule rupture	0

Complications after Surgery

Recurrent laryngeal nerve paresis	2
Hematoma	2
Bleeding	9
Wound infection	1

Conclusion

Radiofrequency ablation is an effective and safe alternative for the treatment of benign thyroid nodules. It results in significant nodule volume reduction and symptom relief, with minimal complications and without loss of thyroid function. RFA is recommended for patients with contraindications to surgery, those who prefer a minimally invasive approach, or in cases where prevention of surgical complications is desirable.

THE ASSOCIATION OF EXPOSURE TO SOME HEAVY METALS AND NEURODEGENERATIVE DISEASES IN ARMENIA

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Keywords: heavy metals, neurodegenerative diseases, environmental exposure, Alzheimer's disease, and Parkinson's disease.

Introduction. The purpose of the research. This study aims to investigate the content of certain heavy metals in environmental samples (arable land, street/house dust) and the incidence of neurodegenerative diseases in Armenia. The presence and content of heavy metals will also be determined in the hair of individuals suffering from neurodegenerative diseases, such as Alzheimer's disease (AD) and Parkinson's disease (PD), as well as in hair samples from a control group.

To achieve this objective, the following tasks will be completed:

1. Determine the presence and levels of heavy metals in the hair of individuals with AD and PD, as well as in the hair of a control group;
2. Determine the content of certain heavy metals in environmental samples in the study regions of the republic;
3. Study the incidence rate and structure of neurodegenerative diseases in the study regions of the republic.
4. Conduct a comparative analysis of the content of certain heavy metals in environmental samples in the study regions of the republic.
5. Comparative analysis of the prevalence of neurodegenerative diseases in the studied regions of the republic;
6. Study of the possible relationship between actual concentrations of heavy metals in environmental objects and the prevalence of neurodegenerative diseases.

Type of study: ecological (correlational) studies.

Scientific novelty: it will be the first time that the possible association of some heavy metals, determined in the environmental objects of certain regions of Armenia, with the frequency of development of neurodegenerative diseases will be studied.

Methods and procedures. *Obtaining primary data on the incidence of the population.* The data will be collected from medical centers in certain regions of the Republic of Armenia. *Taking hair samples.* In order to take hair samples from participants in both groups (case-control), prior permission will be taken and approved in the form of a signed informed consent. *Collection of arable land samples.* Mapping will be carried out to collect soil from different regions of Armenia, based on the incidence rates of AD and PD. *Taking samples of street dust.* Dust is an aerosol system formed by solid particles of dispersion origin. Particles larger than 1 µm and less than 76 µm. The content of several heavy metals in the selected all the above-mentioned samples will be determined using an Agilent 4210-MP-AES atomic emission spectrometer. All received data will be stored in specially created databases, **and** the information will be encoded. Taking into account the fact that this research is in progress, the Summary of Results and Conclusion items are not acceptable.

NOVEL APPROACHES FOR DIFFERENTIAL DIAGNOSIS OF BRADYKININ-MEDIATED ANGIOEDEMA AND A PILOT STUDY OF POTENTIAL BIOMARKERS

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Key words: angioedema, angiotensin-converting enzyme inhibitors, bradykinin, biomarkers, pilot study, differential diagnosis

Background. Angiotensin-converting enzyme inhibitor-induced angioedema (ACEi-AE) is an adverse drug reaction occurring in approximately 0.1–0.7% of patients and may present a life-threatening course. Although bradykinin accumulation is considered the principal pathogenic mechanism, no definitive clinical or laboratory markers have yet been identified. ACEi-AE typically involves the facial region—lips, tongue, or pharynx—persists for more than 24 hours, is not accompanied by pruritus or urticaria, and does not respond to antihistamines or systemic glucocorticoids. In contrast, histaminergic angioedema is almost always associated with urticarial rash and responds well to antihistamine therapy, while hereditary angioedema (HAE) is characterized by a confirmed deficiency of C1 esterase inhibitor. Differentiating ACEi-AE from histaminergic and hereditary angioedema (HAE) remains challenging due to overlapping clinical features and the lack of validated laboratory biomarkers.

Aim. This pilot study aimed to assess the feasibility of patient recruitment, biospecimen collection, and sample preservation as a preparatory step for a subsequent large-scale study investigating potential clinical and laboratory biomarkers of ACEi-induced angioedema.

Materials and Methods. Seven patients were included: five with ACEi-induced angioedema, one with histaminergic angioedema, and one with HAE. Clinical and demographic data, symptom onset time, duration between drug intake and symptom development, and additional relevant information were recorded using a standardized case report form. Blood samples were collected during the acute phase of angioedema—prior to hospital treatment and within 24 hours of symptom onset—processed according to standard operating procedures, and stored at –80°C for subsequent laboratory analyses, including plasma kallikrein activity, angiopoietin-1 and -2, and plasminogen quantification. Feasibility outcomes included patient recruitment rate, completeness of the case report forms, and adherence to sample processing procedures.

Results. During the four-month pilot period, patient recruitment and biospecimen collection were achieved with approximately 60% compliance. Several technical issues were identified and addressed, including the need to improve sample labeling and to expand the questionnaire with additional clinical variables. Sample collection was performed without complications, and recruitment is expected to be completed by the third quarter of 2026. Preliminary data indicated that all enrolled patients had A Rh(+) blood type. The most common In four cases, angioedema developed within 24 hours after an additional intake of 25 mg captopril. All participants demonstrated normal levels of complement component C4. The mean age of the participants was 62 years.

Conclusion. This pilot study confirmed the feasibility of coordinated clinical data collection and standardized biospecimen storage in patients with ACEi-induced and related types of angioedema. The findings provide an important methodological validation for the upcoming large-scale study aimed at identifying specific biomarkers for differential diagnosis of ACE inhibitor-induced angioedema.

Future Perspective. The continuation of this project will enable validation of promising biomarkers and contribute to developing evidence-based diagnostic algorithms for angioedema subtyping.

OPTIMIZING OUTCOMES OF RELAPAROTOMY IN ACUTE SURGICAL PATHOLOGIES

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Keywords: relaparotomy, laparostomy, diverting ileostomy, damage-control surgery, peritonitis

Introduction. Acute surgical pathologies such as peritonitis, intestinal obstruction, and anastomotic leakage often necessitate relaparotomy due to postoperative complications. These conditions are associated with high morbidity and mortality rates, especially in patients with multiple comorbidities. Laparostomy and diverting enterostomy are important adjuncts that facilitate infection control and physiological stabilization. Although the concept of “damage-control surgery” originally emerged from trauma surgery, it has since evolved to include severe non-traumatic intra-abdominal infections, peritonitis, and abdominal compartment syndrome. In these contexts, the approach emphasizes staged operations aimed at source control and stabilization rather than immediate definitive repair (Rotondo & Zonies, 1997; Robledo et al., 2005; Sartelli et al., 2017). This study evaluates the role of laparostomy and diverting ileostomy during relaparotomy in improving patient outcomes. **Materials and Methods** A retrospective study was conducted on 168 patients who underwent relaparotomy for acute abdominal pathologies at the Department of Surgery №3, YSMU, between 2018 and 2022. Group 1 included 67 patients treated with laparostomy and diverting ileostomy, while Group 2 comprised 101 patients managed without these interventions. The severity of illness was assessed using the APACHE II scale. Data were analyzed using SPSS 26, with $p < 0.05$ considered statistically significant.

Results. The mean APACHE II score was significantly higher in Group 1 (26.7 ± 7.53) compared to Group 2 (18.84 ± 7.64 ; $p < 0.001$). Mortality was 38.8% in Group 1 and 29.7% in Group 2. Laparostomy enabled repeated abdominal sanitation and infection control, particularly in patients with diffuse peritonitis, while diverting ileostomy reduced the risk of anastomotic leakage (12% vs. 25%, $p = 0.03$). Although mortality remained higher in Group 1 due to more severe initial conditions, these interventions contributed to improved infection management and reduced need for repeated relaparotomy.

Conclusion. Laparostomy and diverting ileostomy are valuable components of relaparotomy in acute surgical pathologies, especially under a damage-control approach. These interventions facilitate infection control, reduce intra-abdominal pressure, and decrease anastomotic

complications. Despite technical complexity and the need for staged management, their judicious use can improve survival and reduce morbidity in critically ill patients.

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SOLUBLE HLA-G IN RELATION TO EARLY-LIFE EXPOSURES AND RECURRENT WHEEZING IN PRESCHOOL CHILDREN

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Keywords: recurrent wheezing, soluble HLA-G, early-life risk factors, asthma prediction, preschool children

Introduction: Recurrent wheezing in early childhood is a common respiratory condition that often precedes the development of asthma. Despite its clinical importance, identifying early predictive factors for recurrent wheezing and future asthma development remains challenging because of the lack of reliable diagnostic tools, including spirometry. Early-life exposures-such as delivery mode, antibiotic use, breastfeeding practices and allergic family background have been shown to influence immune maturation and respiratory outcomes in young children. Therefore, novel immunological biomarkers are being investigated to help stratify asthma risk in preschool-aged children. Among these markers, the soluble human leukocyte antigen-G (sHLA-G), a non-classical HLA class Ib molecule involved in immune regulation, has gained attention for its potential role in allergic and respiratory diseases. Elevated sHLA-G expression has been linked to allergic inflammation and asthma pathogenesis in previous studies, yet its significance in early-childhood wheezing and immune maturation remains poorly understood. This study aimed to assess the predictive value of plasma sHLA-G levels in young children with wheezing and to evaluate the influence of early-life factors.

Materials and Methods: A prospective case-control study included 90 children aged 1–5 years. Participants were divided equally into a wheezing group (n = 45) and a control group (n = 45) without a history of wheezing. The wheezing group was further subdivided into recurrent wheezing (≥ 2 lifetime episodes, n = 20) and first-episode wheezing (n = 25). Each child underwent a clinical assessment, a structured parental questionnaire, and laboratory testing, including measurement of plasma sHLA-G by ELISA.

Results: Mean serum sHLA-G levels were significantly higher in the wheezing group compared with controls (760.0 ± 26.3 pg/mL vs 601.7 ± 25.3 pg/mL, $p < 0.05$). Within the wheezing group, children with recurrent wheezing had higher mean sHLA-G levels (736.1 ± 27.4 pg/mL) than those with a first episode (637.0 ± 27.2 pg/mL, $p < 0.05$). Among clinical factors, cesarean-section delivery (53.3%), repeated antibiotic use (42.2%), and parental allergic history (55.6%) were significantly more common in the wheezing group ($p < 0.05$). A significant inverse correlation was identified between exclusive breastfeeding duration and plasma sHLA-G concentration ($r = -0.320$, $p = 0.002$). In logistic regression analysis, cesarean delivery, parental allergic anamnesis and elevated sHLA-G levels emerged as independent predictors of recurrent wheezing ($p < 0.05$).

Conclusions: Children with recurrent wheezing have significantly elevated sHLA-G concentrations, supporting the role of this molecule as an early biomarker for recurrent wheezing and future asthma risk. The inverse association between breastfeeding duration and sHLA-G highlights the protective immunoregulatory impact of breastfeeding, whereas the positive correlation of allergic family background supports the genetic and environmental interplay in asthma susceptibility. Incorporating sHLA-G measurement into pediatric practice, alongside early-life and familial risk assessment, may enhance early identification of children at increased risk for persistent wheezing and asthma development.

ASSESSMENT OF PHARMACOVIGILANCE AWARENESS AMONG PHARMACY EMPLOYEES IN THE REPUBLIC OF ARMENIA

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Keywords: Pharmacovigilance; pharmacy; adverse drug reactions; patients

Introduction. Pharmacovigilance plays a vital role in ensuring the safe and effective use of medicines by detecting, assessing, and preventing adverse drug reactions. However, limited awareness among pharmacy professionals remains a major barrier to implementing effective pharmacovigilance systems, particularly in developing and transition countries such as Armenia. The aim of this study is to assess the level of pharmacovigilance awareness among pharmacy employees in the Republic of Armenia.

Materials and Methods. The survey was carried out through random sampling among **pharmacy employees** across Yerevan and the regions of Armenia during **2024–2025**. A quantitative research design was applied, using semi-structured questionnaires developed based on **World Health Organization (WHO)** guidelines. The study had a **cross-sectional design** and included demographic, informational, and pharmacovigilance-related questions. Participation was voluntary, and data confidentiality was fully ensured. Data analysis was performed using **SPSS version 23.0**, applying modern statistical methods with a significance level of **$p < 0.05$** .

Results and Discussion. A total of **219 pharmacy employees** participated in the study. Among them, **66%** had secondary professional education, while the remaining participants held higher or other types of education. The majority had **1–5 years of work experience (37%)**. Pharmacovigilance awareness among pharmacy employees was found to be **insufficient**, as **66%** of respondents were unfamiliar with the concept of pharmacovigilance. This lack of awareness significantly hinders their effective participation in ensuring medicine safety. Educational background had a notable impact on awareness levels: participants with **higher** and **postgraduate education** were substantially more informed than those with **secondary education**. This difference underscores the need for **targeted awareness initiatives** among lower-education groups. No significant association was found between the **type of pharmacy** and the level of pharmacovigilance awareness. This circumstance allows us to conclude that there is a need to improve the level of pharmacovigilance awareness across all pharmacy organizations, regardless of their structural affiliation.

Only **15%** of respondents had ever reported adverse drug reactions, and among them, few had submitted reports to an officially authorized body. The main barriers identified were **lack of awareness** and the **complexity of the reporting system**. A considerable proportion of pharmacy employees were unaware of both the **WHO pharmacovigilance guidelines (90%)** and the **national pharmacovigilance guidelines of Armenia (70%)**. Nevertheless, the majority recognized the **importance of pharmacovigilance training** and expressed willingness to participate in relevant educational programs (**77%**). The findings highlight a pronounced gap in pharmacovigilance knowledge among pharmacy employees, potentially restricting their effective involvement in medicine safety assurance processes.

Conclusion. Pharmacy employees in Armenia demonstrated limited awareness of pharmacovigilance, with two-thirds unfamiliar with its core principles. Educational background significantly influenced awareness, highlighting the need for targeted training, especially among staff with lower qualifications. The low rate of adverse drug reaction reporting and limited knowledge of WHO and national guidelines indicate systemic challenges. Strengthening pharmacovigilance education, simplifying reporting mechanisms, and integrating safety monitoring into daily pharmacy practice are essential to enhance patient safety and align with international standards.

EVALUATING PHARMACY PRACTICES IN OVER-THE-COUNTER MEDICINE USE IN THE REPUBLIC OF ARMENIA

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Keywords: pharmacy; self-medication; OTC medicines; patients

Introduction: The global rise in self-medication with over-the-counter (OTC) drugs raises significant concerns regarding inappropriate medicine use and patient safety. In Armenia, where healthcare reforms are underway and access to OTC medicines is increasing, the lack of standardized pharmaceutical care presents additional challenges. This study aimed to examine self-medication behaviors among Armenian consumers and assess the quality of pharmaceutical care provided by pharmacy employees. It focused on how consumers select over-the-counter medicines, whether they follow pharmacy advice and whether symptoms are assessed before dispensing.

Materials and Methods: A cross-sectional, anonymous survey was conducted from March 2023 to November 2024, involving 384 pharmacy consumers across Armenia. Data collection tools were adapted from World Health Organization questionnaires and refined through a pilot study. Participants were randomly selected. Data analysis was performed using SPSS version 23.0, employing descriptive statistics and association tests with p-values to assess significance. Ethical clearance was obtained, and strict confidentiality protocols were maintained throughout the research process.

Results and Discussion: The study involved respondents of varying ages and educational backgrounds. Self-medication was prevalent, with 56% choosing OTC medicines based on prior experience. Similar trends have been observed in other low- and middle-income countries, where insufficient patient education and weak enforcement of prescription regulations contribute to extensive self-administration of OTC use.

A total of **59.8%** of respondents reported *never following* pharmacy employees' advice when selecting OTC medicines, primarily due to **previous negative experiences (38%)** or **distrust toward pharmacy personnel (31%)**. Such attitudes reveal a critical erosion of public confidence in pharmacists, which may result from inconsistent counselling quality and limited communication skills. Nearly half of the consumers stated that pharmacy employees **neither assessed their health status nor inquired about symptoms** before dispensing medicines. This suggests that, despite pharmacists' central role in ensuring the safe use of OTC drugs, **clinical assessment and triage are often neglected**. These figures highlight the insufficient integration of pharmacy services into primary healthcare and raise concerns about patient safety and delayed medical intervention. Regarding communication and patient satisfaction, only **31%** of consumers were fully satisfied with the answers provided to medicine-related questions, **48%** said responses were sometimes complete, and **21%** were not satisfied at all. These findings reveal systemic deficiencies in pharmaceutical care within Armenian community pharmacies. The high prevalence of self-medication, low trust in pharmacists, and limited patient engagement indicate insufficient professional communication and lack of standardized counselling protocols. Addressing these gaps requires comprehensive training and stronger integration of pharmacy services into the primary healthcare system.

Conclusion: Improving pharmaceutical care and raising public awareness in Armenia are essential to promoting safe self-medication practices. Strengthening the training, communication skills, and accountability of pharmacy staff alongside rebuilding public trust in professional healthcare advice is critical for enhancing national healthcare quality. These efforts are necessary to align with international standards and ensure the safe, rational use of medicines at the community level.

EPIDEMIOLOGY OF TUBERCULOSIS AND EXTRAPULMONARY FORMS OF TUBERCULOSIS IN ARMENIA IN 2000–2024

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Keywords: epidemiology, extrapulmonary tuberculosis, clinical forms

Objective. This study aimed to investigate the quantitative and qualitative epidemiological indicators of tuberculosis, with a particular focus on extrapulmonary tuberculosis, in Armenia from 2020 to 2024.

Materials and Methods. The study was based on statistical reporting documents from anti-tuberculosis institutions.

Results. Analysis of the data revealed a decrease in the incidence of all forms of tuberculosis from 14.8 to 13.3 per 100,000 population between 2020 and 2024. The prevalence of tuberculosis declined by 35% (from 78.3 to 50.7 per 100,000 population), and mortality decreased from 1.2 to 0.8 per 100,000 population (a reduction of 33.3%) during the same period. This gradual decline is attributed to improvements in prevention, early detection, and effective treatment, which reached 85% coverage.

The incidence of tuberculosis among children remained low, with 3.3 cases per 100,000 child population in 2020 and 2.9 in 2024. The proportion of children and adolescents (0–17 years) among newly diagnosed TB patients remained stable over the last five years, averaging 8.4%. This reflects a combination of declining child population due to migration and lower birth rates, as well as challenges in diagnosing TB in children. The average annual incidence of pulmonary tuberculosis with bacterial excretion decreased from 6.4 to 6.0 per 100,000 population. The proportion of confirmed cases with bacterial excretion among all patients with respiratory TB slightly increased by 12% (from 71.6% to 70.4%). A key indicator of TB control quality in high-risk settings is the incidence among contacts, which remains high in Armenia. In 2024, TB incidence among contacts was 1,722.7 per 100,000, 3.5 times higher than in 2020 (476.6 per 100,000). Incidence among child contacts increased 2.8 times during the same period (from 1,287.5 to 3,692.3 per 100,000). Extrapulmonary tuberculosis incidence remained low (3.5 per 100,000), reflecting diagnostic challenges and low clinical suspicion among other specialists. A common feature of all forms of extrapulmonary TB was a significant delay in diagnosis, exceeding 60–90 days in over 40% of cases. Among extrapulmonary forms, bone and joint tuberculosis predominated, with its proportion increasing by 32.1% (from 53.8% to 71.1%) over the study period. Intrathoracic lymph node TB was the second most frequent form (10.1% of cases), while genitourinary TB (from 7.5% to 4.8%) and pleuritis (from 14.2% to 4.8%) decreased. Clinical patterns of extrapulmonary TB differed significantly between sexes. In men, bone and joint TB was most common (65.4%), whereas in women, abdominal and genitourinary TB predominated (57.1%).

Conclusion. The analysis of the epidemiological situation and the effectiveness of tuberculosis control measures in Armenia during the period 2020–2024 showed a decline in the main epidemiological indicators. However, the incidence among contacts remains high. During the study period, low incidence rates of extrapulmonary forms of tuberculosis were observed. A common feature of all the most frequently reported forms of extrapulmonary tuberculosis is a significant delay in establishing the diagnosis. The main reason for the late diagnosis of extrapulmonary tuberculosis is the lack of awareness and vigilance regarding tuberculosis among general practitioners.

DRUG-RESISTANT PULMONARY TUBERCULOSIS IN PATIENTS WITH HIV INFECTION

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Keywords: tuberculosis, multidrug-resistant, HIV

Objective. The objective of this study was to analyze the treatment outcomes of patients with drug-resistant tuberculosis in combination with HIV infection.

Materials and Methods. A retrospective and prospective analysis of treatment was conducted among 42 patients diagnosed with both tuberculosis and HIV infection.

Results. In these patients, drug resistance was detected to one drug (mono drug-resistant), to two or more drugs (poly drug-resistant), and multidrug resistance (MDR-resistant, at least to rifampicin and isoniazid).

Although global tuberculosis incidence and mortality rates have declined, high mortality remains one of the current challenges in modern medicine. The control of resistant tuberculosis is complicated by the challenge of early disease detection. According to WHO data for 2023–2024, out of 6,000,000 estimated cases of multidrug-resistant tuberculosis worldwide, approximately 4,000,000 were confirmed as resistant cases, and only 60% of them initiated appropriate treatment [1]. During the study period, we identified a group of 42 patients with tuberculosis and HIV infection who demonstrated drug resistance to one or several anti-tuberculosis drugs.

Analysis of the gender distribution showed that the majority of the examined patients (95.3%) were men, all under the age of 45. Most were residents of urban areas from various regions of

Armenia (73%). Almost all were of working age. The majority of patients (63%) had secondary education, and more than 85% were unemployed. The leading clinical manifestations included general weakness (85%), productive cough (59%), and marked weight loss (53%). Tuberculin sensitivity according to the Mantoux test with 2 TU PPD-L was negative in 73% of cases. A pulmonary process was established in 53% of patients, and lung tissue destruction was observed in 62% of cases. Various specific and nonspecific tuberculosis complications were noted in 21 patients. Analysis of drug susceptibility showed that resistance to one drug was observed in 53% of cases, resistance to two or more first-line drugs (poly-resistance) in 30%, and multidrug resistance (MDR) in 17% of cases. The duration of treatment in this group ranged from 18 to 24 months. Analysis of the treatment outcomes showed successful therapy in 53% of patients. Five patients died, and twelve experienced relapses within 2–5 years after completion of treatment.

Conclusion. The analysis of tuberculosis cases combined with HIV infection revealed that the disease most frequently affected males of working age. Multiple organ involvement was found in approximately one-third of patients, with the central nervous system being the most commonly affected. Among pulmonary forms, infiltrative tuberculosis with lung tissue destruction was predominant. All examined patients demonstrated resistance to one or more anti-tuberculosis drugs (mono-, poly-, or MDR-resistance). The study emphasizes the need to improve early detection and implement targeted treatment strategies for patients with drug-resistant tuberculosis in order to achieve higher treatment effectiveness.

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APPLICATION OF THE BUCCAL MICRONUCLEUS CYTOME ASSAY IN ARMENIA

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Keywords: Micronucleus; Nuclear anomalies; Buccal mucosa; Exfoliated cells

Purpose: Genomic instability and chromosomal damage play a crucial role in the initiation and progression of various human diseases, including cancer and diabetes mellitus. The micronucleus (MN) assay in exfoliated buccal mucosa cells is a minimally invasive and reliable biomarker of chromosomal instability and DNA damage caused by exogenous and endogenous genotoxic factors. For the first time in Armenia, this method was applied to evaluate cytogenetic and cytotoxic alterations in different populations and disease conditions.

Methods: The studies included women from the Ararat and Aragatsotn regions and Yerevan, as well as patients with diabetes mellitus (types I, II, and LADA), oral precancerous and cancerous lesions, and uterine cervix cancer undergoing radiotherapy. Exfoliated buccal cells were analyzed using the buccal MN cytome assay to determine the frequency of MN and other nuclear anomalies indicative of genotoxic and cytotoxic effects.

Results: In the general female population, no statistically significant differences in MN frequency were found between regions or compared with historical controls, despite detection of chlororganic pesticide residues in all breast milk samples. Age did not affect MN frequency. In oral pathology cases, exfoliated buccal cells from patients with primary, treatment-naïve oral cancer, leukoplakia, and healthy controls were examined. Compared with controls, MN frequency was approximately 2-fold higher in leukoplakia and 4.5-fold higher in oral cancer patients. Other nuclear anomalies followed similar trends, reflecting strong cytotoxic effects. These findings confirm the assay's potential as a biomarker for early detection and monitoring of genetic damage during oral carcinogenesis. A pilot study on patients with type I, type II, and LADA diabetes mellitus showed that MN levels in exfoliated oral epithelial cells were elevated 2- to 3-fold compared with healthy individuals, reaching statistical significance in type I and LADA groups. Other nuclear anomalies were significantly increased across all diabetic types, indicating cytotoxic and genotoxic stress associated with metabolic dysregulation. A strong positive correlation was observed between MN frequency, blood glucose concentration, and HbA1c levels. In women with uterine cervix cancer, MN and other nuclear anomalies were assessed in exfoliated buccal and cervical cells before, during, and after radiotherapy. Significantly elevated MN levels and nuclear anomalies were detected in both cell types before treatment. During and immediately after radiotherapy, cervical cells showed a marked increase in MN and other anomalies, returning to baseline two weeks post-therapy, while buccal cells showed no significant changes during treatment.

Conclusions: These findings demonstrate the applicability of the buccal MN cytome assay in Armenia as a sensitive biomonitoring tool for evaluating genomic instability associated with environmental exposures, chronic diseases, and cancer therapy. The assay offers a simple, noninvasive approach for detecting cytogenetic damage, supporting its use in early diagnosis, disease monitoring, and public health surveillance.

ASSESSMENT OF THE STATUS OF THE MUTAGENIC BACKGROUND OF SOILS IN SOME AREAS OF THE ARARAT VALLEY IN THE DYNAMICS OF YEARS

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Keywords: environment, contamination, pesticides, biotesting, mutagenic background

Introduction. Soil as a key part of the human environment is a powerful recipient of pollutants impacting the mutagenic background. Due to migration, harmful substances can enter the human body through food chains, posing an additional health risk. The most common anthropogenic pollutants include pesticides, mineral fertilizers, and their essential components – surfactants, etc. As part of a comprehensive hygienic study of the environmental status, an assessment of the mutagenic activity of soils in some active agricultural regions of the Ararat Valley was carried out, as well a comparative analysis of the results over the years (2017 and 2023). Soil samples were collected from agricultural lands during the active seasons (spring, summer, fall). Mutagenic background was assessed by examining the genotoxic and phytotoxic activity of the soil samples, using standard methods. The sensitive test objects were: *Taraxacum officinale* Wigg. (dandelion) and *Avena sativa* L. (oats), using the seed germination method. To exclude the influence of other anthropogenic contaminants, *Taraxacum officinale* Wigg. Seeds were collected from areas not treated with pesticides. The monitored parameters for *Avena sativa* L. were the average length of the main root (cm) and seed germination energy (%). Significant differences between the test samples and the control, exceeding 20%, served as toxicity criteria. The toxicity index was calculated based on the length of the main root. Genetic activity of soil samples was done by studying the mitotic activity of rootlet meristematic cells of *Allium cepa* Z. grown on soil samples collected from monitoring points. The data were processed using standard software (*Microsoft Office Excel*). The results of testing on *Taraxacum officinale* Wigg. Seeds (2017) showed that the decrease in germination during the studied periods (spring, summer, fall) was 1.74, 2.46, 2.72, respectively, indicating a tendency towards a gradual increase in phytotoxic activity. Over time, these indicators were 1.66, 2.53, and 1.49, respectively, indicating weak phytotoxic activity in the spring-summer period (2023). A comparison of average annual indicators over the years – 2.3 and 1.89, revealed a decrease in the phytotoxic activity of soil samples (2017 and 2023). The results of biotesting on the *Avena sativa* L. showed in the summer and fall series high values for the length of the main root of the seedling – inhibition by 66%, which corresponded to class II (high) according to the toxicity index (2017). In subsequent years, in the same series of studies, soil samples were classified into toxicity index classes III (medium) and IV (low) (2023). A study of the genotoxic activity of the soil samples did not reveal any deviations in the dynamics over the years. A study of soil phytotoxic activity revealed a decreasing trend over the years. Soil samples collected from some areas of the Ararat Valley did not exhibit genotoxic activity. Bioassay results using sensitive test objects correlated with each other, indicating that the soil samples studied did not exhibit mutagenic activity. The mutagenic background data also correlated positively with the results of comprehensive hygienic studies conducted over the same period.

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THE EFFECT OF DIFFERENT BINDERS AND DISINTEGRANTS ON THE RELEASE RATE OF ACETAMINOPHEN FROM TABLETS

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Keywords: Gummi Armeniacae, PVP, Starch, Dissolution profile

Background: The crucial role in the drug release process from a solid dosage form belongs to the excipients used during the manufacturing of tablets. One of the important classes of those excipients is binders, which provide the necessary strength of tablet hardness and the speed of drug substance release from a solid oral dosage form. Natural binders, such as different gums and starch are much safer and more economical than synthetic polymers like polyvinylpyrrolidone (PVP). Gums are natural hydrophilic polymers, and they are useful as tablet binders, and they show the ability to absorb water and swell, and can also be used as disintegrates in tablets. Gummi Armeniacae, similar to Gummi Arabica, is widely used as an excipient in the pharmaceutical and food industries.

Objectives: The aim of this study was the development, pharmacopeial analysis of manufactured tablets, and a bioequivalence study by the biowaiver method of Acetaminophen tablets containing as a binders standardized powder of Gummi Armeniacae (GA), potato starch (PS), or PVP K30. In parallel, the Gummi Armeniacae or starch was used as a disintegrating agent.

Methods: For the research purpose, Acetaminophen 50 mg tablets of different compositions were produced, which contained PVP, Gummi Armeniacae, or starch as a binder, and starch or Gummi Armeniacae as a disintegrant. The characterization of the obtained tablets was conducted according to the tablet's USP quality requirements. The dissolution profiles of tablets were carried out according to WHO Guidance (the paddle speed was 75 rpm, the temperature was $37 \pm 0.5^\circ\text{C}$, and the dissolution media volume was 900 mL) in three dissolution media with pH 1.2, 4.5, and 6.8.

Results: Different series of Acetaminophen 50 mg tablets with four compositions of binder and disintegrants were produced (PVP+PS, GA+GA, GA+PS or PS+PS). The results of general tablet quality testing procedures, including average mass, uniformity of mass, thickness, diameter, assay, friability, and disintegration time, corresponded to USP requirements. Acetaminophen 50 mg tablets containing PVP or Gummi Armeniacae as a binder, and starch as a disintegrant, and tablets with composition GA+GA exhibited high solubility in three different (pH 1.2, 4.5, 6.8) dissolution media ($\geq 85\%$ of the labeled amount of drug in 30 minutes). Although tablets containing only starch as a binder and disintegrant do not provide the required release rate of substance. Moreover, the comparative dissolution profile study indicates that tablets GA+PS, containing starch as a disintegrant dissolve rapidly in hydrochloric acid media at pH 1.2 and the release rate of acetaminophen from this formulation decreases as the pH shifts from 1.2 to 6.8. Otherwise, the tablets GA+GA containing Gummi armeniacae as a disintegrant showed high dissolution rate at pH 4.5.

Conclusions: Tablets containing Gummi Armeniaca as a binder possess pH-dependent drug substance release from tablets. Obtained data of this research could recommend it as a binder or disintegrant for the tablet manufacturing process, with or without a combination of starch.

ASSOCIATION OF ENDOTHELIN-1 AND PROCOLLAGEN BIOMARKERS WITH CARDIAC REMODELING AND EXERCISE INTOLERANCE IN HEART FAILURE: THE IMPACT OF SEX DIFFERENCES

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Keywords: Chronic heart failure, Endothelin-1, Procollagen type I N-terminal propeptide (P1NP), Left ventricular remodeling, Sex differences

Background: Cardiac remodeling and exercise intolerance are hallmarks of chronic heart failure (HF), resulting from complex interactions between neurohormonal activation, vascular dysfunction, and extracellular matrix (ECM) remodeling. Endothelin-1 (ET-1), a potent endothelial-derived vasoconstrictor peptide, promotes increased afterload, myocardial hypertrophy, and interstitial fibrosis. Elevated ET-1 concentrations have been associated with adverse hemodynamic and clinical outcomes. Collagen turnover is another crucial component of myocardial remodeling and can be assessed by circulating biomarkers such as procollagen type I N-terminal propeptide (P1NP), reflecting collagen synthesis and fibrotic activity. Both ET-1 and P1NP provide insights into different aspects of the remodeling process, but their interrelationships with cardiac structure, functional capacity, and sex-related modulation remain incompletely understood.

Purpose: To evaluate the associations between circulating ET-1 and P1NP levels, left ventricular (LV) remodeling, and exercise tolerance in patients with chronic HF, with a particular focus on sex-related differences and postmenopausal status.

Methods: This observational study included 80 patients (mean age 67 ± 10 years; 33% female) with compensated chronic HF (NYHA class II-III, LVEF $< 45\%$) and 21 healthy controls (59 ± 12 years; 33% female). Plasma ET-1 and P1NP concentrations were measured using immunoassay techniques. Standard echocardiographic assessment included LV end-diastolic diameter (LVEDD), and functional capacity was evaluated using the 6-minute walk test (6MWT). Correlation and linear regression analyses were used to explore relationships between biomarkers, LV parameters, and exercise tolerance.

Results: Plasma ET-1 concentrations were significantly higher in HF patients than in controls (22.1 ± 8.7 pg/mL vs 7.19 ± 5.3 pg/mL, $p < 0.001$). Similarly, P1NP levels were elevated in HF compared with controls (40.5 ± 19.7 ng/mL vs 29.8 ± 4.5 ng/mL, $p = 0.004$), reflecting enhanced collagen synthesis and ECM activation. Within the HF cohort, ET-1 levels correlated negatively with LVEDD ($r = -0.48$, $p = 0.002$), suggesting that higher ET-1 concentrations may limit excessive LV dilation. P1NP levels correlated inversely with 6MWT distance ($r = -0.36$, $p = 0.001$), indicating that increased collagen synthesis is associated with reduced exercise tolerance. Patients with a 6MWT distance < 300 m had markedly higher P1NP levels (43.3 ± 21.9 ng/mL) compared with those > 300 m ($p = 0.037$). Significant sex-related differences were observed: postmenopausal women exhibited higher ET-1 (24.7 ± 8.5 pg/mL vs 20.7 ± 8.5 pg/mL, $p = 0.047$) and P1NP (48.1 ± 25.3 ng/mL vs 36.4 ± 14.7 ng/mL, $p = 0.008$) levels compared with men, as well as a shorter 6MWT distance (166 ± 91 m vs 233 ± 114 m, $p = 0.010$).

Conclusions: Elevated ET-1 and P1NP levels are characteristic of chronic HF and are associated with adverse structural and functional profiles. ET-1 was linked to restricted LV dilation, while P1NP reflected enhanced fibrotic activity related to exercise limitation. The higher biomarker levels and poorer functional capacity observed in women suggest that sex hormones and menopausal status modulate endothelial and fibrotic pathways. These findings emphasize the relevance of biomarker-based phenotyping and the need for sex-specific approaches in HF management and research.

EXERCISE INTOLERANCE IN HEART FAILURE: THE IMPACT OF SEX DIFFERENCES

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Keywords: Chronic heart failure, Endothelin-1, Procollagen type I N-terminal propeptide (PINP), Left ventricular remodeling, Sex differences

Background: Cardiac remodeling and exercise intolerance are hallmarks of chronic heart failure (HF), resulting from complex interactions between neurohormonal activation, vascular dysfunction, and extracellular matrix (ECM) remodeling. Endothelin-1 (ET-1), a potent endothelial-derived vasoconstrictor peptide, promotes increased afterload, myocardial hypertrophy, and interstitial fibrosis. Elevated ET-1 concentrations have been associated with adverse hemodynamic and clinical outcomes. Collagen turnover is another crucial component of myocardial remodeling and can be assessed by circulating biomarkers such as procollagen type I N-terminal propeptide (PINP), reflecting collagen synthesis and fibrotic activity. Both ET-1 and PINP provide insights into different aspects of the remodeling process, but their interrelationships with cardiac structure, functional capacity, and sex-related modulation remain incompletely understood.

Purpose: To evaluate the associations between circulating ET-1 and PINP levels, left ventricular (LV) remodeling, and exercise tolerance in patients with chronic HF, with a particular focus on sex-related differences and postmenopausal status.

Methods: This observational study included 80 patients (mean age 67 ± 10 years; 33% female) with compensated chronic HF (NYHA class II-III, LVEF $< 45\%$) and 21 healthy controls (59 ± 12 years; 33% female). Plasma ET-1 and PINP concentrations were measured using immunoassay techniques. Standard echocardiographic assessment included LV end-diastolic diameter

(LV EDD), and functional capacity was evaluated using the 6-minute walk test (6MWT). Correlation and linear regression analyses were used to explore relationships between biomarkers, LV parameters, and exercise tolerance.

Results: Plasma ET-1 concentrations were significantly higher in HF patients than in controls (22.1 ± 8.7 pg/mL vs 7.19 ± 5.3 pg/mL, $p < 0.001$). Similarly, PINP levels were elevated in HF compared with controls (40.5 ± 19.7 ng/mL vs 29.8 ± 4.5 ng/mL, $p = 0.004$), reflecting enhanced collagen synthesis and ECM activation. Within the HF cohort, ET-1 levels correlated negatively with

LV EDD ($r = -0.48$, $p = 0.002$), suggesting that higher ET-1 concentrations may limit excessive LV dilation. PINP levels correlated inversely with 6MWT distance ($r = -0.36$, $p = 0.001$), indicating that increased collagen synthesis is associated with reduced exercise tolerance. Patients with a 6MWT distance < 300 m had markedly higher PINP levels (43.3 ± 21.9 ng/mL) compared with those > 300 m ($p = 0.037$). Significant sex-related differences were observed: postmenopausal women exhibited higher ET-1 (24.7 ± 8.5 pg/mL vs 20.7 ± 8.5 pg/mL, $p = 0.047$) and PINP (48.1 ± 25.3 ng/mL vs 36.4 ± 14.7 ng/mL, $p = 0.008$) levels compared with men, as well as a shorter 6MWT distance (166 ± 91 m vs 233 ± 114 m, $p = 0.010$).

Conclusions: Elevated ET-1 and PINP levels are characteristic of chronic HF and are associated with adverse structural and functional profiles. ET-1 was linked to restricted LV dilation, while PINP reflected enhanced fibrotic activity related to exercise limitation. The higher biomarker levels and poorer functional capacity observed in women suggest that sex hormones and menopausal status modulate endothelial and fibrotic pathways. These findings emphasize the relevance of biomarker-based phenotyping and the need for sex-specific approaches in HF management and research.

QUALITATIVE AND QUANTITATIVE DETERMINATION OF ORGANIC COMPOUNDS OF EXTRACTS OF RUMEX CRISPUS SEEDS AND ROOT EXTRACTS

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Keywords: *Rumex crispus*, gas-liquid chromatography, Soxhlet extraction, fatty acids, column chromatography, phytochemical analysis, natural products.

Abstract. *Rumex crispus* is a widely distributed medicinal plant traditionally used for its therapeutic and nutritional properties. This study aimed to determine the qualitative and quantitative composition of organic compounds in extracts of the seeds and roots of *R. crispus* using modern physicochemical analytical methods. Fatty oils were extracted from the seeds using the Soxhlet method with methylene chloride, followed by hydrolysis and gas-liquid chromatography (GLC) to identify fatty acids. Additionally, ethanol extracts from roots were fractionated via column chromatography, and compounds were characterized. Ten fatty acids were identified from the seed extracts, including cis- and trans-oleic acid isomers with notable antioxidant potential. The findings validate traditional medicinal claims and highlight *R. crispus* as a valuable source of biologically active compounds with pharmaceutical potential.

Research Materials and Methods. Plant Material Seeds and roots of *R. crispus* were collected from wild populations in Armenia. Plant material was authenticated at the Department of Botany, Yerevan State University, and air-dried at room temperature before use.

Extraction of Fatty Oils from Seeds

Fatty oils were obtained by the **Soxhlet extraction method**

Derivatization and Gas-Liquid Chromatography (GLC)

Summary of Results. Ten fatty acids were identified from the dichloromethane extract of *R. crispus* seeds by GLC. Among these, **cis- and trans-oleic acid** exhibited notable antioxidant potential, consistent with reported biological functions of unsaturated fatty acids (Gharby et al., 2017).

Further analysis of the neutral organic components revealed compounds such as tetraacetyl-D-xylonic nitrile, tetradecane, hexadecane, octadecane, cetyl alcohol, and ethyl iso-allocholate, the latter possessing antibacterial properties (Chen et al., 2011).

Conclusion. A systematic study on *R. crispus* seeds and roots was conducted using Soxhlet extraction, GLC to identify and characterise organic compounds. The results demonstrate that:

- The extraction and analytical procedures successfully isolated fatty oils and fatty acids with a total yield of 0.73%.
- Ten fatty acids were identified in seed extracts, with cis- and trans-oleic acid being the most biologically significant due to their antioxidant effects.
- Several neutral organic compounds, including ethyl iso-allocholate, exhibited potential antibacterial properties.

These findings validate the traditional medicinal uses of *R. crispus* and underscore its potential as a source of natural antioxidants and antimicrobial agents. Further pharmacological and toxicological studies are recommended to evaluate its therapeutic efficacy and safety.

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THE IMPACT OF CHRONIC DISEASES AND CONCOMITANT INFECTIONS ON THE COURSE OF CORONAVIRUS INFECTION IN CHILDREN

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Keywords: COVID-19, SARS-CoV-2, children, comorbidity, coinfection

Objectives. To evaluate the impact of chronic diseases and concomitant infections on the clinical course and outcomes of SARS-CoV-2 infection among children.

Materials and Methods. This study included 623 children aged 1 month to 18 years with confirmed COVID-19 infection (via nasopharyngeal PCR), hospitalized at “Arabkir” Medical Center, Yerevan, from March 2020 to June 2021. Demographic data, presenting symptoms, pre-existing chronic diseases, laboratory and imaging findings, concomitant infections, treatment approaches, and outcomes were analyzed. Patients were divided into three groups:

- **Group A (n=475):** Practically healthy
- **Group B (n=106):** With chronic diseases
- **Group C (n=33):** With coinfections

The frequency of severe disease and the mean duration of hospitalization were assessed for each group.

Results. Children of all age groups were hospitalized, including 346 boys (55.5%) and 277 girls (44.5%); infants constituted the largest group (40%). The most common symptom was fever $\geq 38^{\circ}\text{C}$ (68%), followed by respiratory (62.4%) and gastrointestinal (40.3%) symptoms, indicating multi-organ involvement. Chronic diseases were present in 115 patients (18.5%), including neurologic, cardiovascular, hematologic, endocrine, autoimmune, autoinflammatory disorders, and malignancies. Fourteen patients had two, and one had three comorbidities. Coinfections were detected in 42 patients (6.7%), predominantly bacterial (73.3%), with some viral and fungal cases. Among 196 X-rays performed, 110 (56.1%) were normal, while 86 (43.9%) showed lung involvement, most commonly patchy infiltrates or consolidations. Of 2 fluorographies and 5 CT scans performed before hospitalization, 1 and 3, respectively, were abnormal. Laboratory abnormalities included elevated nonspecific inflammatory markers: ESR ≥ 20 mm/h in 166 cases (26.6%), CRP ≥ 10 mg/dl in 198 (31.8%), thrombocytosis ($>400,000/\mu\text{l}$) in 125 (20.1%), leukopenia ($\leq 4000/\mu\text{l}$) in 6.6%, and leukocytosis ($\geq 15,000/\mu\text{l}$) in 9.6%. Supportive care included oxygen therapy in 5.8% of cases, mechanical ventilation in one case, antibiotics in 24.7%, IV fluids in 42.1%, corticosteroids in 6.4%, anticoagulants in 1.4%, and blood transfusion in 1.0%. Symptomatic treatment was provided to 33.2% of patients, while 5.3% required no therapy.

Disease severity varied by group:

- **Group A:** 95.4% mild/moderate; 4.6% severe
- **Group B:** 83% mild/moderate; 17% severe
- **Group C:** No severe cases

Nine patients had both chronic disease and coinfection; one had severe disease. Mean hospitalization duration was:

- Group A: 6.5 days
- Group B: 8.5 days
- Group C: 9.9 days
- Comorbid + coinfection: 12.2 days

One patient developed MIS-C, and one death occurred (a 16-year-old female with residual neurological deficits after astrocytoma resection).

Conclusion. Children of all ages can be affected by COVID-19, with infants being most commonly hospitalized. The disease course is generally mild to moderate. Chronic comorbidities increase the risk of severe disease more than threefold, while coinfections do not appear to influence severity. However, both comorbidities and coinfections—particularly the latter—prolong hospital stay. MIS-C remains a rare but serious complication of COVID-19 in children. Overall mortality in the pediatric population is low.

SCREENING AND COUNSELING AT COMMUNITY PHARMACIES

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Keywords. community pharmacist, pharmacy counseling, screening services

Introduction. Many patients in Armenia seek advice at community pharmacies in terms of prevention, detection and initial management of certain conditions and diseases. Some countries have expanded the role of pharmacists and introduced pharmacy-based screening programs and counseling [1]. Community pharmacists are among the most accessible healthcare professionals and are very well-placed to deliver different screening services. Screening programs implemented at community pharmacies can facilitate early disease detection and support physicians in diagnosis. The results of some implemented studies suggest that screening for some diseases in community pharmacies is feasible [2]. Studies have shown that patients are willing to participate in pharmacist-led screening for various risk factors/medical conditions; and community pharmacist-led screening seems to be acceptable for patients, pharmacists, and other healthcare professionals [3]. Barriers to screening implemented by pharmacists include time and privacy constraints [3]. The objective of this work was to analyze the situation on providing screening and counseling at community pharmacies in Armenia.

Material and methods. The survey was conducted in community pharmacies in all the regions of Armenia. 353 community pharmacists and pharmacy technicians were asked to complete pre-tested questionnaire. The data were analysed with SPSS statistical software, version 22.0.

Results. The majority (62.9%) of 353 responded professionals reported about availability of conditions for monitoring blood pressure, 14.4% of participants noted availability of conditions for monitoring glucose level, 11.3% of responders mentioned availability of conditions for doing pregnancy test, 9.6% of pharmacists and pharmacy technicians pointed availability for testing cholesterol and 2.0% - for monitoring asthma using peak flow meter. The great majority (86.7%) of participants indicated accessibility of conditions for private discussion with patients. Small number of pharmacy professionals reported that during the last year they were engaged in diabetes management (10.2%) and HIV/AIDS/TB management (7.9%). 7.4% of respondents were involved in family planning activity. 97.5% of pharmacy professionals consider that being active in providing general health information to patients is important; and 89.2% reported about being active. The number of professionals who are active in providing general health information to patients is significantly higher among those who attended continuing professional education courses, than among those who did not ($p=0.003$).

Conclusion. Thus, only part of community pharmacies in Armenia can provide point-of-care testing. Conditions for private discussion with patients are available at many community pharmacies. Pharmacy professionals are rarely involved in disease management. They are much more active in providing general health information. Continuing professional education improves situation with engagement of pharmacy professionals in implementing public health activity.

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EFFECTS OF SOUR CHERRY FRUITS ON THE RISK FACTORS OF CARDIOVASCULAR DISEASES

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Keywords: platelet aggregation, lipid spectrum, cerebral blood flow, freeze-dried Sour cherry fruits

Background. The development of effective agents for the prevention and treatment of cardiovascular diseases (CVDs) - the leading global causes of mortality, remains a major biomedical challenge. In this context, S.cherry (*Prunus cerasus*), rich in biologically active compounds, has attracted attention as a promising source of novel cardioprotective agents targeting key CVD risk factors. In view of this it was investigated antiplatelet and cerebrovascular activity of sour cherry fruits, as well as their antihyperlipidemic, antihypertensive, and anti-inflammatory properties.

Methods. The antiplatelet effect was evaluated by impedance aggregometry. Serum lipid parameters were assessed using standard biochemical techniques: enzymatic-colorimetric method for total cholesterol, glycerol-phosphate oxidase method for triglycerides, accelerator selective detergent method for HDL, and liquid selective detergent method for LDL in volunteers. The cerebrovascular effects were studied in a rat model of impaired cerebral blood flow induced by right common carotid artery occlusion (RCCAO), using laser Doppler flowmetry. The antihypertensive effect was assessed by the “non-invasive” tail-cuff test. The anti-inflammatory potential was investigated in a xylene-induced rat ear edema model followed by histological analysis. A technological approach for developing a new dosage form was based on freeze-drying of standardized fruit extract.

Results. Impedance aggregometry revealed a pronounced antiplatelet effect of Sour cherry fruits. Three hours after consuming 250 g of fresh fruits, platelet aggregation intensity, rate, and platelet count involved in aggregation decreased by $40.2 \pm 7.02\%$, $41.4 \pm 5.95\%$, and $50.3 \pm 8.06\%$, respectively, compared to baseline. Although these parameters gradually recovered, five hours post-intake aforementioned parameters remained below initial values by $29.84 \pm 3.38\%$, $39.29 \pm 4.79\%$, and $36.18 \pm 7.81\%$ respectively. After 14 days of daily consumption of 250 g of fresh fruits, serum triglycerides decreased by $21.01 \pm 9.25\%$, while total cholesterol and LDL levels were reduced by $8.1 \pm 3.30\%$ and $8.1 \pm 4.24\%$, respectively. Based on these promising outcomes, a freeze-dried powder standardized to an anthocyanin (89.76 mg per 100 g of fresh fruit) was obtained for further pharmacological evaluation. In rats, intraperitoneal administration of freeze-dried fruits (2.5 g/kg, i.p.) improved cerebral perfusion under ischemic conditions caused by RCCAO. While no effect on local cerebral blood flow (LCBF) was observed in intact animals, in carotid-occluded rats showing a $31.07 \pm 3.96\%$ reduction in LCBF, the same dose increased LCBF by $40.04 \pm 12.51\%$ compared with occlusion, even exceeding baseline values at 90 minutes. Systemic arterial pressure measurements demonstrated that intraperitoneal administration of freeze-dried fruits (2.5 g/kg) reduced systolic and diastolic blood pressure by 15.35% and 14.2%, respectively, within 20-40 minutes, with a mild compensatory heart rate increase (7.6% above baseline) at 50 minutes. In the xylene-induced ear edema model, freeze-dried fruit (0.9 g/kg, i.p.) reduced inflammation by 47.11%, surpassing ketoprofen (10 mg/kg, i.p.) which prevents inflammation by 35.7%. Histological analysis confirmed reduced leukocyte infiltration, minimal eosinophil degranulation and absence of stromal edema.

Conclusion. These findings evidence that sour cherry fruits exert anti-platelet, hypotensive, hypolipidemic, cerebrovascular, and anti-inflammatory effects, which serves base to suggest freeze-dried fruits as promising agent for CVD risk reduction.

ASSESSMENT OF DYNAMICS OF PRIORITY CONTAMINANTS IN THE ENVIRONMENT AND THE INCIDENCE OF SOME TARGET DISEASES IN EJMIADZIN REGION OF ARMENIA

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Keywords: organochlorine pesticides, surfactants, environment, contamination, population health

The research was conducted in Ejmiadzin region to study and comparative analysis the dynamics of organochlorine pesticide (OCPs) and surfactant (SSs) levels in the environment, agricultural products and biomedica, as well the incidence of certain target diseases over a 13-year period (2011 and 2024), investigating the potential adverse effects on population health. This region is characterized by predominated rural population (68%) and agriculture accounting for the highest share in the republic – 22%. Samples of surface water, soil, sludge, snow, agricultural products and breast milk were collected, and reproductive health and some target diseases statistics were examined. The study used analytical, sanitary-chemical, sanitary-hygienic, genetic-hygienic, social-hygienic, biotesting, statistical, descriptive and other methods.

Over the years, OCP levels in studied matrices gradually decreased, with average annual OCP concentrations decreasing by 1.5-4.0 times. However, their detection frequency remained unchanged. γ -HCH was constantly detected in the environmental and agricultural matrices (100%), while DDT and DDE accounted for 50-100%. γ -HCH levels were regularly higher than total DDT, $p=0.00000$. In plant agricultural products, a significant decrease in OCP levels was also observed: 3.74 ± 0.26 $\mu\text{g/kg}$ and 2.80 ± 0.27 $\mu\text{g/kg}$, respectively by years, $p=0.019$. In the environmental matrices, SSs were detected most frequently in fall (50-100%). Mean annual levels in surface waters were within hygienic standards and not detected in the snow. Meanwhile, annual average levels in soil exceeded the hygienic standard (0.2 mg/kg) by 2-3 times, being about 2 times higher than in surface water. No changes in the indicators of mutagenic background of the environment.

All OCPs studied were detected in breast milk and their number detected simultaneously did not change significantly over 13 years. The OCP levels significantly decreased by 6-12 times, $p=0.1-0.00000$. The structure of the reproductive health has changed in somewhat with decreasing various problems and complications. The analysis of the prevalence of some target diseases showed downward trend: $R^2=0.3991-0.6863$, consisting with OCP levels found in the environmental matrices, biomedica and reproductive health indicators.

This research is a part of ongoing comprehensive studies conducting in different regions of Armenia and aimed at investigating the potential adverse effects of circulating OCP levels in the environment and biomedica. The results obtained showed significantly decrease in OCP levels over 13 years period and some positive changes in the pattern of population health. However, OCPs are still found in the environment, agricultural products and biomedica without exceeding hygienic standards. Average annual OCP levels are gradually declining, primary du to decrease in the concentration of DDT and its derivatives used in the recent past. This trend can be explained by possible cessation or strict limited usage of these formulations, as well by the gradual breakdown of their residues in the environment.

OUR EXPERIENCE OF TREATMENT OF PATIENTS WITH ACUTE CHOLECYSTITIS AT EREBUNI MEDICAL CENTER FOR THE PERIOD 2023–2025

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Key words: acute cholecystitis, elderly patients, laparoscopic cholecystectomy

Acute destructive cholecystitis remains one of the most common causes of emergency abdominal surgery. Timely diagnosis and the choice of optimal treatment strategy determine patient outcomes and the rate of complications.

The aim of the study. To summarize our experience of diagnosis and treatment of patients with acute cholecystitis at the multidisciplinary Erebuni Medical Center during the period 2023–2025.

Materials and methods of investigation. During this period, **108 patients** with acute cholecystitis were treated at Erebuni Medical Center from the staff of emergency and abdominal surgery YSMU. The mean age was 54 ± 12 years; **38 patients (35.2%)** were over 60 years old. The diagnosis was confirmed by clinical, laboratory, and instrumental methods (ultrasound, CT, ERCP, laparoscopy).

Laparoscopic cholecystectomy was performed in **90%** of cases, and **10%** required conversion to open surgery. **Comorbid conditions** (cardiovascular, endocrine, vascular disorders) were identified in **68%** of patients, mostly in elderly patients. 14 patients were complicated by choledocholithiasis and mechanical jaundice. 5 of them over 60 years old. These patients underwent 2 operations: ERCP, EPST with stone removal, then laparoscopic cholecystectomy

Results. Postoperative complications occurred in **6%** of patients, and there were **3 deaths (2.8%)**. All 3 cases death reason was stroke in postoperative period. The average hospital stays was 1.6 ± 0.5 days. The use of modern laparoscopic technologies significantly reduced the rate of complications and the length of hospitalization, more obviously in elderly patients.

Conclusions:

1. Laparoscopic cholecystectomy remains the method of choice for acute destructive cholecystitis, even in herontology group.
2. With timely diagnosis and adequate preoperative preparation, favorable clinical outcomes are achieved.

The experience of our staff (emergency and abdominal department, YSMU) at Erebuni Medical Center confirms the effectiveness of minimally invasive techniques and the importance of a multidisciplinary approach in the treatment of this pathology.

SURGICAL OUTCOMES IN PATIENTS WITH LOW-AND INTERMEDIATE-RISK PN1 PAPILLARY THYROID CANCER: A COMPARISON OF LOBECTOMY AND TOTAL THYROIDECTOMY

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Key words: papillary thyroid cancer, thyroid lobectomy, thyroidectomy with ipsilateral neck dissection

Background: Papillary thyroid cancer (PTC) is the most common endocrine neoplasm, and it is predominantly treated surgically. While thyroidectomy remains the treatment of choice in the majority of cases, fear of postoperative complications, such as hypoparathyroidism and recurrent laryngeal nerve damage, has resulted in interest in less invasive surgeries, particularly for patients with unilateral disease and limited lymph node involvement. The aim of this study was to determine whether hemithyroidectomy with ipsilateral central neck lymph node dissection can be performed safely without increasing the risk of recurrence in patients with unilateral PTC and ipsilateral central neck lymph node metastasis.

Methods: In this retrospective cohort study, 160 patients with PTC (T1a N1a M0) were recruited and separated into two groups: Group 1 (102 patients), who underwent total thyroidectomy with ipsilateral central neck lymph node dissection and radioactive iodine therapy, and Group 2 (58 patients), who underwent hemithyroidectomy with ipsilateral central neck lymph node dissection. Preoperative and postoperative assessments were performed via included fine-needle aspiration biopsy, neck ultrasound, CT, and hormone studies. Recurrence rates and complications were tracked over 3 years of follow-up. To evaluate the differences between these two groups in terms of complications and rates of recurrence, we performed chi-square tests on categorical data.

Results: Hypoparathyroidism

- Group 1 (total thyroidectomy): Transient hypoparathyroidism occurred in 15 patients (14.7%), and permanent hypoparathyroidism occurred in 2 patients (1.96%).

- Group 2 (hemithyroidectomy): No patients showed transient or permanent hypoparathyroidism.

The incidence of permanent hypoparathyroidism was significantly greater in Group 1 than in Group 2 (1.96% vs. 0%, $P = 0.005$)

Recurrent Laryngeal Nerve Damage

- In Group 1 (total thyroidectomy), 6 patients (5.8%) experienced unilateral recurrent laryngeal nerve damage.

- In Group 2 (hemithyroidectomy), 2 patients (3.44%) had unilateral recurrent laryngeal nerve injury.

Although intraoperative nerve monitoring was conducted during all the surgeries, it was not able to fully reduce the risk of injury in the two groups. Injury to the recurrent laryngeal nerve occurred nominally more often in Group 1 (5.8%) than in Group 2 (3.44%), but there was no significant difference ($P = 0.21$).

Tumor Recurrence Finally, we sought to determine the effectiveness of hemithyroidectomy in mitigating PTC recurrence with respect to total thyroidectomy. The three-year recurrence rates were as follows:

- Group 1 (Total thyroidectomy): Recurrence was identified in 5 patients (4.9%).
- Group 2 (Hemithyroidectomy): Recurrence was identified in 3 patients (5.17%).

There was no significant difference in the rates of recurrence between the groups ($P = 0.05$), implying that hemithyroidectomy is an acceptable procedure for some patients, particularly those with good expected outcomes.

Conclusion: Hemithyroidectomy with ipsilateral central neck lymph node dissection is a valid and tissue-sparing surgical approach for patients with unilateral PTC and limited central neck metastasis. Compared with total thyroidectomy, hemithyroidectomy is not associated with an increased risk of recurrence and is less likely to cause hypoparathyroidism. Hemithyroidectomy may therefore serve as a potential alternative for treating PTC in appropriately selected patients.

DIAGNOSTIC ACCURACY OF INTRAOPERATIVE FROZEN SECTION OF LATERAL NECK LYMPH NODES IN PREDICTING METASTASIS IN PAPILLARY THYROID CARCINOMA

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Keywords: intraoperative frozen section, lateral neck lymph node, papillary thyroid cancer

Introduction. The presence of lateral neck lymph node metastases (MTS) significantly increases the extent of surgical intervention, necessitating a combination of total thyroidectomy and lateral neck lymph node dissection. This escalation in surgical scope results not only in greater operative trauma but also in a higher risk of both intraoperative and postoperative complications. Fine-needle aspiration (FNA) biopsy with thyroglobulin (Tg) washout measurement, used for the preoperative detection of lymph node metastases, demonstrates a high level of diagnostic accuracy. However, its positive predictive value is not consistently reliable, and in some cases, diagnostic errors may occur, leading either to postoperative recurrence or to unnecessarily extensive surgical procedures. This study aimed to evaluate the diagnostic accuracy of intraoperative frozen-section examination of lymph nodes from the lateral neck compartments (levels II–V) in predicting metastatic involvement.

Methods. A prospective diagnostic accuracy study was conducted on 142 patients with papillary thyroid carcinoma (PTC) who exhibited suspicious sonographic features in lateral neck lymph nodes on preoperative ultrasound. Intraoperatively, frozen-section examination was performed on the largest suspicious lymph node in the lateral neck before thyroidectomy. If metastasis (MTS) was identified on frozen section, thyroidectomy was combined with a lateral neck dissection. Frozen-section results were compared with final histopathological findings. In cases with negative frozen-section results, lateral neck dissection was not performed. All patients were followed for 24 months to monitor disease recurrence, using neck ultrasound, computed tomography (CT), and serum thyroglobulin (Tg) and anti-Tg antibody levels.

Results and Discussion. Based on intraoperative frozen-section results, patients were divided into two groups:

- Group 1: 68 patients with negative frozen-section results for MTS in the lateral neck lymph node.
- Group 2: 74 patients with positive frozen-section results for MTS in the lateral neck lymph node.

Final histopathological examination confirmed metastatic involvement in all 74 patients with positive frozen-section results. The 68 patients with negative frozen-section results were monitored for 24 months; disease recurrence in the lateral neck was detected in only two cases. Diagnostic performance of intraoperative frozen section was evaluated using a 2×2 contingency table comparing frozen-section results (positive/negative) with the reference standard (final histopathology for patients with lateral neck dissection or follow-up outcomes for frozen-section–negative cases). In this series (n = 142), there were 74 true positives, 2 false negatives, 66 true negatives, and no false positives. The corresponding diagnostic indices were:

- Sensitivity: 97.4%
- Specificity: 100%
- Positive predictive value (PPV): 100%
- Negative predictive value (NPV): 97.1%
- Overall accuracy: 98.6%

For comparison, a pooled analysis by Xu-Hang Zhu et al. (2019) reported an overall sensitivity of 91% and specificity of 94% for FNA-Tg, demonstrating that intraoperative frozen section may offer comparable or superior diagnostic reliability in real-time intraoperative decision-making.

Conclusion. In this study, intraoperative frozen-section examination of suspicious lateral neck lymph nodes proved to be a highly accurate and reliable method for detecting metastasis in patients with papillary thyroid carcinoma. The technique can effectively guide the extent of surgical intervention, allowing surgeons to determine the appropriate surgical volume during PTC surgery.

THE TREATMENT WITH MILK PRODUCT «NARINEH», CONTAINING *LACTOBACILLUS*, ADDED TO THE STANDARD SCHEME FOR ERADICATION OF *HELICOBACTER PYLORI* INFECTION ASSOCIATED PEPTIC ULCERS

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Keywords: Eradication *Helicobacter pylori*, *Lactobacillus acidophilus*.

Introduction: In recent years, there has been a growing dissatisfaction with the classical schemes of the eradication of *Helicobacter pylori* (Hp) in ulcerative disease among physicians due to frequent failures in eradication therapy, mostly due to antibiotic resistance. It is a known fact that the *Lactobacillus acidophilus* (LA) inhibits the growth of Hp. Our main goal was to investigate the ability of the fermented milk product "Narineh," as a functional food, containing *Lactobacillus acidophilus* to evaluate the efficiency and incidence of adverse effects in addition to the standard scheme of eradication therapy.

Material of Research: The patients with peptic ulcer (PU) were divided into 2 groups: control (42 patients) received traditional treatment regimens, including 7 days proton pump inhibitor (PPI) + amoxicillin and clarithromycin in the standard doses and subsequent 14 day De-Nol; experimental (44 patients) received in addition to this standard conventional scheme fermented milk product "Narineh," 200g, containing 2×10^9 CFU/ml LA one time a day starting from the 8th day for 4 weeks. The distribution of patients was carried out in such a way that in terms of age, gender, size of the ulcer, localization of the ulcer in the stomach or duodenum.

Methods: The results of the eradication in patients were evaluated after 4 -5 weeks, 6 months, and 12 months after completion of treatment using respiratory urea test (RUT) by using the C¹³ breath test devices of Fischer Analysen Instrumente GmbH, FANhp, Germany. Repeated endoscopy with histological biopsies was carried out together with RUT in 4-5 weeks after the completion of treatment, and later (6-12 months) for the identification of recurrent ulcer. Stepwise biopsy was taken in two pieces from the body, antrum, and duodenum bulb. Histological stains with hematoxylin-eosin and Giemsa were used. The Bacteriological culture of feces and microscopic analysis of stool was carried out before treatment and 5 weeks after the completion of the treatment. The relative values of the degree of eradication of Hp in different groups were compared with each other using the student's test of significance of differences or the t-test to assess the significance of the difference between the relative indicators. To check the accuracy of reinfection, relapses and side effects of treatment in different groups, the initial information was compiled in the form of four-field tables. The significance of differences was calculated using the χ^2 -test. Using the four-field table, we calculated indicators of relative (RR) and immediate risk (IR).

Summary of Results: The treatment with "Narineh" added to the standard regimen significantly reduces the percentage of reinfection and relapse of the disease with a statistical difference ($P < 0,05$). The combination of fermentation milk product "Narineh", containing *Lactobacillus acidophilus* with bismuth subcitrate, doesn't cause a violation of biocenosis of the large intestine, in contrast to the PPI and antibiotics with a statistical difference ($P < 0,05$). In addition, it provides the normalization of gut biocenosis and reduces the frequency of antibiotic-associated diarrhea and other side effects.

Conclusion: The treatment with "Narineh" added to the standard scheme is more effective for eradication of *Helicobacter pylori* infection and significantly reduces the percentage of reinfection and relapse of the disease and lessens the side effects of medications.

VIOLENCE AGAINST HEALTHCARE WORKERS: PROFESSIONAL EMOTIONAL BURNOUT AND POST-TRAUMATIC STRESS DISORDER

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Introduction. Healthcare workers are the cornerstone of every health system and they are frequently exposed to stressful and conflict-prone environments that may lead to workplace violence. Such incidents have serious implications for their mental health and professional functioning, often resulting in emotional burnout and post-traumatic stress disorder (PTSD). Burnout develops due to chronic occupational stress, exposure to aggression, bureaucratic constraints, and a lack of systemic trust. These factors cause apathy, frustration, and a decline in motivation, eventually leading to psychological and physical exhaustion. Globally, the prevalence of burnout among healthcare professionals ranges from 29% to 76.7%, reaching up to 69% during the COVID-19 pandemic [1-10]. PTSD prevalence is around 3% in the general population but may rise to 33% among healthcare workers exposed to workplace violence [11–13].

Methods. A quantitative, non-experimental study was conducted in Yerevan and all regions of the Republic of Armenia. The research included all major multidisciplinary hospitals and 10 primary health care facilities in Yerevan, along with one hospital and one polyclinic in each region. The sample comprised 432 healthcare workers selected through accessibility sampling method. Data collection used internationally validated tools: a workplace violence questionnaire, the Maslach Burnout Inventory, and the PTSD Checklist for DSM-5 (PCL-5). Data analysis was performed using SPSS software with descriptive statistics, Chi-square (χ^2), independent t-tests, and one-way ANOVA. Ethical approval was obtained from the Yerevan State Medical University Ethics Committee.

Results. The study revealed a high prevalence of emotional burnout among healthcare workers. Emotional exhaustion was high in 39.6% and very high in 23.6% of respondents, while 29.6% reported moderate levels. Depersonalization was high among 34.7% and moderate among 25.9%. Regarding professional accomplishment, low or very low motivation was recorded in 87.7% of participants. Overall, 67.4% had high and 19.9% very high levels of burnout.

Independent t-tests showed significant differences between those exposed to violence and those not. Emotional exhaustion was significantly higher among individuals subjected to physical ($p=0.001$) and verbal assaults ($p=0.001$), while differences related to sexual harassment were not statistically significant. Among 305 respondents who completed the PCL-5, 198 (64.9%) scored ≥ 31 , indicating probable PTSD. Symptoms of intrusion, avoidance, negative mood, and hyperarousal were found in 296, 264, 305, and 305 participants, respectively. Chi-square analysis confirmed a significant association between physical violence and PTSD ($\chi^2 = 30.130$, $p = 0.001$, Cramer's $V = 0.264$), reflecting a moderate correlation.

Conclusions:

- Emotional burnout is highly prevalent among healthcare workers.
- Levels of professional emotional burnout are significantly higher among those who have experienced physical or verbal violence.
- Healthcare workers exposed to violence more frequently develop symptoms characteristic of post-traumatic stress disorder.

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