

SUMY STATE UNIVERSITY MEDICAL INSTITUTE



BIOMEDICAL PERSPECTIVES

II

ABSTRACT BOOK

*International Scientific Conference
of Students, Postgraduates and Young Scientists*

(Sumy, October 20-22, 2020)

Sumy
Sumy State University
2020

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
SUMY STATE UNIVERSITY
MEDICAL INSTITUTE



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Contact email: conference.med.ssu@gmail.com

Contact phone: +380507276193

Organizing Committee: Prof. Maksym Pogorielov;
PhD Vladyslav Sikora;
PhD Mykola Lyndin;
PhD Artem Piddubnyi;
Ruslana Chyzhma;
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FUNDAMENTAL MEDICAL SCIENCES

EFFICIENCY OF BONE TISSUE EQUIVALENTS APPLICATION BASED ON MMC-AT IN THE HEALING OF BONE DEFECTS OF THE SKULL IN EXPERIMENTAL ANIMALS

Bambuliak A.V.

*Higher State Educational Establishment of Ukraine,
"Bukovinian State Medical University", Ukraine.*

Introduction. The use of stem cells and tissue engineering in dentistry provides an innovative approach to the treatment of bone defects by replacing missing tissue, and also helps to improve bone regeneration.

Aim. To determine the perspectives for the use of bone tissue equivalents based on multipotent mesenchymal adipose tissue cells for the healing of bone defects.

Materials and methods. The properties of MMC-AT on the model of rat skull (Wistar line) bone defect were studied. Control groups were formed taking into account the gender and age of the animals. Under general anesthesia, in accordance with the rules of humane treatment of animals, surgery was performed in the parietal area of the rats' skull: skin, subcutaneous fat, aponeurotic helmet were cut in layers. Using a drill, with consequent irrigation with saline, holes were formed with a diameter of 5-6 mm, without damaging the dura mater. The prepared material (5 x 5 mm) was implanted in the formed defect. After 1, 2 and 3 months, rats were removed from the experiment by overdose of nembutal at a dose of 30-50 mg/kg.

Indicators of the structural and functional state of bone tissue in experimental animals were determined using a two-photon X-ray densitometer "Prodigy". Statistical calculation of numerical values was performed using standard statistical methods.

Results and conclusions. After 30 days of observation on the simulated skull defects of experimental animals revealed osteoplastic properties of bone tissue equivalents based on MMC-AT, especially combinations of MMC-AT + PRP and MMC-AT + PRP + Collapan, which passed osteogenic differentiation and provided improved bone regeneration process. After 2 months of observation in groups of experimental animals, regardless of the chosen method of MMC-AT implantation, an effective bone regeneration was obtained, which was indicated by a decrease in the inflammatory response and positive values dynamics of bone remodeling markers, as well as significant improvement of the structural and functional state of bone tissue. It was also found out, that on simulated defects of rats' skull bones it is effective to use bone implants based on MMC-AT, especially combinations of MMC-AT + PRP and MMC-AT + PRP + Collapan, which provided complete closure of the bone defect after 90 days.

E-mail for correspondence: bambuliak.andrij@bsmu.edu.ua

THE ROLE OF PSAMMOMA BODIES IN THE OVARIAN SEROUS ADENOCARCINOMA (LITERATURE REVIEW)

Chyzhma R.A., Soloviov N.O., Sikora V.V., Pidubnyi A.M.

Research advisor: Moskalenko R.A.

Department of Pathology, Medical Institute, Sumy State University, Ukraine.

Introduction. One of the current problems among women's reproductive system diseases is ovarian tumors. Each year the risk of this disease shows a tendency to increase. The pathognomonic feature of the morphological diagnostic of ovarian cancer is Psammoma bodies (PBs), which are represented by plasticized calcium structures and are placed in the form of concentration circles [Das]. Should be noted, that the process of pathological biomineralization is most common in serous papillary carcinoma, but the mechanism of PBs formation is not fully understood yet.

Aim. To investigate the features of the location of PBs and their diagnostic value in predicting the behavior of serous papillary carcinomas of ovaries.

Materials and methods. The analysis of scientific sources was performed by using the resources of the library-information center of Sumy State University (scientific and scientometric databases EBSCO, Case Files Collection, Scopus) and open scientific databases Pubmed and Google Scholar.

Results. Found out significant variations of the location and prevalence of calcifications in ovarian cancer tissue in the serous variant of the tumor lesions. PBs are formed intracellularly, both in tumor cells and in stromal histiocytes [Ferency]. However, biominerals in serous adenocarcinoma of ovaries are localized mainly in the stromal component of the tumor and much less in the epithelium. Should be noted that in single cases, PBs are localized in areas of degenerative changes of tumor tissue and in a vascular wall [Wen].

In addition, the presence and location of PBs in serous adenocarcinoma depends on the degree of malignancy of the ovarian tumor and are more common in highly differentiated serous tumors with a low degree. Important to note, that as a result of treatment, the percentage of calcifications in peritoneal metastases increases significantly compared to the initial level and reaches about 16% [Ganeshan].

Conclusion. Consequently, on the basis of the processed material, it is established that at an early stage of development of the tumor process PBs can create a protective barrier for spreading the neoplastic cells, and in some cases even to their death, which indicates the regression of the tumor process and favorable prognosis of this disease [Das]. At the same time, in the later stages of the development, PBs may be the consequence of biological changes of tumor cells characterizing the progression of the tumor process and an unfavorable prognosis in the future [Wen].

E-mail for correspondence: r.chyzhma97@gmail.com

EFFECT OF L-LYSINE COMPOUNDS ON SURVIVAL AND NEUROLOGICAL DEFICIENCY IN ANIMALS WITH MODELING OF ACUTE CEREBRAL CIRCULATION DISORDER BY ISCHEMIC TYPE

Egorov A., Kurlyak K.

Research advisor: prof. Belenichev I.

*Department of Pharmacology and Medical Prescription
Zaporozhye State Medical University, Ukraine.*

Introduction. The increase in the number of vascular diseases, as well as associated complications (acute cerebrovascular accident), pose a challenge for modern pharmacology to search for new compounds, the action of which would be aimed at the prevention and treatment of cerebral strokes. For the study, we have selected compounds, the structure of which includes the essential amino acid L-lysine.

Aim. To study the effect of L-lysine compounds on the survival rate of animals and the severity of neurological symptoms using a model of acute cerebrovascular accident (ACVA) by ischemic type.

Materials and methods. ACVA in experimental animals (outbred male rats) was induced by bilateral ligation of the common carotid arteries. L-lysine compounds (L-lysine hydrochloride, L-lysine succinate, L-lysine escinate and Lysinium. Lysinium compound (3-methyl-1,2,4-triazolyl-5-thioacetate) was synthesized at the Department of Pharmaceutical Chemistry ZSMU under the guidance of Prof. IA Mazur. The compounds under study were injected intraperitoneally at a dose of 50 mg / kg once a day. On the 18th day the animals were withdrawn from the experiment by decapitation. The severity of neurological deficit was determined using the McGrow scale.

Results. Modeling of stroke by ischemic type is characterized by high mortality (predominant in the first 48 hours) and severe neurological symptoms. So, on the 18th day of the experiment, the survival rate in the group was: the group with ACVA - 30%, with the introduction of L-lysine hydrochloride - 60%, with the introduction of L-lysine succinate - 70%, with the introduction of L-lysine escinate 80% and with introduction of "Lysinia" - 90%. The study of the severity of neurological deficit according to the McGrow scale showed the average score in the group with ACVA - 8.33. The introduction of L-lysine hydrochloride, L-lysine succinate and L-lysine aescinat reduced neurological deficits by 11.11%, 24.11% and 70.94%, respectively, relative to the ACVA group. In the group with the introduction of "Lysinium" there is a significant ($p < 0.05$) decrease in neurological deficit by 2.4 times as compared to the group with stroke.

Conclusions. 1. Modeling of stroke by ischemic type leads to mortality of 70% of experimental animals and severe neurological deficit. 2. The introduction of the studied compounds L-lysine in varying degrees of severity reduced neurological symptoms and increased the number of surviving animals. 3. The greatest activity was shown by L-lysine aescinata and "Lysinia", increasing the percentage of surviving animals to 90%, as well as reducing the manifestations of neurological symptoms on the McGrow scale up to 2.4 times. 4. Based on our data, we can consider some compounds of L-lysine (L-lysine succinate, L-lysine escinate, "Lysinia") as promising neuroprotectors.

E-mail for correspondence: datas999@gmail.com

ANATOMICAL STRUCTURE OF FRONTAL AND MAXILLARY SINUSES

Gargin V.V., Alekseeva V.V.

Kharkiv National Medical University, Kharkiv, Ukraine.

Introduction. The anatomical structure of the paranasal sinuses of a person predetermines the risk of development, diversity of presentation, possibility of complications and features of surgical treatment of rhinosinusitis.

Aim. To determine the thickness and density of the walls of the maxillary and frontal sinuses, which are potentially dangerous in terms of the development of complications.

Materials and methods. Our study involved 121 subjects without any ENT diseases, who underwent SCT examination due to reasons that were not related to abnormalities of ENT organs. thickness and density in the region of the lower (orbital) wall and posterior (cerebral) wall of the frontal sinus were calculated.

Results and Discussion. The study has shown that the maximum density is characteristic of the lower wall of the frontal sinus under physiological conditions and is 107.96 ± 201.64 Hu, the minimum for the lower wall is -29.98 ± 208.54 Hu. The thickness of the bone tissue in the frontal sinus is 4.05 ± 2.04 mm.

Conclusion. The minimum density and thickness of the lower and posterior walls of the frontal sinus and upper and lower walls of the maxillary sinus was established under physiological conditions. The density of the posterior wall was found to be 25.4% lower than the density of the lower wall, and the thickness 22.2% lower.

E-mail for correspondence: vik13052130@i.ua

FEATURES OF INTERNAL STRUCTURE OF PINEAL GLAND IN ELDERLY PEOPLE DEPENDING ON THE DEGREE OF ITS CALCIFICATION

Hrinko R.M., Shkodina A.D.

Research advisor: prof. Starchenko I.

Department of Pathological Anatomy with Autopsy Course, Ukrainian Medical Stomatological Academy, Poltava, Ukraine.

Introduction. Specific structures describing in the human pineal glands (PG) are called “brain sand” and consist of Calcium and Magnesium salts. Generally, calcification of PG is interpreted as an age-related change due to degeneration of pinealocytes. However, it is not clear how changes in cell composition and blood vessels associate with degree of calcification of PG in elderly people.

Aim. To study features of cell composition and blood vessels in PG of elderly people depending on the degree of its calcification.

Materials and methods. We conducted the case-control study, which include 16 samples of PG from autopsy elderly male and female. They were separated into 2 groups according to the degree of calcification assessing by specific gravity of “brain sand” in PG, namely:

- group 1: mild calcification – less than 20% of PGs volume;
- group 2: moderate calcification – more than 20% of PGs volume.

Histological sections made by traditional methods were stained with hematoxylin and eosin. The study of micropreparations and morphometric studies were performed using a light microscope Olympus BX-41. IBM SPSS Statistics 26.0 was used for statistical analysis.

Results. The risk of accumulation of "brain sand" deposits increases not only in the outer capsule, but also in the interparticle connective tissue trabeculae, with increasing the degree of calcification of the PG in the elderly people. At the same time, the specific gravity of dark pinealocytes decreases, which is most likely the result of involutive processes. The outer diameter of arterial vessels and the thickness of the vascular wall are increased in the group with moderate calcification. But their diameter of inner lumen is not change. Accordingly, in the group with moderate calcification the Kernogan index is significant more, which allows to determine the dependence of the degree of PGs calcification in the elderly people on the condition of arterial blood vessels.

Conclusion. The degree of calcification of the PG in the elderly people is associated with the "brain sand" topography, which may indicate the stage of its accumulation in different structures of the gland. Increasing the degree of calcification are accompanied by a decreasing in the specific gravity of dark pinealocytes and changes in the wall of arterial microvessels.

E-mail for correspondence: maniac61870@gmail.com

THE DEVELOPMENT AND FORMATION OF ARTERIAL SYSTEM TOPOGRAPHY OF THE PANCREAS

Hrymailo N.A., Karatieieva S.Yu.

“Bukovinian State Medical University”, Chernivtsi, Ukraine.

Introduction. The structure and function of some organ is related with circulatory system of this organ, development and peculiarity of his anatomy. The topography and anatomy peculiarity of the pancreas determine significant difficulties of assessing the nature of prevalence of the pathological process and degree of involvement to this process of the main vessels, while choosing of adequate surgical access.

Aim. To study of the development and formation of arterial system topography of the pancreas.

Materials and methods. Preparations of pancreas (45), pancreatic arterials, duodenal papilla (45), macro and micro dissection, Magnetic Resonance Imaging.

Results. In the early stages vascular system of the pancreas was represented between the mesenchymal fissures, vascular lacunae, randomly throw about in the tab of the pancreas. To the end of the prenatal and early periods of development begins of the intensive increase of density of vascular channel in the head and body of the pancreas. The phase of accelerated growth of the vascular system of the pancreas is replaced by the period of his slowly development.

The branches of large arteries, penetrating into the tissue of the pancreas, are divided into anterior and posterior, they to anastomose with each other at the lower edge of the gland and forming numerous of rings. From this arteries walk away branches of the second and third order – interparticle arteries wich are anastomosing among themselves, they form the plexus wich encircle the lobe of pancreas. From them at different angles to branch out capillary arterioles, which have branching on capillaries, surrounding of external secretion of the cells.

The head of the pancreas is blood supply by the branches of the common hepatic, gastrointestinal duodenum, anterior and posterior of upper pancreatic duodenal, anterior and posterior inferior of pancreatic duodenal arteries, long of artery pancreas, the right branches of lower pancreas artery.

From the 7 th month of development, in the blood supply of the head of the pancreas, except of specified arteries, involved of the higher anterior pancreatic and great pancreatic of the arteries. The splenic artery and its branches and the branches of the long and lower pancreatic arteries are involved of the blood supply to the tail of the pancreas.

According to the sources of blood supply in the pancreas, there are three regions: hepatic, splenic and upper mesenteric.

In connection with what have distinguished three areas of the pancreas - the head, the body and the tail, relatively to which clearly define of the vascular boundaries.

Conclusion. The performing of resection of the pancreas, considering his of blood supply and the structure of the ducts will greatly to promote of faster healing of the organ and prevent of development of the complications.

E-mail for correspondence: hrymailo.nataliia@bsmu.edu.ua

TOPOGRAPHICAL AND ANATOMICAL FEATURES OF THE BLOOD SUPPLY OF THE INFRAHYOID MUSCLES OF HUMAN FETUS

*Khmara T.V., Lopushniak L.Ya., Boichuk O.M., Honcharenko V.A., Dmytrenko R.R.
Higher state educational establishment of Ukraine
“Bucovinian state medical university”, Ukraine.*

Introduction. The main sources of blood supply to the infrahyoid (strap) muscles are the branches of the upper and lower thyroid arteries, and additional – the lingual artery and the transverse artery of the neck. Data on vascular branching options and vascular-nervous relationships in the infrahyoid muscles should be taken into account when making rational incisions in the neck, as well as when moving both the patch and the muscles mentioned above in general during plastic surgery.

Aim. To find out the features of the branching of arteries in the infrahyoid muscles of the neck of human fetuses.

Materials and methods. The study was performed on 36 fetuses 4-10 months using fine dissection and morphometry.

Results. In the studied fetuses, the main source of blood supply to the pectoralis infrahyoid muscle is the superior thyroid artery. The upper and lower thirds of the pectoralis infrahyoid muscle are best vascularized, and the arteries branch in the main shape and in the direction of the muscle bundles. The blood supply to the sternothyroid muscle is provided by the branches of the upper and lower thyroid arteries, which together with the nerves enter the muscle through the anterior surface, mainly in the middle third, cross the muscular abdomen in the transverse direction and branch, as a rule, trunk form. The main source of blood supply to the thyroinfrahyoid muscle is the superior thyroid artery, and an additional source is the lingual artery. The branches of the above arteries enter the thyroinfrahyoid muscle through the lateral edge, cross the muscle bundles at right angles and run parallel to their passage, giving in the transverse direction the branches of the following order. The form of branching of the arteries in the thyroinfrahyoid muscle is usually trunk. The upper abdomen of the scapular-infrahyoid muscle is supplied with blood by the branches of the superior thyroid artery, and the lower muscle's abdomen is supplied by the transverse artery of the neck. These arteries enter the muscle's abdomen through the lateral edge of the scapular-infrahyoid muscle, run parallel to the muscle bundles, and give off branches in the transverse direction along the trunk shape.

Conclusion. In human fetuses, the trunk form of branching of arteries in the infrahyoid muscles of the neck was found in most observations. The arteries enter the sternothyroid and infrahyoid muscles through the anterior surface, and the scapular-infrahyoid and sternoinfrahyoid muscles enter mainly through the posterior surface. When making incisions or moving the infrahyoid muscles of the neck, it is advisable to take into account the established points of entry of the arteries, as well as the topography of their vascular-nerve gates and the features of intramuscular branching.

E-mail for correspondence: olegb007@bsmu.edu.ua

HISTOLOGICAL CHANGES IN THE ADRENAL CORTEX OF RATS UNDER CONDITIONS OF RADIOACTIVE IRRADIATION

Kiptenko L.I., Tymakova O.O.

Department of Morphology

Medical Institute, Sumy State University, Sumy, Ukraine.

Introduction. Irradiation causes various damage to the DNA of cells and is accompanied by a number of significant tissue reactions, in which endocrine disorders is of particular importance. One of the most important issues of radio-biology is the study of damage to the endocrine glands and, in particular, adrenal glands under the influence of ionizing radiation, since the neuroendocrine system has an effect on organs and systems and plays a prominent role in response to the action of the stimulus and triggers the stressful reactions of the organism.

Materials and methods. The experiment was conducted on White laboratory rats - males 3 months of age weighing 150-200 g. The irradiation of rats was carried out at the installation of "Rocus" in doses of 0.1 Gy, 0.2 Gy and 0.3 Gy.

Results. There is only a certain thickening of the adrenal capsule and a sharp increase in the blood vessels of the gland in the first group. Connective tissue does not change. With an increase in the radiation of 0.2 Gy, the gland capsule thickens due to edema and intensively infiltrated with leukocytes of varying degrees of maturity and lymphocytes, lymphoblasts, plasma cells. There is loosening of connective tissue stroma. At maximum irradiation there are large hemorrhages in the cortical layer of the adrenal gland and an increase in the volume of the connective tissue stroma of the gland.

In the first group of the study of series, the cortex of the adrenal gland was enlarged through the fasciculate zone of the adrenal gland, whose thickness exceeds the control values by 23.2%. Glomerulosa and reticularis zones thicken by 6.9% and 15.4%. A similar trend is observed in cytometry indices. All this testifies to the voltage of the functional activity of the adrenal glands, which is confirmed by more frequent figures of mitosis in the glomerular zone.

With the increase of irradiation, the fasciculate zone grows in the direction of the glomerulosa and on its border; there is accumulation of cells, representing intermediate forms. The fasciculate zone is hyperemic, especially in the transition region to the zone reticularis. At a dose of 0.3 Gy of radiation, the general structure of the cortical substance of the adrenal glands is disturbed due to dystrophic changes in the cells. If we add to this, the pinocytosis of nuclei, karyolysis, degranulation and vacuolation of the cytoplasm, the absence of cell mitosis in all zones, then we can talk about degenerative changes. Even foci of necrosis appear with a maximum dose of radiation.

Conclusion. Thus, we can make a conclusion that with an increase in the dose of radiation, a structural reorganization of the adrenal cortex occurs in the form of successive changes, which together determine the transition from the stress phase of the secretory activity of the gland to its dystrophy.

E-mail for correspondence: l.kiptenko@med.sumdu.edu.ua

GENETIC VARIANT RS4977574 OF LNCRNA ANRIL IS ASSOCIATED WITH DISEASE-FREE SURVIVAL IN GENITOURINARY CANCER PATIENTS

Kolnoguz A.V., Volkohon A.D., Chumachenko Ya.D.

Research advisor: prof. Harbuzova V.Yu.

*Department of physiology, pathophysiology and medical biology
Medical Institute, Sumy State University, Sumy, Ukraine.*

Introduction. ANRIL (Antisense Non-coding RNA in the INK4 Locus, also known as CDKN2B-AS1) is long non-coding RNA (lncRNA) transcribed from the antisense strand of INK4b-ARF-INK4a gene cluster. It is shown that *ANRIL* overexpression is related to occurrence, progression and survival outcome of various oncological pathologies, including genitourinary system malignant tumors.

Aim. To study the possible link between *ANRIL* gene rs4977574 SNP and disease-free survival of genitourinary cancer (GUC) patients in Ukrainian population.

Materials and methods. The whole venous blood of 426 GUC patients was used in the study: 101 patients with clear cell renal cell carcinoma (CCRCC), 141 patients with transitional cell carcinoma of urinary bladder (TCCUB), 184 patients with prostate adenocarcinoma (PA). Genotyping of *ANRIL* gene rs4977574-locus was performed using real-time polymerase chain reaction (Real-time PCR) method and TaqMan assay C_31720978_30. SPSS software package (version 17.0) was used for mathematical analysis. The Kaplan-Meier test and Cox regression were used for survival analysis. P values < 0.05 were considered as statistically significant.

Results. The results of *ANRIL* rs4977574 SNP genotyping have revealed that ratio of AA-homozygotes, AG-heterozygotes and GG-homozygotes in GUC patients was 39.6%, 52.5% and 7.9%, respectively. The results of Kaplan-Meier test demonstrated that life expectancy until GUC onset is dependent on *ANRIL* rs4977574-polymorphism (log rank P = 0.029). The Cox regression analysis, adjusted for sex, body mass index, metastases, smoking habits and alcohol abuse, showed that risk of GUC development in minor G-allele carriers is higher compared to AA-homozygotes (HR = 1.274; 95 % CI = 1.035-1.568; P = 0.022).

Conclusion. The rs4977574 SNP of *ANRIL* gene is associated with disease-free survival in Ukrainian GUC patients. GUC occurs earlier in persons with rs4977574GG- and rs4977574GA-genotype than in individuals with rs4977574AA-genotype.

E-mail for correspondence: kolnoguz.aliona@ukr.net

PECULIARITIES OF IMMERSIVE TECHNOLOGIES USAGE DURING STUDY OF FUNDAMENTAL DISCIPLINES.

*Kovalchuk O.I., Bondarenko M.P., Ohrey A.G., Prybytko I.Y., Reshetnik E.M.
Department of Anatomy and Pathological Physiology, Educational and Scientific Center
"Institute of Biology and Medicine",
Taras Shevchenko National University of Kyiv, Ukraine.*

Introduction. Modern usage of immersive technologies (IT), namely virtual (VR) and augmented (augmented) reality (AR), optimizes various areas and medical education as well. Usage of IT helps to improve the assimilation of the material, prepares future doctors for various situations.

Usage of IT in the educational process is a clear and interesting study of different disciplines in one room. IT are high-quality replacement of tables, models, corpse material. During studying process of the fundamental disciplines (FD) training with the acquisition of new knowledge and competencies based on IT is motivated and organized. Usage of IT helps teachers and students in institution of higher education to master the manipulation of various specializations at the modern level.

Aim. To study the influence of IT during study of FD.

Materials and methods. Equipment of VR classrooms (30 smartphones); 2 tablets for teachers; 2 Wi-Fi routers; Oculus helmet with manipulators; computer with VR support. In the educational process *Google Expeditions* applications is used to implement learning using IT (supports AR / VR, giving the impression that the viewer is witnessing processes)).

Results. VR / AR simulators simplify a number of ethical issues that are safe compared to training on actual patients. With the help of simulators you can achieve more variety and complexity of procedures. Modern educational computer technology allows the student to study FD at a convenient time, regardless of the presence of corpse material. The value of VR in the context of learning lies in an environment as close as possible to a real-life scenario. Conducting operations in VR allows you to acquire the necessary psychomotor skills to master invasive techniques. As a result, there is an improvement in the learning outcomes of medical students and growing interest in the FD.

Conclusions. The need of introduction of IT in the educational process is due to the widespread usage of these latest technologies in medical practice.

E-mail for correspondence: iprybytko@gmail.com

CHARACTERISTICS OF MORPHOLOGICAL CHANGES THAT OCCUR IN THE ALVEOCYTES OF THE LUNGS OF RATS UNDER THE INFLUENCE OF ACUTE STRESS RESPONSE

Kyslyi V.F., Torubara O.O.

*Research advisor: Koptev M.M., PhD, Vynnyk N.I., PhD
Ukrainian medical stomatological academy, Ukraine.*

Introduction. The existence of a modern man is constantly accompanied by stress reactions. Currently, one of the major problems of medicine is the study of the effects of stress and prevention of stress. However, stress changes in the lungs remained poorly understood.

Aim. To determine the effect of acute immobilization stress on the alveocytes of the lungs of white rats.

Materials and methods. The study was performed taking into account bioethical standards in 10 adult white male rats. I, control, group consisted of 5 intact animals, II, experimental, group - 5 rats that underwent acute immobilization stress. The acute stress model was reproduced by immobilizing the animals for 6 hours in a supine position. After euthanasia of the animals and macroscopic examination of the lungs, material was collected for macro- and microscopic examination. Lung micropreparations were stained with hematoxylin and eosin using standard techniques.

Results. Macroscopic examination of the lungs of intact animals and rats with the reproduction of an experimental model of acute stress did not reveal significant differences. Microscopic examination of the alveoli of intact rats of group I revealed that inside the alveoli of the rats of the control group lined with a layer of epithelial cells with tight contacts. The epithelium is located on the basement membrane, which was adjacent to the basement membrane of the capillaries or separated from it by slits. In these slits reticular, elastic fibers and cells. Most cells lining the alveoli are represented by respiratory type I alveocytes and a small number of secretory type II alveocytes. Alveolar macrophages and brush type III alveocytes are also present.

Histological changes in the lung alveoli of group II rats are characterized by areas of destruction of the processes of type I alveocytes, the presence of micropinocytic vesicles. Destruction and desquamation of respiratory alveocytes were revealed. In the lumen of the alveoli are cellular conglomerates, fibrin and erythrocytes. Alveolar macrophages and type II alveocytes were found in the alveolar cavities.

Conclusion. The effect of acute immobilization stress on the lung alveoli of white rats is characterized by dystrophic changes and destruction of respiratory alveocytes, filling the lumen of the alveoli with necrotic masses and transudate, which leads to disruption of the integrity of the blood-air barrier function and impaired lung function.

E-mail for correspondence: kisliyvf@gmail.com

MICROSCOPIC FEATURES OF REPARATIVE SKIN REGENERATION UNDER CHRONIC HYPERGLYCEMIA

Maksymova O.S.

Research advisor: Doctor of Medicine, Professor Tkach G.F.

Department of Morphology

Medical Institute, Sumy State University, Ukraine.

Introduction. The study of skin regeneration is become more relevant each year due to the increasing number of patients with diabetes mellitus.

Aim. To study microscopic features of the skin regeneration of rats with chronic hyperglycemia.

Materials and methods. The study was conducted on 20 white laboratory middle-aged rats: a control group (10 rats) and a group of animals with chronic hyperglycemia (10 rats). The chronic hyperglycemia was simulated by single intraperitoneal administration of streptozotocin (40 mg/kg) and nicotinic acid (1 mg/kg). On the 60th day after the model reproduction in animals with chronic hyperglycemia and control group, the skin hole was formed by cutting interscapular region of the back. The studies were performed on the 14rd day after trauma. The sections were stained with hematoxylin-eosin. The light microscopy was performed using an Olympus BH-2 microscope (Japan).

Results. The basale cells of the skin regenerate were not closely linked, resulting in broad intercellular gaps were formed and cells were located without certain order. The basement membrane was not formed and as a result in the basale cells have infiltrated a new dermis. The capillaries were located under the epidermis. Its had damaged vessel walls. The clear border was not observed between stratum spinosum and granulosum. The neutrophils and the remains of destroyed cells were between keratinocytes spinosum. The one layer of the cells formed stratum granulosum. Stratum corneum had cells with pyknotic nucleus and destroyed organelles.

Conclusion. Thus, the fully regeneration epidermis and dermis did not happen on the 14rd day after trauma in rats middle age with chronic hyperglycemia of the body.

E-mail for correspondence: alenamaksimova@ukr.net

EXPERIMENTAL MODEL FOR THE STUDY OF DYSHYDRIA IN LABORATORY RATS

Omelchenko D., Dubovskoy B., Pernakov M., Dmytruk S.

Research advisor: assistant Pernakov M.

Department of Morphology, Medical Institute, Sumy State University, Ukraine.

Introduction. The special role of water in the emergence and maintenance of life on Earth. The human body has an average of 60% of water. Natural and man-made disasters, unfavorable conditions of a hot climate, increased physical activity, as well as diseases accompanied by vomiting and diarrhea all are accompanied by dehydration of the organism.

Aim. More deep study of the effects of dehydration on the body.

Materials and methods. For experiments selected sufficient for statistical analysis and obtaining reliable results acceptable number of animals (not less 6 each at the group). During the experiment, all animals were divided into 2 series: experimental and control. Experimental series divided into 4 groups: group of animals with simulation general dehydration, cellular dehydration, extracellular dehydration, the group using dehydration on a background severe combined preparation tiazotic acid and piracetam as a proofreader. Groups of experimental animals with simulation of dyshydria are divided into subgroups according to the severity of dehydration: mild, moderate and severe. Group of animals using combination drug tiazotic acid and piracetam divided into three groups by type for heavy dehydration degree. Animals from each subgroup where the severe degree of dyshydria was simulated were divided into 4 more parts, to study the readaptational transformations after dehydration at 1, 2, 4 and 8 weeks respectively. Rats series distributed control district at 2 groups: intact animals and animals and negative control drug selected for correction, which introduced a combined preparation tiazotic acid and piracetam, under the terms of severe degrees of all kinds dehydration. In the experimental groups correction animals (under terms of all species of severe dehydration) using animals who were elected from all kinds of dehydration severe degrees of, but with the use of combination drug of tiazotic acid and piracetam for the corresponding correction of morphological changes.

Results. We studied the possibility of using the proposed scheme to study dehydration.

Conclusions. This experimental model is an attempt to more deep study the dehydration and its effects on the body.

E-mail for correspondence: m.pernakov@med.sumdu.edu.ua

HIPPOCAMPAL MICROGLIA-NEURON CHANGES IN EXPERIMENTAL MODEL OF GENERALIZED SEIZURE ELECTRICAL STIMULATION

Parashchanka A.O.¹, Siamionik I.¹, Derevyanko M.¹, Melik-Kasumov T.¹

Research advisors: Rjabceva S.¹, Terekhov V.²

1 – Centre of electron and light microscopy, Institute of Physiology of National Academy of Science of Belarus, Minsk, Belarus.

2 – Republican Research and Clinical Center of Neurology and Neurosurgery, Minsk, Belarus.

Introduction. In animal kindling models was found that hippocampal cell in CA1-region were the most “sensitive” to chemical damage than CA4 pyramidal cells.

Aim. To analyze change of cell population in CA1 and CA4 subfields of the rat hippocampal formation after electrical stimulation (ES) of generalized seizure.

Materials and methods. 20 adult Wistar rats (average weight 276 ± 1.4 g) were stimulated during 4-6 weeks. The electrical stimulation by the Medtronic Model 3625. The ES parameters were: pulse rate – 120 pulses per second, pulse width – 800 msec, pulse amplitude – 4.5-7.0 V. At the end of experiments, the rat brains were dissected out. Histologically, we analyzed neurons and glial cells counts in CA1 and CA4 subfields of hippocampal formation of right hemispheres (bregma – 2.00 mm). The Mann–Whitney’s test was used.

Results. In first group (without electrode implantation, n=10) the median of neuron count (NC) in CA1-region was 75.0 [72.0;84.0] and of glial cell count (GCC) – 4.0 [2.0;6.0]. In this group the median of CA4 pyramidal cells count was 62.5 [51.5;69.0] and of GCC in CA4 – 32.0 [26.0;38.0]. In second group after ES (n=10) the median of NC in CA1 was 46,0 [37,0;51,0] and of glial cell count – 9,5 [4,0;14,0]. In stimulated group the median of CA4 pyramidal cells count was 42,5 [37,0;48,5] and of GCC in CA4 – 30,0 [22,0;38,5]. The neuron count in CA1 and in CA4 after ES of generalized seizure was decreased in compare with first group (in 38,7% and 32%, respectively). Significant distinctions were revealed on neuron count in CA1 ($p=0.0000$) and in CA4 ($p=0.0000$) subfields of brains second group. GCC was increased in CA1 (Mann-Whitney’s test: $U=90.500$, $p=0.0004$) and was decreased in CA4-region ($p=0.54$) of second group in compare with first one.

Conclusion. We detected neuronal cell loss in CA1 and CA4 subfields of rat hippocampal formation and gliosis only in CA1 region after ES of generalized seizure.

E-mail for correspondence: anastasia.parashchenko99@gmail.com

EFFECT OF HYPERGLYCAEMIA ON THE GROWTH INDICES OF LONG TUBULAR BONE OF RATS

Raj Shweta, Dhvani Deepakkumar Patel

Research advisor: Ponyrko A.O.

Department of Morphology, Medical Institute, Sumy State University, Ukraine.

Introduction. Diabetes mellitus is one of the most important problems of clinical endocrinology, this is evidence by its prevalence and changes that occur in all organs and systems.

Aim. To find out the influence of hyperglycemia on osteometric parameters of long tubular bones in young rats.

Materials and methods. The experiment was performed on 24 young white rats of both sexes weighing 101-131 g. Experimental animals were divided into two groups: experimental (n = 12) and control (n = 12). Hyperglycemia was simulated by a single intraperitoneal injection of aloxane dihydrate solution at a dose of 150 mg / kg. The concentration of glucose in the blood and urine was determined starting from 2 days of the experiment. Rats were removed from the experiment every 30 days by decapitation. The femurs were removed for investigation. The maximum bone length, the largest width of the proximal and distal epiphyses, the maximum length of the diaphysis were measured.

Results. According to osteometry, the linear growth rates of the femur increased most intensively in animals of the control group. The overall rate of femur growth in animals of the experimental group was 5% and 6,1% in animals of the control group. The average diaphysis length of the femoral bone in the experimental group animals increased by 2% in the control group animals - by 4%. The growth of the width of the proximal and distal epiphyses of the femur in rats of the experimental group were 2,1% and 1,5% in animals of the control group 2,8% and 1,8%.

The growth rates of the femur in the animals of the experimental group on the 60th day of the experiment was lower than that in the animals of the control group by 6%. The index of femur growth in animals of the experimental group was 9,3% and 10,3% in animals of the control group. The length of the diaphysis femoral bone in the animals of the experimental group increased by 3,1% in the animals of the control group - by 6%. The width of the proximal and distal epiphyses of the femur in the rats of the experimental group was 2,8% and 2%, in the control groups 5,1% and 5%.

Conclusion. Finally in young rats under conditions of experimental hyperglycemia, there is a slowdown in the growth of the femurs bone in the length and width. Linear indicators are expressed in the form of slowing down the growth of the length of the femurs. Osteometric changes of the proximal and distal epiphyses are characterized by a decrease in the growth of their relative area.

E-mail for correspondence: ponyrkoalina123@gmail.com

THE EFFECT OF ANTITUMOR CHEMOTHERAPY ON THE HEALING OF THE FEMORAL DEFECT ACCORDING TO THE RESULTS OF COMPUTED TOMOGRAPHY

Riabenko T.V.

Department of Morphology, Medical Institute, Sumy State University, Sumy, Ukraine.

Introduction. Patients with oncopathology have a high incidence of bone fractures. Because the treatment of cancer requires long-term administration of antitumor chemotherapy, the processes of reparative bone regeneration can occur against the background of antitumor chemotherapy.

Aim. To study of the effect of antitumor chemotherapeutics on the processes of reparative bone regeneration.

Materials and methods. White laboratory rats (52 animals) had a perforated defect in the middle third of the femoral shaft. Animals were divided into control and three experimental groups, which after injury and every 21 days of the experiment were administered antitumor chemotherapeutics: doxorubicin, 5-fluorouracil, methotrexate. On days 15, 30, 45 and 60, all animals underwent computed tomography, determined the optical density of the regenerate in units of Hounsfield (HU).

Results and discussion. In animals of the control group, the timing of reparative bone regeneration is not violated. The stage of formation of callus is preserved, the development of complications is not detected. The optical density in the area of the regenerate on the 15th day of the experiment was 646.33 ± 77.08 NU, on the 30th day- 922.33 ± 30.01 NU, on 45- 1462.00 ± 29.21 NU, on the 60th day- 2150.00 ± 126.00 NU.

In animals of all experimental groups there was a slowdown in the processes of reparative bone regeneration and increase their duration. This is confirmed by the low optical density of the regenerate and maternal bone in comparison with the control group and their slow growth during the healing of the defect.

The optical density of the regenerate when using doxorubicin on the 15th day after injury was 444.33 ± 54.00 NU, on the 30th- 841.50 ± 32.53 NU, on 45th- 1367.00 ± 25.46 NU, on the 60th- 1655.00 ± 25.46 NU.

The optical density of the regenerate when using 5-fluorouracil for 15 days was 503.50 ± 167.58 NU, on the 30th day- 756.00 ± 21.22 NU, 45th- 1327.00 ± 18.39 NU, 60th- 1550.50 ± 94.00 NU.

The optical density of the regenerate when using methotrexate on the 15th day was 398.00 ± 158.39 NU, on the 30th- 711.00 ± 142.00 NU, on the 45th- 1098.00 ± 42.43 NU, on the 60 th- 1352.00 ± 65.00 NU.

The slowing of reparative osteogenesis was most pronounced against the background of methotrexate administration.

Conclusions. Reparative bone regeneration on the background of antitumor chemotherapy is characterized by a slow process of bone callus formation and increased fracture healing time.

E-mail for correspondence: t.riabenko@med.sumdu.edu.ua

A NEW METHOD OF RAT BRAIN ELECTRICAL STIMULATION FOR DEVELOPMENT OF PULSE AMPLITUDE-DEPENDENT SEIZURES

Siamionik I.¹, Derevyanko M.¹, Melik-Kasumov T.¹

Research advisors: Rjabceva S.¹, Terekhov V.²

1 – Centre of electron and light microscopy, Institute of physiology of National academy of science of Belarus, Minsk, Belarus.

2 – Republican Research and Clinical Center of Neurology and Neurosurgery, Minsk, Belarus.

Introduction. Chronic electrical stimulation (CES) of rodent brain is a widely used model for studying of complex partial seizures with secondary generalization. Two types of seizures can be induced by electrical stimulation: minimal clonic (partial) and maximal (generalized tonic-clonic).

Aim. To modified the CES model with stimulation of rat sensorimotor cortex.

Materials and methods. 32 adult Wistar rats (average weight 289 ± 1.2 g) were used in experiments. Stimulating electrode (0.5 x 6 mm) was bend over at 90° and implanted into right sensorimotor cortex piercing the dura mater (craniotomy point at Bregma ML +2mm AP +2mm). An intracerebral electrode fixation was performed using quick-hardening cyanoacrylate. Reference electrode (0.5 x 6 mm) was fixed to rat skull aponeurosis on the left side. Electrical stimulation by the Medtronic Model 3625 Test Stimulator was started one week later after operation. The CES parameters were: pulse rate – 120 pulses per second, pulse width – 800 mcsec, pulse amplitude (PA) – from 0 to 10 V. The experimental rats were stimulated during 4-6 weeks.

Results. Partial and generalized seizures in rats were development during CES. According to Racine scale, the following data were obtained:

- mouth and facial movements were observed in PA from 1.0 to 2.5 V,
- head nodding (rotation, rotation in one direction, rotation in the direction of inclination, tilting of the head) – with PA from 3.0 to 4.0 V,
- forelimb clonus – with PA in the range of 4.5-5.5 V,
- rearing and falling – with PA in range of 5.5-10 V.

Thus, during CES with PA of up to 4.0 V we observed partial seizures, in range from 4.5 to 5.5 V – partial with secondary generalization and above 5.5 V – generalized seizure.

Conclusion. We suggest that our described method for frontal cortex of rat brain electrical stimulation with development of pulse amplitude-dependent seizures is reliable for chronic brain stimulation and can be used as a model for evaluating the effectiveness of antiepileptic drugs in the different nature of epileptic seizures.

E-mail for correspondence: irina.derewianko@yandex.by

PECULIARITIES OF CHANGES IN THE RATIO OF ZN / CU IN THE LUNGS OF YOUNG ANIMALS UNDER CONDITIONS OF EXPERIMENTAL ALLOXAN HYPERGLYCEMIA

Teslyk T.P.

Research advisor: Sikora V.Z.

Department of Morphology, Medical Institute, Sumy State University, Ukraine.

Introduction. It is generally accepted that diabetes is a multifactorial disease caused by insulin resistance and β -cell insufficiency. According to modern scientific research, each pathology has certain deviations in the elemental status. For example, in diabetes, the most common accumulation of zinc, manganese, copper, magnesium in the lungs, liver and other parenchymal organs, which is evidence of oxidative stress reactions.

Aim. Detect and investigate changes in the Zn / Cu ratio in young rats under conditions of experimental hyperglycemia.

Materials and methods. The studies were performed on 72 white laboratory rats of both sexes. Experimental animals were divided into two series: 1) experimental and 2) intact. Each experimental group is divided into six subgroups (6 animals) depending on the duration of the experimental study: the first - with a term of hyperglycemia 30 days, the second - 60 days, the third - 90 days, the fourth - 120 days, the fifth - 150 days, the sixth - 180 days. For experimental simulations of hyperglycemia, alloxan monohydrate was used at a rate of 20 mg per 100 g of rat body weight. Determination of Zn and Cu concentrations in $\mu\text{g} / \text{g}$ was performed on an atomic absorption spectrophotometer C-115.M1 (OJSC "Selmi", Sumy, Ukraine) using a universal certified computer program "AAS SPEKTR".

Results. After administration of alloxan at the end of the first day, animals of all ages developed polydipsia, polyphagia and polyuria. The level of glucose in the blood of experimental animals from 30 to 180 days ranged from 13.1 ± 0.12 to 19.3 ± 0.2 mmol / l, HbA1C - from 7.1 ± 0.05 to 9.39 ± 0.08 . In animals of the intact group, the level of glucose in the blood was within normal limits (blood glucose 3.5 - 6.3 mmol / l, HbA1C 4.0 - 5.1).

The ratio of Zn / Cu in intact animals aged 2 months was 8.5; 3 months - 8.5; 4 months - 8.5; 5 months - 8.53; 6 months - 8.54; 7 months - 8.56. In rats of the appropriate age on the background of hyperglycemia, the ratio of Zn / Cu for 30 days was 16.8; for 60 days - 16.95; for 90 days - 17.1; for 120 days - 17.3; for 150 days - 17.35; for 180 days - 17.3.

Conclusions. The ratio of Zn / Cu increased with increasing duration of diabetes: on the 30th day compared with the control by 95.3% ($p < 0.05$), on the 60th day - by 0.89% ($p < 0.05$), compared with the previous month of the experiment, on the 90th day - by 0.88% ($p < 0.05$), on the 120th day - by 0.29% ($p < 0.05$), and on the 180th day decreased by 0.29% ($p < 0.05$) compared with the 120th day, which indicated an increase in the intensity of antioxidant reactions with increasing duration of hyperglycemia.

E-mail for correspondence: t.teslyk@med.sumdu.edu.ua

COMPARISON OF CYCLOPHOSPHAMIDE, DOXIRUBICIN AND CISPLATIN ACTION ON THE MALE SEXUAL FUNCTION IN EXPERIMENT

*Tischenko M.O.¹, Musatova I.B.², Prokopiuk V.Yu.², Safonov E.R.¹,
Bocharova T.V.¹, Prokopiuk O.V.³*

1 – Kharkov National Medical University.

2 – Institute for Problems of Cryobiology and Cryomedicine of the National Academy of Sciences of Ukraine.

3 – Kharkov Medical Academy of Postgraduate Education.

Introduction. The male sexual and reproductive function decreasing significantly degrades the life quality, social adaptation of older men and men who underwent chemotherapy. The study of various chemotherapeutic agents effects on male sexual function will allow both to more accurately model diseases in the experiment and to individualize patients` treatment and rehabilitation regimens.

Aim. To compare the effect of various chemotherapy agents on male reproductive function in experiment.

Materials and methods. 4 groups of male Balb/c mice aged 6 months, weighing 29.4 ± 0.5 g were used: 1 group - control animals, 2, 3 and 4 groups - males treated with cyclophosphamide, doxorubicin and cisplatin, respectively. Animals weight, spermogram, myelogram, behavioral reactions, morphological changes in the liver and kidneys were studied at 1, 4, and 8 weeks after drug administration.

Results. The cyclophosphamide application led to weight loss, leukopenia, oligozoospermia at 4 weeks and the complete restoration of all indices by 8 weeks, except the number of spermatozoa. Anxiety increased sharply and interest in the female mice decreased. By week 8, behavior restored to 90% of control, except anxiety.

The doxorubicin application led to complete sterilization, expressed toxic changes in the liver and kidneys. Animal mortality increased. Anxiety of animals a week after the administration of doxorubicin almost doubled; they spent 3 times less time with the female. By week 8, sexual behavior was almost restored, but anxiety increased by 3 times compared with control.

The effect of cisplatin was milder: transient oligozoospermia was observed after 4 weeks, by the 8th week the number of spermatozoa was fully restored. Cisplatin practically did not adversely affect the sexual behavior of males. Anxiety, which increased after the administration of cisplatin, tended to decrease by week 8, in contrast to the results obtained with the administration of doxorubicin and cyclophosphamide.

Conclusion. Doxorubicin is the most toxic chemotherapy agent for the male reproductive system.

E-mail for correspondence: v.yu.prokopiuk@gmail.com

MACRO- AND MICROELEMENT COMPOSITION OF THE KNEE ARTICULAR CARTILAGE UNDER CONDITION OF MULTIPLE SKELETAL TRAUMA

Tkachenko A.S., Tkach G.F.

Department of Morphology, Medical Institute, Sumy State University, Ukraine.

Introduction. In Ukraine, the injury of the musculoskeletal system ranks the 3rd place among all occupational diseases. The knee joint is the most commonly affected structure of the musculoskeletal system due to trauma. Trauma often results in metabolism disturbance within the joint tissues that leads to disturbance of macro- and microelement balance and to changes in its structure, decrease in the ability to resist loading, and development of deformation changes. Therefore, understanding the macro- and microelement composition of the knee articular cartilage under conditions of the injury of the joint forming bones, will allow revealing the better approach to the treatment of deforming changes in the knee joint.

Aim. To study the concentration of macro- and microelements in the knee articular cartilage of rats under conditions of multiple trauma of the femoral and tibial diaphysis.

Materials and methods. The experimental study was performed on 10 white laboratory male rats with multiple skeletal trauma of the femoral and tibial diaphysis. Perforated defect of the femoral and tibial diaphysis of the left limb was simultaneously simulated in all rats.

Atomic absorption spectrometry with electrothermal and flame atomization was used for the determination of the macro- and microelements content in the samples of the articular surfaces of the knee joint. The content of K, Na, and Ca was determined on a spectrophotometer S-115-M1 AT "Selmi" (Ukraine) with flame atomization in the emission mode. Determination of the Mg, Fe, Zn, and Cu concentration was performed on the atomic absorption complex CAS-120.1 with an electrothermal atomizer A-5 and a graphite furnace Carl Zeiss Jena (Germany) in the adsorption mode. The analytical signal was scanned in 0.016 s increments and processed with "AAS-SPECTR3" software.

Results. The amount of Calcium in the knee articular cartilage was 4.7 ± 0.2 mg/g; Potassium – 1.9 ± 0.1 mg/g; Sodium – 2.4 ± 0.1 mg/g; Magnesium – 1.8 ± 0.1 mg/g; Copper – 0.4 ± 0.03 μ g/g; Ferum – 31 ± 4 μ g/g; Zinc – 50 ± 2 μ g/g.

Conclusion. Thus, the study revealed certain patterns of macro- and microelements content in the knee articular cartilage of rats under the condition of multiple trauma of femoral and tibial diaphysis.

E-mail for correspondence: artemstkachenko@ukr.net

DEPENDENCE OF AGE OF PATIENTS AND SOME PATHOMORPHOLOGICAL PARAMETERS OF PROSTATE CANCER

Torubara O.O., Kyslyi V.F.

Research advisor: Filenko B. M., PhD, assoc. prof. Royko N. V., PhD

Ukrainian medical stomatological academy, Ukraine.

Introduction. According to the WHO, prostate cancer (PC) is the 4th most common malignant tumor in men, and mortality from carcinoma of this location is 2nd. The development of RPZ depends on the age of the patient with a peak at 70 years. The most common histological form of RPZ is acinar adenocarcinoma of varying degrees of differentiation. The main diagnostic criterion that is taken into account with the selected method of treatment of RPZ, is the morphological atypism of the glands, which is reflected in the Gleason scales. The numerical value of the degree of plump products is more important than the prognostic criterion, to allow for faster disease progression, metastasis live. However, the three-level gradation system is also relevant, according to which adenocarcinoma is divided into high (G1), moderate (G2) and low-differentiated (G3). A comparison of these two classifications reveals their incomplete correspondence.

Aim. To study of the relationship between the degree of differentiation of prostate adenocarcinoma, the patient's age and atypical glands on the Glisson scale.

Materials and methods. Retrospective analysis of histological preparations of patients with RPZ, hematoxylin and eosin, taken from POPAB in 2019. Statistical verification of data for visits of Pearson's correlation (r) between the studied indicators.

Results. In 2019, 37 cases of RPZ were registered in POPAB. The age of men ranged from 49 to 80 years, averaging 67.1 ± 6.9 years. By degrees of differentiation of materials into three groups G1 (67.6% of cases), G2 (27.0% of cases), G3 (5.4% of cases). According to the Glisson scale, the material is also divided into three groups: 1-4 points - 0 cases, 5-7 points - 81.1% of cases and 8-10 points - 18.9% of cases. The study of the dependence of the degree of differentiation of RPZ and the age of patients revealed a strong correlation between these indicators ($r = 0.76$ at $p < 0.05$). There was a moderate dependence of the age of the patients and the degree of differentiation of glandular structures on the Gleason scale ($r = 0.37$ at $p < 0.05$). Also, in this variety of moderate strength determined the relationship between the degree of histological differentiation of the tumor and the severity of atypia of glandular structures ($r = 0.5$ at $p < 0.05$).

Conclusion. The of the study selected, as a result of which the patient's age, stage of tumor differentiation and atypia of glandular structures, there is a relationresultship of varying severity. This indicates how this patient is deteriorating in the prognosis.

E-mail for correspondence: sasha.torubara@gmail.com

LACK OF ASSOCIATION BETWEEN *ANRIL* GENE rs4977574 POLYMORPHISM AND BLADDER CANCER DEVELOPMENT

Volkogon A., Chumachenko Ya.

Research advisor: prof. Ataman O.V.

*Department of Physiology and Pathophysiology
Medical Institute, Sumy State University, Ukraine.*

Introduction. *ANRIL* (Antisense Non-coding RNA in the *INK4* Locus, also known as *CDKN2B-AS1*) is long non-coding RNA (lncRNA) transcribed from the antisense strand of *INK4b-ARF-INK4a* gene cluster. *ANRIL* overproduction is related to development and progression of various oncological pathologies. Also, the role of *ANRIL* gene polymorphisms in the tumors occurrence, including genitourinary malignancy, was shown.

Aim. To test the possible relation between *ANRIL* gene rs4977574-polymorphism and bladder cancer development in Ukrainian patients.

Materials and methods. Venous blood of 241 Ukrainian population representatives (141 patients with transitional cell carcinoma of urinary bladder (TCCUB) and 100 patients without oncological history (control group)) was used for study. The rs4977574-locus of *ANRIL* gene was genotyped using real-time polymerase chain reaction (Real-time PCR) method and TaqMan assay C_31720978_30. SPSS software package (version 17.0) was used for data analysis. P values < 0.05 were considered as statistically significant.

Results. The frequency of rs4977574-genotypes (*ANRIL* gene) was not significantly different between control subjects and TCCUB patients (P = 0.809). The results of binary logistic regression analysis under common models of inheritance revealed no link between rs4977574 SNP and TCCUB risk (P > 0.05). Significant relation was not shown even after adjusting for sex, age, body mass index, and smoking habit (P > 0.05).

Conclusion. Thus, for the first time the frequency of *ANRIL* gene rs4977574-genotypes distribution in representatives of Ukrainian population was established. There is no association between rs4977574 polymorphism and risk of TCCUB development.

E-mail for correspondence: volkogon_andrei@ukr.net

ROLE OF KALLIKREIN-KININ SYSTEM IN MECHANISM OF ACTION OF CORDANUM ON RENAL BLOOD FLOW AND SODIUM EXCRETION WITH URINE IN UNNARCOTIZED RATS

Vysotsky I.Yu., Khramova R.A., Zhanov V.V., Levkovsky V.V.

*Department of Biophysics, Biochemistry, Pharmacology and Biomolecular Engineering
Medical Institute, Sumy State University, Ukraine.*

Introduction. Angiotensin-converting enzyme inhibitors and angiotensin receptor blockers are widely used to treat hypertensive disease. Their long-time use leads to tolerance with increased aldosterone level. It eliminates antihypertensive action and promotes development of complications in heart, vessels, and kidneys. Chronic renal failure is common complication for hypertensive patients. β -Adrenoblockers decrease tolerance to mentioned drugs, increase diuresis, sodium excretion, renal circulation and reduce kallikrein-kinin system activity.

Aim. To investigation of role of kallikrein-kinin system in mechanism of Cordanum's influence on renal circulation and sodium excretion with urine in unnarcotized rats in chronic experiments with water load.

Materials and methods. Experiments fulfilled on 27 white male rats with mass 200-250g. Prior investigation, the rats was operated to create microcystis, that allows more correct urine collection. The rats were taken for experiments in 2 weeks after operation. Renal function was estimated under the background of 3% water load. Kallikrein was determined in taken portion of urine by standard method. Sodium concentration was determined by flame photometry. Cordanum was administered intraperitoneally in dose 1mg/kg. Contrycal was used in dose 3000 IU/kg to inhibit kallikrein-kinin system.

Results. Received results have showed that combination of Cordanum and Contrycal was not accompanied by marked changes of renal function in comparison with results received for β_1 -adrenoblocker administered alone. Previous inhibition of kinin biosynthesis by Contrycal does not prevent natriuretic and diuretic effects caused by blockage of β -adrenoceptors in rats. Changes in diuresis and natriuresis were unreliable, though they showed tendency to decrease. The volume of glomerular filtration, calculated on the base of excreted creatinine, was not changed too.

Conclusions. On the base of fulfilled chronic experiments on unnarcotized rats, it was found that parameters of functional state of kidneys (glomerular filtration, diuresis, sodium excretion) at administration of Cordanum are independent on an increase of activity of renal kallikrein-kinin system of rats.

E-mail for correspondence: rivay.hanzhy@gmail.com

CONTRIBUTIONS OF ATG16L1 AND AHR DURING EXPERIMENTAL COLITIS IN RATS

Zherebiatiev A.S.

Research advisor: prof. Kamyshny A.M.

*Department of Microbiology, Virology and Immunology
Zaporozhye State Medical University, Ukraine.*

Introduction. The pathogenesis of inflammatory bowel disease is complex and multifactorial. Studies have led to the current concept that aryl hydrocarbon receptors have recently emerged as a critical physiological regulator of immune responses affecting both innate and adaptive systems. Autophagy related 16-like 1 protein is part of a larger family of proteins that are required for a process called autophagy. The effects of variations in the ATG16L1 gene on Crohn's disease risk are unclear.

Aim. We studied of AhR and ATG16L1 expression intensity with lymphocytes in the inflamed colon of rats with experimental oxazolone-induced colitis.

Materials and methods. Experiments were carried out on male Wistar rats aged 8 months. Rats were divided into four experimental groups: group 1 — control; group 2 — rats with oxazolone-induced colitis. The AhR and ATG16L1 immunopositive lymphocytes were determined using an indirect immunofluorescence technique with using a monoclonal rat antibody.

Results. The histological observation showed inflammatory cell infiltration, including polymorphonuclear leukocytes and multiple erosive lesions in the large intestine. The study of serial sections of colon showed that the development of colitis is not accompanied by changes of total number of AhR immunopositive lymphocytes (AhR⁺) in lymphoid structures of colon. The study of serial sections of colon showed that the development of colitis is accompanied by changes of total number of ATG16L1 immunopositive lymphocytes (ATG16L1⁺) in lymphoid structures of colon — increase of ATG16L1⁺ cells by 30% ($p < 0.05$) in proximal colon. The measuring of fluorescence intensity of ATG16L1⁺-lymphocytes expressing the concentration of ATG16L1 protein in immunopositive cells showed reliable increase of this parameter in ATG16L1⁺-lymphocytes ($p < 0.05$) in proximal colon. In distal colon we have found increase of this parameter in ATG16L1⁺-lymphocytes ($p < 0.05$) in comparison with control.

Conclusion. We established that development of colitis was accompanied by changes of total number of ATG16L1⁺ lymphocytes in lymphoid structures of the colon, but not accompanied with the change of amount of AhR⁺ lymphocytes in the colon. At the same time change the density of AhR and ATG16L1 in immunopositive cells.

E-mail for correspondence: a.zherebiatiev@gmail.com

CLINICAL MEDICAL SCIENCES

IMPROVEMENT OF METHODS OF TREATMENT OF ABNORMAL UTERINE BLEEDING IN WOMEN WITH PRIMARY HYPOTHYROIDISM ON THE BACKGROUND OF AUTOIMMUNE THYROIDITIS

Alekseeva O.S., Safonov E.R., Lyashchenko O.A.,

Research advisor: prof. Lazurenko V.V.

Department of Obstetrics and Gynecology №2

Kharkiv National Medical University, Ukraine.

Introduction. Abnormal uterine bleeding (AUB) is one of the most common diseases in gynecological practice. And the frequency of hysterectomies in the AUB remains extremely high. Pathology of the thyroid gland in the form of primary hypothyroidism due to autoimmune damage is much more common and requires more in-depth study.

Aim. Improvement methods of treatment of abnormal uterine bleeding in patients with primary hypothyroidism on the background of autoimmune thyroiditis, introduction of adequate methods of recurrence prevention and rehabilitation.

Materials and methods. 43 women with AUB and primary hypothyroidism coupled with AIT 18 to 49 years, which were divided: Group I - 15 women with AUB and primary hypothyroidism coupled AIT, received traditional treatment with hormonal drugs; Group II - 17 women with AUB and primary hypothyroidism coupled with AIT, received comprehensive treatment with a herbal drug based on fructus agni casti extract at a dose of 20 mg; Group III - 11 healthy women. The women underwent: hysteroresectoscopy, ultrasound, hormones in the blood (thyroid stimulating hormone (TSH), estradiol, progesterone, follicle-stimulating hormone, luteinizing hormone, prolactin) before and after treatment (for 3 months).

Results. Maximum therapeutic effect was achieved with the disappearance of complaints in 72.7% and 90% of patients of groups I and II, respectively. The clinical efficacy of complex therapy using a drug based on fructus agni casti has been proven by clinical as well as laboratory, hormonal, histological studies. All patients of group II experienced significantly improved general well-being, decreased menstrual blood loss and menstruation duration. A comparative analysis of the concentration of hormones in the blood before and after treatment revealed that the changes of TSH level were statistically significant ($p < 0.05$) – decreased by 10.5 and 18.5%, respectively, while being decreased by 2.5% in the control group; changes in estrogen and progesterone levels over time are also statistically significant, complete normalization of hormone levels was observed in 62 and 79% cases, respectively.

Conclusions. The inclusion of the herbal drug based on fructus agni casti extract at a dose of 20 mg in standard treatment significantly reduces proliferative processes of the endometrium, supports the secretory activity of the thyroid, resulting in reducing the number and duration of AUB and can be recommended for widespread use.

E-mail for correspondence: alenaalekseeva334@gmail.com

BLOOD LEVEL OF IL-2 IN PATIENTS WITH ALOPECIA AREATA*Aljabali M.A.**Research advisor: prof. Kuts L.V.**Department of Family Medicine with a course of Dermatovenereology,
Medical institute, Sumy State University, Ukraine.*

Introduction. Alopecia areata (AA) is a widespread autoimmune disease leading to non-scarring hair loss. The course of the disease is unpredictable, can affect the scalp and / or hair in other areas, and manifest itself as isolated foci of baldness or large-scale rapid complete hair loss. Today, it is assumed, that imbalance of pro- and anti-inflammatory cytokines plays one of the major roles in AA development.

Aim. To check the possible link between AA occurrence and blood serum concentration of pro-inflammatory cytokine – IL-2.

Materials and methods. Venous blood from 104 patients with AA (61 – female (58.7 %), 43 – male (41.3 %); mean age 35.7 ± 8.9) and 30 control subjects (16 – female (53.3 %), 14 – male (46.7 %); mean age 37.4 ± 7.9) was used for current study. To measure the serum level of IL-2 in both groups the Sandwich-ELISA method (Enzyme-linked Immunosorbent Assay) was used. Unpaired two-tailed Student t-test was used for statistical analysis. The significance level was set at $P < 0.05$.

Results. The obtained results revealed that serum level of IL-2 was significantly increased in AA group compared to control subjects ($P = 0.013$). Thus, the mean IL-2 concentration in AA patients was (28.528 ± 13.225) pg/ml, while in control group – (21.855 ± 10.995) pg/ml.

Conclusion. Thus, the increased level of blood IL-2 in AA patients suggest about the imbalance of T-cells cytokines during the AA development.

E-mail for correspondence: maljabali@ukr.net

CONTENTS OF MICROELEMENTS IN THE SYSTEM OF MOTHER-PLACENTA-FETUS DURING INTRAUTERINE INFECTION OF THE FETUS

Amanda Okpoko, Nikolaenko Y., Smitan S.A.

*Department of Obstetrics, Gynecology and Family Planning,
Medical Institute, Sumy State University, Ukraine.*

Introduction. The health status of a pregnant woman is a reflection of the socio-economic and environmental processes that occur in the society. Relevance is determined by the frequency and severity of diseases, which are caused by the unsatisfactory state of the environment. In addition, a decrease in the intake of trace elements is observed in the diet. The problem of microelementosis for pregnant women with signs of intrauterine infection (IUI) of the fetus is extremely urgent. Prevention of fetal infection is one of the most important in modern perinatology.

Aim. To study the provision of micronutrients in pregnant women with physiological pregnancies and with signs of fetal IUI, especially transplacental transportation of trace elements from mother to fetus.

Materials and methods. A prospective analysis of 43 birth histories was carried out. In the peripheral blood of pregnant women and in cord blood, trace elements were determined: Fe, Cu, Zn, Co, Cr, Ni and Pb.

Results. All 43 pregnant women were divided into 2 groups. The main group included women with signs of fetal IUI, in the control group - with physiological pregnancies. Gestational age in women was 38.1 ± 0.35 weeks. The content of trace elements in intrauterine infection of the fetus in the mother-placenta-fetus system and during physiological pregnancy was different. In the blood of women: $Cu > Zn > Fe > Pb > Ni > Cr > Co$; in cord blood: $Fe > Zn > Cu > Pb > Cr > Co > Ni$. Placental ratio for iron, zinc, copper was lower by 20-50% in the main group compared with the control, and for lead and cobalt by 65% higher.

Conclusion. Analysis of the research results showed that in the blood of women with fetal IUI and in cord blood there was a deficiency of zinc, iron, copper, while the content of lead, chromium and cobalt were significantly increased. The placenta of women with signs of IUI does not provide protective function with respect to toxic IUs and the teratogenic effects of toxic metals. The main cause is the presence of morphological changes in the placental tissue due to viral or bacterial damage.

Based on the research that has been carried out, it is possible to make a conclusion that an imbalance of microelements plays an important role in the pathogenesis of fetal IUI. Therefore, to improve perinatal indicators, together with the elimination of the infectious pathogen, it is necessary to normalize the balance of trace elements, which affects the functional state of all systems and organs of the mother and fetus.

E-mail for correspondence: gin@med.sumdu.edu.ua

USE OF ULTRASOUND FOR SURGICAL TREATMENT OF BREAST DISEASES

Andrienko D.

Research advisor: PhD. Lukavenko I.M.

*Department of Surgery, Traumatology, Orthopedics and Phthysiology,
Medical Institute, Sumy State University, Ukraine.*

Introduction. Ultrasonic waves are used in surgery for precision dissection and coagulation with minimal lateral thermal damage to surrounding tissues. This allows for very precise manipulations in tight spaces. Ultrasonic influence reduces the carbonization and drying of tissues, while improving visualization due to slight smoke formation. The principle of ultrasonic scalpel operation in the frequency operating range from 22 to 60 kHz is based on the properties of ultrasonic waves at high intensities (several hundred W/cm^2) to destructively affect objects while penetrating the depths of living tissues without damaging them. The use of ultrasound energy allows atraumatic tissue dissection and hemostasis with minimal adverse effects on breast tissue, the parenchyma of which is characterized by histological polymorphism, i.e. glandular, adipose, muscle and connective tissue, blood and lymphatic vessels combined into anatomical or morphofunctional unit.

Aim. Analysis and description of the clinical use of ultrasound scalpel in the surgical treatment of breast diseases; establishing the dependence of the depth of incision of breast tissue on the time of exposure to ultrasound.

Materials and methods. Ultrasonic scalpel «Harmonic Ethicon Endo-Surgery» (Germany) consists of a generator, piezoceramic transducer and instruments for open and minimally invasive surgery. The tip of the tool oscillates, shifting along the axis, with a constant frequency of 55.5 kHz. The length offset can be from 25 to 100 μm and can be adjusted in five modes by changing the generator power.

Results. We found that the the tissue complex coagulation of the breast occurs at a constant rate 0.9 mm/s. Minimal thermal damage to tissues within a radius of not more than 50 microns from the contact zone accelerates the repair period by reducing the frequency of lymphorrhea and scarring and reduction of pain in the postoperative period.

Conclusions. Ultrasound method is effectively used in the surgical treatment of breast diseases. It allows very precise manipulations in a confined space and safe removal of anatomical structures near vital organs. The absence of smoky provides a good visualization for the surgeon. Ultrasound reduces the degree of charring and drying of tissues, which is especially important due to histological polymorphism of the breast.

E-mail for correspondence: i.lukavenko@med.sumdu.edu.ua

PHYSICAL DEVELOPMENT AND PERFORMANCE EFFICIENCY OF FEMALE WOMEN-SMOKERS WITH DIFFERENT SMOKING HISTORY AND OF FEMALE NON-SMOKERS

Aponchuk L., Shevchuk T., Pykaliuk V., Yushchuk G.

Medical Institute of Lesya Ukrainka Eastern European National University, Ukraine.

Introduction. Different social surveys confirm that the number of smokers among Ukrainians remains consistently high. However, a new tendency marked the rapid growth of the given habit among women. Consequently, this resulted in the overall escalation of such a phenomenon.

Aim. To study the peculiarities of physical health indicators and performance in women who smoke in comparison with the control group.

Materials and methods. The Harvard step test was used for the examination of physical efficiency. Physical development was assessed with the help of methods for measuring morphological and functional parameters (anthropometry). 120 women (aged 17-21) participated in the study. They were divided into 3 groups (according to the Fagerström test). Group I included women who have been smoking for more than 3 years while smoking more than 10 cigarettes per day and who have a high level of dependence (40 people). Group II – women with the smoking experience of 1 to 3 years, who smoke up to 10 cigarettes a day and have a low and medium level of dependence (40 people). Group III (the control group) – women who do not smoke (40 people).

Results. The analysis of the data which was obtained during the study of physical development of female smokers and non-smokers showed the following results: only two indicators – weight ($55,3 \pm 1,26$ – group II, $60,8 \pm 1,79$ – group III) and chest circumference (68.4 ± 1.45 – group II, 75.7 ± 1.52 – group III) had statistically valid intergroup differences. At the same time, differences, if to compare with group III, were only in women who had a smoking experience of 1–3 years. Thus, body weight in women with short smoking history is less than in group III at $p \leq 0.05$, and with increasing experience of smoking, no such differences are observed. The impact of smoking on physical performance had a much greater influence. Its value in group III was marked by the indicators 84.48 ± 2.08 , which corresponds to an above-average level of physical efficiency in the population. In group II this value equals 68.54 ± 2.39 (average level), and in group I – 56.67 ± 1.87 (below average) at $p \leq 0.05$.

Conclusion. In the course of the study, the following results were obtained. The testees with smoking experience of up to 3 years have less body weight and smaller chest circumference compared to the control group. The level of physical performance in women decreases from average and below average – in groups with smoking experience up to 3 and more than 3 years compared to a sufficient level of physical performance as in the control group.

E-mail for correspondence: Liudmyla.Aponchuk@eenu.edu.ua

COMPARISON OF DIFFERENT SCORES FOR EVALUATION OF THE SEVERITY OF COMMUNITY-ACQUIRED PNEUMONIA

Chernatska O.¹, Ebozon Sandra Uchechukwu¹, Mc-Cujo Paul¹, Kandyba V.², Cherniavets I.²

1 – Medical Institute, Sumy State University, Ukraine.

2 – Sumy Central Regional Clinical Hospital, Ukraine.

Introduction. Pneumonia is an acute infectious inflammatory lung disease which is very popular nowadays. The CRB-65 and CURB-65 are clinical scores used for the severity determination of community-acquired pneumonias.

Aim. The comparison of severity in patients with community acquired pneumonia according to different scores.

Materials and methods. We observed 20 patients with confirmed community-acquired pneumonia treated in Sumy Central Regional Clinical Hospital during 2019-2020. They were 60,55±8,9 years old. Coexistent pathology was present in all patients. Arterial hypertension (45 %), ischemic heart disease (20 %), arterial hypertension and ischemic heart disease (35 %). The characteristics were analyzed according to CRB-65 and CURB-65 score. CRB-65 score does not include blood urea nitrogen as a criterion compared with CURB-65 score. According to CRB-65, score 0 is associated with mild, score 1-2 (2 – for patients more than 65 years old) – moderate and score 2-3-4 (3-4 – for patients more than 65 years old) severe pneumonia. According to CURB-65, score 0-1 is connected with mild, 2 – moderate and 3-5 – severe pneumonia.

Results. According to CRB-65 score, mild pneumonia was determined in 55% of patients, moderate pneumonia in 45% of patients, severe pneumonia was absent (0%).

According to CURB-65 score, mild pneumonia was determined in 80% of patients, moderate pneumonia in 20% of patients, severe pneumonia was absent (0%).

Conclusion. CRB-65 score is associated with the bigger percent of moderate and smaller present of mild severity of pneumonia.

E-mail for correspondence: chernatskaya@ukr.net

MODERN RESPIRATORY TECHNIQS IN TREATMENT OF PATIENTS WITH SPINAL MUSCULAR ATROPHY

Chibueze Mercy Asabe

Research advisor: PhD Tkachenko Y.A.

*Department of Emergency Medical Care and Disaster Medicine,
Medical Institute, Sumy State University, Ukraine.*

Introduction. Spinal muscular atrophy (SMA) is a genetic disorder characterized by weakness and atrophy in skeletal muscles. In the early 1890s, Werdnig and Hoffman described a disorder of progressive muscular weakness beginning in infancy that resulted in early death. Death occurs as a result of progressive muscle hypotonia, loss of deep reflexes, inadequate work of the intercostal muscles and diaphragm, the addition of a secondary infection with the development of severe pneumonia.

Aim. To describe the main modern respiratory technics in treatment the patients with SMA.

Materials and methods. In the last 5 years, the Sumy pediatric Hospital has recorded 3 cases of Werdnig Hoffman Spinal Atrophy Type 1 disease. Two patients did not survive until their first year of life. Presently, we only have one such patient in our region.

Results. Last years in this hospital for patients with SMA only face or nasal masks were used for non-invasive ventilation with the subsequent transition to invasive ventilation through the tracheostomy tube. After months of similar treatment, 2 patients died of hospital-associated pneumonia.

The modern apparatus Ventilic L8 is currently in use for non-invasive artificial ventilation for such patients. This has some innovative features such as cough support, three storable ventilation programs, volume compensation-which gives you quick and reliable support with ideal therapy settings. This patient spent 2.5 months on invasive ventilation through an endotracheal tube. The purchase of the Ventilic L8 device made it possible to transfer the patient to non-invasive ventilation using a mask. Stimulation of cough was performed using a expectorant Philips Respironics Cough Assist E70 twice a day. Gradually, from the second day of stay on the non-invasive ventilation device, the child was disconnected from the device, first for 1-2 hours, then for a longer period. Periods of non-invasive ventilation on the 14th day consisted of day and night sleep and generally lasted about 14-15 hours, at other times the child breathed independently and was oxygen-independent. After 2 weeks of training the parents with this device the patient was discharged home.

Conclusion. Only the use of modern devices for non-invasive ventilation improves the quality of life of patients with SMA and allows them to continue respiratory support even at home.

E-mail for correspondence: y.tkachenko@med.sumdu.edu.ua

ASSOCIATION OF THE 429T/G OF THE PSEN1 GENE IN PATIENTS WITH ALZHEIMER'S DISEASE AND VASCULAR DEMENTIA

Chyniak O.

Medical Institute, Sumy State University, Ukraine.

Introduction. Currently more than 200 mutations in the PSEN1 gene have been identified in patients with early-onset Alzheimer's disease (AD). Mutations in the PSEN1 gene, which encodes presenilin 1 (PS1), are the most common cause with familial form of cognitive impairment due to AD, which accounts for 70% of cases. These mutations lead to the production of abnormal protein PS1, disrupt the function of the γ -secretase complex, enhancing the processing of APP cause excessive production of β -42 in the blood followed by its toxic accumulation in the brain. However, genetic testing of the PSEN1 rs63751071 gene in patients with AD and vascular dementia (VaD) has not been previously studied.

Aim. To find the possible association between rs63751071 of the PSEN1 in patients with AD and VaD.

Materials and methods. For analysis, the venous blood of 60 patients (30 patients with AD, 30 - with VaD) aged 50 to 87 years (mean age $67,8 \pm 0,4$ years). The control group consisted of 30 practically healthy persons. The groups did not differ in the ratio of two sexes ($P=0.0960$ for the χ^2 test). The determination of allelic polymorphism PSEN1 rs63751071 was carried out by 7500 Fast Real-Time PCR System (Applied Biosystems, Foster City, USA) and Taq-Man Assays. Depending on the severity of the clinical course of neurocognitive impairment with AD and VaD, patients was divided into 2 groups: mild and moderate degrees of severity.

Results. The frequency of the rs63751071 genotype of the PSEN1 gene among patients with AD, VaD and the control group was 0%, 0%, 0%. The results of comparing the distribution of genotype on 429T/G of the PSEN1 gene between patients with varying degrees of severity of dementia did not reveal a significant difference, indicating no effect of this genetic marker on the clinical characteristics of major cognitive impairment. We did not reveal a reliable association of 429T/G genotype of the PSEN1 gene in patients with AD and VaD.

Conclusion. Summarizing the above, investigated 429T/G polymorphism of PSEN1 is not statistically associated with the risk of developing neither among in AD nor in the group with VaD. However, the association between most PSEN1 gene polymorphisms and the risk of developing AD and VaD remains unclear. Large-scale studies to confirm associations are needed to better understand the genetic risk factors for neurocognitive disorders due to AD and VaD. In addition, further research should consider the influence of risk factors and genetic interactions.

E-mail for correspondence: o.chyniak@med.sumdu.edu.ua

ANALYSIS OF THE MAGNESIUM CONTENT IN THE SERUM OF CHILDREN WITH CHRONIC TONSILLITIS

Christiana Olaide Popoola, Hodan Ali

Research advisor: assistant Manko Y., prof. Smiyani O.

Department of Pediatrics, Medical Institute, Sumy State University, Ukraine.

Introduction. Disorders of micro- and macroelement metabolism play an important role in the occurrence and progression of myocardial pathology on the background of chronic tonsillitis. Magnesium plays an important role in ensuring normal cardiac electrophysiology and metabolic processes in the myocardium.

Aim. To study the serum magnesium content of children with chronic tonsillitis and tonsillogenic lesions of the cardiovascular system.

Materials and methods. We examined 36 children (aged 11 to 17 years), patients with chronic tonsillitis with tonsillogenic lesions of the cardiovascular system on day 1-2 of hospitalization and after treatment. Group I consisted of 19 children with chronic tonsillitis and secondary lesions of the cardiovascular system receiving standard treatment. Group II - 17 patients whose standard treatment was supplemented with magnesium.

Determination of serum magnesium concentration was performed by atomic absorption spectrophotometry. Statistical processing of the obtained results was performed using a standard statistical computer system "Microsoft Excel", adapted for biomedical research. We also met the requirements of the principles of bioethics and drew up a protocol in accordance with the basic principles of the Declaration of Helsinki.

Results. As a result of the studies, it was found that the level of magnesium in the serum of patients to (0.77 ± 0.05) mmol / l, which did not increase after standard therapy. However, it should be noted that in the group of children receiving magnesium preparation in addition to standard therapy, the content of this trace element in the serum was normalized to (1.19 ± 0.14) mmol/l. These changes can affect metabolic processes in the heart, because magnesium is one of the important elements that ensures the normal functioning of myocardial cells.

Conclusion. Thus, in children with chronic tonsillitis with tonsillogenic lesions of the cardiovascular system there was a decrease in serum magnesium content, which increased only on the background of treatment with a magnesium-containing drug. Therefore, the addition of standard treatment of children with chronic tonsillitis with cardiac lesions will improve metabolic processes in the myocardium and prevent complications.

E-mail for correspondence: july2005@ukr.net

ANALYSIS OF THE TUBERCULOSIS MORBIDITY RATE AMONG MEDICAL WORKERS IN SUMY REGION

Denysenko A.

Research advisor: Ph.D., assistant Oleshchenko H.P.

*Department of surgery, traumatology, orthopedics and phthisiology,
Medical Institute, Sumy State University, Ukraine.*

Introduction. Despite widespread introduction of infection control measures in medical institutions, morbidity rate of this disease among health workers, especially in tuberculosis (TB) facilities, is a matter of concern and remains an urgent problem in different aspects.

Aim. To study the tendency of TB morbidity rate among medical workers of Sumy region in the dynamics over last decade.

Materials and methods. The indicators of TB morbidity among medical workers of Sumy region for 2010-2019 (according to e-TB Manager and Analytical and Statistical Reference Books «Tuberculosis in Ukraine») were processed.

Results. During 2010-2019, 87 medical workers fell ill with TB in Sumy region (during 2010 year – 11, 2011 – 16, 2012 – 7, 2013 – 8, 2014 – 6, 2015 – 6, 2016 – 6, 2017 – 11, 2018 – 11, 2019 – 5). Among them, medical workers of anti-TB facilities (ATF) – 15 (2010 – 5, 2011 – 1, 2012 – 3, 2013 – 0, 2014 – 1, 2015 – 2, 2016 – 1, 2017 – 1, 2018 – 1, 2019 – 0). While the number of sick employees from general health network (GHN) were 72 (2010 – 6, 2011 – 15, 2012 – 4, 2013 – 8, 2014 – 5, 2015 – 4, 2016 – 5, 2017 – 10, 2018 – 10, 2019 – 5). Accordingly, the share of medical workers from ATF 17,2%, and employees from GHN – 82,8%.

Among detected cases, number of people with first time diagnosed TB is 82 (ATF employees – 12 (14,6%), GHN employees – 70 (85,4%)). The number of patients with retreatment cases of TB – 5 (ATF employees – 2 (40,0%), GHN employees – 3 (60,0%)). The total average morbidity rate during 2010-2019 equals 4,3 per 10 thousand health workers. Thus morbidity of workers of ATF makes 74,3, and workers of GHN – 0,75. Accordingly, morbidity among medical workers of ATF is 100 times higher than in GHN workers.

Conclusions. Despite the fact that in absolute numbers morbidity in ATF workers is only 17,2% of all ill health workers, in relative terms morbidity in ATF workers exceeds the incidence of GHN workers 100 times. Professional contact with TB patients should be carried out in strict compliance with requirements of infection control, which is especially relevant in context of reforming the TB service, when most of the duties to diagnose and treat TB patients are transferred to general practitioners.

E-mail for correspondence: andenisenko98@gmail.com

THE STATE OF HEMODYNAMICS AND RESPIRATION IN LAPAROSCOPIC CHOLECYSTECTOMIES DEPENDING ON THE TYPE OF ANESTHESIA

Denysenko A.

Research advisor: Redko S.I.

*Department of Emergency Medical Care and Disaster Medicine,
Medical Institute, Sumy State University, Ukraine.*

Introduction. The pathophysiological effects of carboxyperitoneum (CP) are based on two main factors: excessive intra-abdominal pressure and the resorptive effect of carbon dioxide. The first mechanism can make breathing difficult, the second causes a pressor reaction with an increase in MBP and tachycardia.

Aim. To assess the changes in hemodynamics and respiration during anesthetic provision of laparoscopic cholecystectomy, depending on the type of anesthesia.

Materials and methods. A retrospective study of the case histories and drug histories of 40 patients, aged 30 to 65 years, operated in the surgical department of the 1st Sumy clinical hospital, was carried out. In the 1st group (n = 20), TIVA with mechanical ventilation was carried out, in the 2nd group (n = 20), subarachnoid anesthesia (SA) with preservation of spontaneous breathing, based on hyperbaric solution of marcaine. During the operation, patients of both groups using a monitor the following parameters were recorded: ECG, blood pressure (systolic, diastolic and mean), pulse rate, saturation (SpO₂), respiratory rate (RR) in min. LCE was performed according to the standard technique under conditions of carboperitoneum 10 mm Hg.

Results. In group 1 of patients operated on under general anesthesia, an increase in blood pressure and an increase in heart rate was determined during the imposition of carboxyrethperitoneum, in comparison with the data obtained in group 2 of patients. In the first group, anesthesia in 7 cases was accompanied by the development of hypertension (MBP over 100 mm Hg), and in 5 cases - the development of tachycardia (heart rate over 100 per minute), which were not stopped by additional administration of fentanyl. In 5 patients of the second group, when carboperitoneum was applied, moderate hypotension was observed (MBP below 60 mm Hg), which was stopped by phenylephrine at a dose of $0.07 \pm 0.01 \mu\text{g} / \text{kg} \cdot \text{minute}$; in two cases, bradycardia was noted less than 50 per minute, stopped by atropine in a single bolus dose of 0.3 mg.

Conclusions. Subarachnoid anesthesia with preservation of spontaneous breathing provides the most adequate protection against operational stress and stable hemodynamics, while maintaining oxygenation at a sufficient level.

E-mail for correspondence: andenisenko98@gmail.com

DETERMINATION INDEX OF LEUKOCYTE AND ESR RATIO IN CHILDREN WITH PNEUMONIA

Elham Nazbar, Hramma A.

Research advisor: Smilian K. and Sichnenko P.

Department of Pediatrics, Medical Institute, Sumy State University, Ukraine.

Introduction. Respiratory diseases occupy one of the first places in the structure of childhood morbidity and remain an important problem in pediatrics. At the same time one of the most common infectious diseases of the respiratory tract in young children is pneumonia. Pneumonia is responsible for the deaths of more than 800,000 young children worldwide each year, according to the United Nations Children's Fund (UNICEF). Although most fatalities occur in developing countries, pneumonia remains a significant cause of morbidity in industrialized nations. The increasing incidence of the disease in children requires further study of the etiology, diagnosis and differential diagnosis of various clinical forms. In view of this, it is worth studying the indicators of the leukocyte formula and the erythrocyte sedimentation rate in order to determine the leukocyte indices. This method has a number of advantages for use in children. It is non-traumatic, economical, easy to perform, and most importantly, makes it possible to establish the activity of the inflammatory process and thus timely prescribe adequate therapy.

Aim. To determine index of leukocyte and ESR ratio in children with pneumonia.

Materials and methods. Laboratory blood tests of 45 children aged 1 month to 3 years were performed on the basis of in Municipal non-profit enterprise "children's clinical hospital of Saint Zinaida" Sumy City Council. The control age group included 13 children without signs of inflammation. We used hematological parameters, which allowed to determine the following leukocyte indices: index of leukocyte and ESR ratio.

Results. In patients with community-acquired pneumonia who were treated in clinical leukocyte count and ESR ratio were $15,83 \pm 0,43$, whereas in healthy children this figure was $3,2 \pm 0,42$ ($p < 0,05$).

Conclusion. The index of leukocyte and ESR ratio significantly increased in patients with pneumonia, compared with healthy children, which indicates the presence of a pronounced general inflammatory reaction and intoxication. Indicators of leukocyte indices can also be used to assess the effectiveness of therapy. The choice of leukocyte indices as an auxiliary method for the diagnosis of pneumonia is due to their availability, ease of determination and lack of material costs.

E-mail for correspondence: elham.nazbar1995@gmail.com

ANALYSIS OF THE TUBERCULOSIS INCEDENCE DEPENDING ON GENDER*Hnatenko I.A.*

*Research advisor: Duzhiy I.D. Professor, MD, Honored Doctor of Ukraine
Department of General Surgery, Radiation Medicine and Phthisiology,
Medical Institute, Sumy State University, Ukraine.*

Introduction. Tuberculosis remains one of the global health problems both in Ukraine and around the world. Tuberculosis is one of the ten leading causes of death in the world and the leading cause of death from one apparent infectious agent more than HIV/AIDS.

Aim. Show the necessity to further research of tuberculosis in Ukraine depending on the gender characteristics of its various forms.

Materials and methods. The patients with tuberculosis were found in the general medicine network at the last three years, analysis of statistical data on tuberculosis patients from 2018 to the first quarter of 2020 year.

Results. 30378 patients with tuberculosis were identified in 2018, of which – 21723 (71, 5%) were men, women were – 8655 (28, 5%). In 2019 tuberculosis was diagnosed in 28539 people, of which men were – 20429 (71, 5%) patients, other 8110 (28, 5%) were women.

Also we compared the incidence of tuberculosis in the first quarters of the last 3 years. Among 8306 people who had tuberculosis in the first quarter of 2018, men were – 6011 (72, 3%), women were – 2295 (27, 7%). In the first quarter of 2019 patients with tuberculosis were – 8103, men were – 5989 (73, 9%), women were – 2114 (26, 1%). Among the identified 6738 patients in the 1st quarter of 2020, men also predominated: 4849 (71, 9%), women were – 1889 (28, 1%).

Conclusions. Over the past three years, the incidence of tuberculosis in men is more than twice that in women. The number of men suffering from tuberculosis is constantly higher than the number of women, in the overall structure of morbidity in Ukraine.

E-mail for correspondence: i.gnatenko@med.sumdu.edu.ua

EPIDEMIOLOGICAL FEATURES OF PERTUSSIS IN SUMY AND ITS REGION NOWADAYS

Hrabar T., Yanovska L.

Research advisor: PhD Vasylieva O., prof. Smiyan O.

Department of Pediatrics, Medical Institute, Sumy State University, Ukraine.

Introduction. The problem of pertussis in the world remains relevant today. According to the WHO, in 2019 132754 cases of pertussis were reported in the world. Immunization has significantly reduced the incidence of pertussis in many countries. But the circulation of the pathogen also occurs at very high vaccination coverage - 85% estimated DTP3 coverage. Under mass immunization against pertussis, a significant part of the disease is asymptomatic or with minimal clinical manifestations, which significantly complicates the diagnosis of this infection and most cases of pertussis remain undiagnosed, which contributes to the further spread of infection.

Aim. To find out the epidemiological features of pertussis at the present stage in Sumy and its region to optimize preventive and treatment-diagnostic measures for this disease.

Materials and methods. 107 cases of pertussis that were registered during this period were analyzed. The data were subjected to epidemic and clinical analysis (study of long-term morbidity dynamics from 2009 to 2019).

Results. We found out that over the last decade there has been a downward trend in the incidence of pertussis, but this figure remains high among the vaccinated population, more vulnerable children under 1 year and children of senior school period. The highest incidence of pertussis in children was observed in the winter-spring period (from January to April). Despite the "controllability" of this infection and a certain tendency to reduce the incidence, it is inappropriate to mention its complete elimination. After all, when pertussis does not occur transplacental transmission antibodies and children are susceptible to this disease from the first day of their life, and post-vaccination immunity is not always sufficiently intense. Also, the protective titer of antibodies in the blood of children does not last long, and there is no revaccination of adolescents. Thus, the particularities of pertussis in modern conditions include the gradual onset of the disease in children and the associated late hospitalization, severe disease, and as a consequence a high frequency of complications.

Conclusion. Timely diagnosis and adequate treatment will promote faster regression of spasmodic cough, reduce the incidence and duration of apnea, which will reduce the occurrence of complications. The main task set for the health care of our country in the coming years in relation to pertussis is to reduce the incidence to sporadic, which will include pertussis among the infections that are fully controlled by vaccination.

E-mail for correspondence: ol.vasilyeva@med.sumdu.edu.ua

IMPACT OF FEMALE OBESITY ON DELIVERY

Hrytsenko Y., Malysheva V.

Research advisor: Babar T.

*Department of obstetrics, gynecology and family planning,
Medical Institute, Sumy State University, Ukraine.*

Aim. To reveal the relationship between increased body mass index in women in labor and the incidence of complications during delivery.

Material and methods. Analyzed 200 birth histories conducted in the Sumy Regional Perinatal Center in 2018. For the study 100 stories of obese women in labor and 100 stories of women in labor with normal BMI were selected.

Results. In 69% of the analyzed cases normal weight-womens have a natural delivery, in 25% it was without complications; in 31% of cases, a cesarean section was performed. Womens with obesity had spontaneous childbirth in 35% cases (no complications 10%), caesarean section — 65%. The frequency of cesarean sections performed in the group of obese women is more than 2 times higher than the frequency of such operations in the of women with normal body weight. Abnormal presentation of the fetus in the group obese women 15%, which is more than two times more than in women with normal body weight — 5%. Preterm birth in obese women was in 11% of cases, in women without obesity - in 8%.

Conclusions. Excess body weight negatively affects women's ability to become pregnant, but also the course of childbirth. Weight management is an important part of a woman's preparation when planning a pregnancy. To prevent complications in childbirth, it is also important to educate women and girls about the importance of proper nutrition and regular physical activity.

E-mail for correspondence: gin@med.sumdu.edu.ua

NEW DRUGS IN TREATMENT OF METASTATIC AND RECURRENT CERVICAL CANCER: LITERATURE REVIEW

Ikonopystseva N.A., Lapuzina U.A., Isaeva N.M.

*Department of obstetrics, gynecology and family planning,
Medical Institute, Sumy State University, Ukraine.*

Introduction. Cervical cancer is widely spread all over the world and takes the second position in the rate of the malignant tumors of the female reproductive system. Cervical cancer remains one of the leading causes of cancer death in women globally, with over 311,000 women dying annually. Routine medical examinations and the human papillomavirus (HPV) vaccine have lowered the incidence of cervical cancer in the developed world. As researchers have learned more about the gene changes in cells that cause cancer, they have been able to develop new drugs that specifically target these changes.

Aim. To find new drugs, that are recommended for using in patients with metastatic cervical cancer according to the latest trials.

Methods. Using search engines, a systematic review of the literature was done.

Results. Bevacizumab is a targeted agent currently used to treat advanced cervical cancer. Cediranib and Nintedanib block certain growth factors that help cancer cells grow have shown to be helpful in some early studies of patients with advanced cervical cancer. These drugs continue to be studied. But they are limited in use in metastatic and recurrent cervical cancer. This fact has encouraged scientists all over the world to look for new variations, that will help patients with III-IV stages. Patients were eligible for the trial if they had received up to 2 prior lines of therapy in the metastatic setting. A total of 101 patients have been treated with the ADC across multiple centers in the United States and Europe. In the dose-expansion phase, patients were given the recommended phase 2 dose of the agent. The recommended phase 2 dose was established to be 2.0 mg/kg of intravenous Tisotumab vedotin once every 3 weeks. A total of 147 patients were then enrolled in the dose-expansion phase of the trial[2]. Here, the most commonly reported treatment-emergent AEs of any grade included epistaxis (69%), fatigue (56%), nausea (52%), alopecia (44%), conjunctivitis (43%), reduced appetite (36%), constipation (35%), diarrhea (30%), vomiting (29%), peripheral neuropathy (22%), dry eye (22%), and abdominal pain (20%). Additionally, infusion-related toxicities were reported in 12% of the patients evaluated.

Conclusion. We have analyzed articles, that have new information about Tisotumab vedotin and its using for patient with cervical cancer. This drug is very promising in the treatment of the hopeless patients with stage 4. The results on the trial's beginning have shown the advantages and benefits of Tisotumab vedotin comparing with other drugs, that were used earlier to treat cervical cancer. Tisotumab vedotin is currently under investigation in several ongoing clinical trials.

E-mail for correspondence: n.ikonopystseva@med.sumdu.edu.ua

X-RAY DIAGNOSTICS OF LATENT SINUSITIS AND THEIR TREATMENT

Khoruzhii V.V., Kolisnychenko D.A.

Research advisor: PhD Khyzhnya Y.

*Department of Emergency Medical Care and Disaster Medicine,
Medical Institute, Sumy State University, Ukraine.*

Introduction. Recently, cases of latent sinusitis are often diagnosed, the diagnosis of which is difficult due to atypical clinical signs, which increases the risks of serious complications of sinusitis (optochiasmal arachnoiditis, basal arachnoiditis, abducens nerve syndrome) and adequate treatment. One of the methods that contribute to the timely diagnosis of latent sinusitis is computed tomography of the paranasal sinuses in thin slices, since this imaging method is superior to others in terms of information content.

Aim. To designate the radiological signs of latent chronic sinusitis in order to timely diagnose the disease and prevent its complications.

Materials and methods. Retrospective analysis of case histories of 86 patients in ENT department with a diagnosis of chronic purulent sinusitis, not previously operated. The patients were divided into 2 groups: group I consisted of 46 patients with typical clinical manifestations of sinusitis, group II - 40 patients with latent chronic sinusitis.

Results. Both groups underwent with latent chronic sinusitis, according to which, in patients of group I, uneven thickening of the mucous membrane in the maxillary (87%), frontal (68%), sphenoid sinuses (42%) with obstruction of the lumen of their anastomosis in 98% of cases, in the anterior (97%) and posterior (88%) cells of the ethmoid labyrinth, the presence of inhomogeneous liquid contents with air bubbles (82%), concha bullosa of the middle turbinate (68%), curvature of the nasal septum (100%), bony protrusions (spines - 48%), ridges - 62%). In patients of group II, the following was determined: parietal thickening of the mucous membrane of the anterior (32%), posterior cells of the ethmoid labyrinth (98%), sphenoid sinus (92%) without fluid level, concha bullosa of the middle turbinate (100%), curvature of the nasal septum (100%), deformities in the form of a thorn (59%) and crest (78%), pronounced asymmetry of the ethmoid labyrinth cells (97%) with narrowing of the lumen of natural anastomoses, preservation of pneumatization of the maxillary and frontal sinuses in 100%.

Conclusions. Due to its high detail and information content, X-ray diagnostics is the method of choice in the diagnosis of latent chronic sinusitis. Signs of latent chronic sinusitis on scans should be considered: the presence of minimal thickening of the mucosa in the posterior cells of the ethmoid labyrinth and the structures of the ostiomeatal complex with or without anastomosis; parietal thickening of the mucous membrane in the sphenoid sinus while maintaining its pneumatization; a complex of anatomical features of the structures of the ostiomeatal complex and cells of the ethmoid labyrinth: reduction in size or blockage of the lumen of the natural sinuses.

E-mail for correspondence: khyaroslava@ukr.net

CHANGES OF INDICATORS OF CLINICAL BLOOD ANALYSIS IN PATIENTS WITH BRAIN TUMORS

Kmyta O.P., Tsyndrenko O.O., Honcharova A.M., Marchenko I.I.

Research advisor: Prof. Potapov O.O.

*Department of Neurosurgery and Neurology with Courses of Psychiatry, Narcology,
Medical Psychology, Occupational Diseases, Medical Institute, Sumy State University.*

Introduction. Among urgent problems of modern neurosurgery, brain tumors occupy one of the leading positions. Despite the significant progress in the diagnosis and treatment of this pathology, the disease and mortality rate remain high and is 6% of all neurooncological diseases, that makes it possible to consider this pathology as an important medical and social problem.

Aim. To analyze the changes in clinical blood tests in patients with brain tumors.

Materials and object of research. The retrospective analysis of the clinical records of 37 patients who were undergoing in-patient treatment for brain tumors in the neurosurgical department of Sumy Regional Clinical Hospital in years 2017-2019 was conducted. The average age of the examined was 51.8 ± 8.5 years. Statistical processing of results was performed using the licensed version of the program SPSS STATISTICA 10.

Results. During the study it was found that the vast majority of patients with brain tumors were men 62.2% (23 persons), women – 37.8% (14 persons). 13.51% (15 patients) were more than 55 years old, 51.4% (19) – patients from 35 to 55 years old and 8.11% (3) – patients under 35 years old. According to the histological study, patients with astrocytoma apparently prevailed ($p < 0,05$) among other tumors – in 13 patients (35,1%). Regarding clinical symptomatology, in 23 patients (62.2%) the leading syndrome was focal. In 10 patients (27%) the leading syndrome was hypertensive. In 4 patients (10,8%) there was a combination of focal and hypertensive syndromes. The presence of secondary brain edema was noted in 53.9% (21 persons).

According to the assessment of peripheral blood indicators, the ESR mean value in women was 13.8 ± 20.5 mm / hr, and in men – 11.3 ± 16 mm / hr. Acceleration of ESR was observed in 24.3% (9) of patients. The mean value of leukocytes in women was $8.6 \pm 6.5 * 10^9 / l$, in men – $9.2 \pm 6.4 * 10^{12} / l$. In 32.4% (12) patients, an increase in the content of leukocytes was observed ($p < 0.05$). The average hemoglobin in women was 128.6 ± 26 g / l, in men – 134.4 ± 16 g / l. The mean erythrocytes content in women was $3.8 \pm 1.1 * 10^{12} / l$, in men – $3.8 \pm 0.7 * 10^{12} / l$. All patients received standardized treatment: 18 (48.7%) patients had surgical interventions which included complete or partial tumor removal, 13 (35.1%) patients were prescribed corticosteroid and chemotherapeutic drug therapy, 6 (16, 2%) patients were transferred for treatment to other specialized institutions.

Conclusions. Having analyzed the results of this study, we can conclude that in patients with tumorous lesions of the brain, elevated indicators of ESR and leukocytosis were observed. It is also possible to point out that in most patients, clinical blood test data remained within the age norm.

E-mail for correspondence: tsyndrenko777@gmail.com

CHANGES OF LABORATORY INDICATORS IN PATIENTS WITH SPINAL BRAIN TUMORS IN SUMY REGION

Kmyta O.P., Tsyndrenko O.O., Pokhmura V.V., Havro M.P., Berezny T.V.

Research advisor: Prof. Potapov O.O.

Department of Neurosurgery and Neurology with Courses of Psychiatry, Narcology, Medical Psychology, Occupational Diseases, Medical Institute, Sumy State University.

Introduction. Tumors of the spinal cord are relatively rare and account for about 2% of all tumors, in the structure of malignant lesions of the central nervous system - 1.4-5%.

Aim. To analyze laboratory changes in patients with spinal cord tumors in Sumy region.

Materials and methods. 18 case histories of patients with spinal cord tumors who were hospitalized in the neurosurgical department of Sumy Regional Clinical Hospital in 2014-2018 were retrospectively analyzed. There were 12 women (66.7%) and 6 men (33.3%). The majority - 14 (77.8%) patients were older than 55 years, the remaining 4 (22.2%) patients ranged in age from 35 to 54 years. During the study, laboratory blood parameters were analyzed, namely: ESR, erythrocyte and hemoglobin content, leukocyte count and blood glucose concentration. Statistical processing of the results was performed using the licensed version of the program SPSS STATISTICA10.

Results. The average value of ESR among women was 20.8 ± 2.6 mm / h, in men - 18.8 ± 3.5 mm / h. Acceleration of ESR was observed in 9 (75%) women and 5 (83.3%) men. The average hemoglobin in women and men was normal and was 123.6 ± 3.9 g / l and 141 ± 5.7 g / l, respectively. The average erythrocyte content in women is $3.8 \pm 0.2 * 10^{12}$ / l, in men - $4.2 \pm 0.2 * 10^{12}$ / l. The average value of leukocytes also corresponded to norm and made among women - $7,3 \pm 0,6 * 10^9$ / l, among men - $8,0 \pm 1,6 * 10^9$ / l. The blood glucose concentration did not exceed the norm and was 4.1 ± 0.2 mmol / l and 4.5 ± 0.2 mmol / l in women and men, respectively.

Conclusions. According to the results of the analysis of the study of laboratory parameters, it can be concluded that in patients with spinal cord tumors changes, except for increased ESR, were not detected.

E-mail for correspondence: tsyndrenko777@gmail.com

THE PREVALENCE OF SHEEHAN SYNDROME IN MASSIVE OBSTETRIC HEMORRHAGE

Kolo Lydia Adi and Chibueze Mercy Asabe

Research advisor: Associate professor, Babar T.V.

Department of Obstetrics, Gynecology and family planning,

Medical Institute, Sumy State University, Ukraine.

Introduction. Massive obstetric hemorrhage is variably defined as: blood loss >1500 ml; a decrease in hemoglobin $>4 \text{ g dl}^{-1}$; or acute transfusion requirement >4 units. Obstetric hemorrhage is classified as antepartum (APH); bleeding occurring after 24 weeks gestation and before delivery, or postpartum (PPH). Postpartum hemorrhage (PPH) can be primary (within 24 h of delivery) or secondary (24 h to six weeks after delivery). Sheehan syndrome (SS) is postpartum hypopituitarism caused by necrosis of the pituitary gland. It is usually the result of severe hypotension or shock due to massive hemorrhage during or after delivery.

Aim. To describe the prevalence of Sheehan syndrome in cases of massive obstetrics bleeding.

Materials and methods. Clinical, Laboratory and Statistical data.

Results. According to the materials gathered from 2017 to 2019 from the department of obstetrics and gynecology of the medical institute of the SSU, KS SOR, regional clinical perinatal center, 6895 births were recorded out of which 40 births were complicated with massive obstetric hemorrhage, 13 out these cases had uterus extirpation as conservative hemostasis was ineffective. Based on statistics 0.58% of these women had MOH and 0.19% of these women underwent hysterectomy. Sheehan syndrome however, was never recorded.

Conclusion. This study provides a comprehensive picture of the prevalence of SS in MOH over a three year period with evidence indicating progressive decline in MOH cases with no recorded case of Sheehan syndrome in the regional clinical perinatal center. Women with MOH were treated and effectively managed thereby preventing further complication as SS.

E-mail for correspondence: gin@med.sumdu.edu.ua

CLINICAL- ENDOSCOPIC FEATURES AND EFFECTIVENESS OF TREATMENT OF CHRONIC DISEASES OF THE GASTROINTESTINAL TRACT IN CHILDREN

Kondratska N., Yusupova A., Shkolna I.

Research advisor: ass. prof. Petrashenko V.

Department of Pediatrics, Medical Institute, Sumy State University, Ukraine.

Introduction. Currently, in the structure of chronic diseases of the digestive system, one of the first places is occupied by chronic gastroduodenitis, gastric ulcer and duodenal ulcer. The aim of the study was to study clinical-endoscopic features and effectiveness of treatment of chronic diseases of the gastrointestinal tract in children.

Materials and methods. We observed 92 sick children with chronic gastritis and gastroduodenitis and 28 patients with gastric ulcer and duodenal ulcer at the age of 9 to 15 years and with a disease duration from 1 to 5 years old.

Results and discussion. The main complaint of patients was abdominal pain (98%). Dyspeptic complaints were noted in all children. In 2/3 of children there was a feeling of early satiety, heaviness in the epigastric region. Often (44.5%) patients noted heartburn, recurrent nausea and vomiting (35.7%). Complaints of bloating, unstable stools, or constipation were observed in more than 2/3 of patients.

Attention was drawn to complaints of a general neurotic nature: headaches (82.3%), sleep disturbances (50%), pain in the region of the heart (45%), irritability, tearfulness, and fatigue (90%). In 62% of patients hypertrophic gastritis were found. In 30% of children, multiple erosions of the mucous membrane of the stomach and duodenum (erosive gastroduodenitis) were determined. Chronic peptic ulcer of duodenal ulcer is often combined with chronic antrum gastritis, esophagitis, erosive bulbitis. Hypotonicity of the duodenal wall was observed in 6% of patients, subatrophic gastritis in 8% of patients, duodenogastric reflux in 7%.

Treatment was prescribed based on complaints, clinic, endoscopic findings, and comorbidities. Antacid therapy for hyperacid gastroduodenitis and gastric ulcer and duodenal ulcer, enzyme therapy for hypoacid state of gastric juice, antispastic and sedative therapy for severe pain symptoms gave a good effect from the first 2-3 days of hospitalization. When *H. pylori* is detected, antibiotics (various regimens) in combination with a proton pump inhibitor. To confirm eradication, a urease breath test, fecal antigen determination, or esophagogastroduodenoscopy were used.

Conclusion. Thus, the treatment of patients with chronic gastroduodenitis, gastric ulcer and duodenal ulcer should be comprehensive. Rehabilitation therapy has a positive effect on the function of the damaged organ and systems, which leads to long-term morphological remission of chronic gastroduodenitis and gastric ulcer and duodenal ulcer.

E-mail for correspondence: v.petrashenko@med.sumdu.edu.ua

CONDITION OF THE INDIGENOUS MICROFLORA IN PATIENTS WITH ALZHEIMER'S DISEASE

Kust V.V.

Research advisor: Ivakhnjuk T.V.

Department of Public Health, Medical Institute, Sumy State University, Sumy, Ukraine.

Introduction. Probiotics are discussed in society. In-depth studies in psychoneuroimmunology ("gut-brain-axis") show dysbiosis plays a key role in the pathogenesis of neurodegenerative processes. Microflora is responsible for the modulation of genes involved in neurogenesis in the hippocampus. These data are promising in diagnosing the Alzheimer's disease (AD) - spread but not fully studied.

Aim. To identify the correlation between the development of neurodegenerative changes and the degree of dysbacteriosis in patients with AD. To study the microbiological and immunological features of AD.

Materials and methods. A microbiological and immunological studies were provided in 32 patients with AD (1 group) and 30 elderly ones (67 ± 1.2 years) (2 control groups) with standard microbiological techniques. The cultural method included the study of the quantitative and qualitative compound of the intestinal microflora of patients with AD.

Results. AD patients' feces analyses show dysbiotic disorders of the intestinal microflora: stage I - $40.5 \pm 0.06\%$ (compensated); stage II - $21.8 \pm 0.04\%$ (subcompensated), stage III - $31.4 \pm 0.04\%$ (uncompensated). The quantitative content of *Lactobacillus spp.* and *Bifidobacterium spp.* is decreased ($p < 0.05$) compared with the control group: *Lactobacillus spp.* - $\lg 4.48 \pm 0.15$ CFU/g (stage III), *Bifidobacterium spp.* - $\lg 3.7 \pm 0.2$ CFU/g (stage II). Adhesive properties are the initial stage of colonization resistance of the habitat. We had 83.3%, 60.0% and 20% of *Lactobacillus spp.* from AD patients with I, II and III stages of dysbacteriosis accordingly (average adhesion(AA) 1.72 ± 0.08 MO/er.). Lactic acid product on hydrolyzed milk (pH 7.2) based on strains isolated from the examined patients was used due to in vitro AA tests. AA *Lactobacillus spp.* significantly ($p < 0.05$) increased 1.8 times, AA *Bifidobacterium spp.* - 1.4 times. Low AA of microflora in stage III indicate a violation of this function and may contribute to the development of opportunistic pathogens and dysfunction of the immune system, which according to recent research is involved in the development of AD as "gut-brain-axis".

Conclusion. Each of the components of "gut-brain-axis" are interconnected, which is why omnigenous stages of dysbacteriosis in AD patients are obvious-to-be. Patients' own representatives of the indigenous microflora can solve this problem. That's why personalized therapy is advisable and promising. This is evidenced by the data obtained from the tests results.

E-mail for correspondence: vlada-kust@ukr.net

DIAGNOSIS AND TREATMENT OF POSTOPERATIVE BILIARY PERITONITIS

Kuzmenko V., Khoruzhyi V.

Research advisor: PhD, ass. prof. Kravets O.

*Department of surgery, traumatology, orthopedics and phthisiology,
Medical Institute, Sumy State University, Ukraine.*

Introduction. All over the world, tendency of increasing the number of diseases of the hepatobiliary zone, which require surgical treatment. It leads to increasing the number of postoperative complications. Postoperative bile peritonitis (PBP) is one of such complication.

Aim. To improve the results of treatment of patients with PBP.

Materials and methods. The experience of diagnostics and treatment of 17 patients with PBP is analyzed. There were 11 females (64,7%) and 6 males (35,3%). Age of patients ranges from 48 to 72 years (mean $64,3 \pm 7,4$ years).

Results. Pain syndrome with symptoms of peritoneal irritation, signs of endogenous intoxication, unstable hemodynamics were observed in 75% of patients. The most informative methods of diagnosis were dynamic abdominal ultrasound and laparoscopy. The reasons for the development of PBP in 5 (29,4%) cases were *ligature slippage* (clips) from the stump of the duct, in 3 (17,7%) – additional duct in the area of the gallbladder bed, in 3 (17,7%) – the failure of the sutures of biliarydigestive anastomosis, in 3 (17,7%) – bile duct injury, one (11,8%) – drainage tube loss from the bile duct and perforation of a duodenal ulcer. In one case the cause of peritonitis has not been established. Total peritonitis was observed in 7 (41,2%) patients, diffuse – in 6 (35,3%), limited – in 4 (23,5%). Surgery for biliary peritonitis was performed at different times after the first operation: up to 24 hours – 2 (11,8%) patients, up to 48 hours – 8 (47,1%), up to 72 hours – 4 (23,5%) , more than 72 hours – 3 (17,7%). Relaparoscopy was performed by three patients with failure of the stump of the duct with repeated clipping. The laparotomy was done to other patients. Two of them were religated stump of the bladder duct, for three – stitched bed of the gall bladder, two – inserted the drainage to the bile duct, three – the imposition of additional sutures on the anastomosis, one case – choledochoenteroanastomosis and excision of ulcer with piloroduodenoplasty. In one case the source of bile flow into the abdominal cavity was not identified – abdominal drainage was performed. All operations were ended with the sanitation and drainage of the abdominal cavity. In postoperative period correction of water-salt exchange and blood rheological properties, detoxification, antibacterial therapy was performed. Three patients died, accounting for 17,6%.

Conclusion. PBP is a difficult complication which is not easy to diagnose. Dynamic ultrasound and laparoscopy are needed for early diagnosis of peritonitis. The main stages of surgery are elimination of the peritonitis source, sanitation and drainage of the abdominal cavity, intensive postoperative therapy.

E-mail for correspondence: kravets.oleksandr@ukr.net

CASE STUDY ON ENDOMETRIOSIS IN NIGERIA

Makinde Bisola Celestina

Research advisor: Associate professor, Smiian Svitlana Anatoliivna

Department of Obstetrics, Gynecology and family planning,

Medical Institute, Sumy State University, Ukraine.

Introduction. Endometriosis is a chronic disease, which is distributed among women of reproductive age and degrades the quality of life. It is characterized by the presence of normal endometrial mucosa (glands and stroma) found in locations other than the uterus. The ovary is the most common site for endometriosis. The pelvic peritoneum and rectovaginal septum are commonly affected. The umbilicus, diaphragm, pleura and pericardium are rarely affected. Women in their late 20s and early 30s are often diagnosed with endometriosis. About 1/3 of women with endometriosis are asymptomatic.

Aim. To analyse the distribution and characteristics of endometriotic lesions amongst women living in Nigeria.

Methods. Transvaginal ultrasound (TVS) is regarded a first line diagnostic tool of choice for imaging the pelvis in the preoperative assessment of women planning laparoscopy for surgical treatment of endometriosis. Laparoscopy with tissue biopsy.

Results. 80 cases were histologically diagnosed under review. The affected age groups were mostly those between 29-39 years which were (49.4%) and 20-28 years which were (30.9%). The affected site was mostly the ovary (56%) then the umbilicus (11.6%) and fallopian tubes (12.1%). Ovarian lesions on the left side predominated (59.1% VS 38.2% on the right side). 14 patients (28.8%) had involvement of both ovaries. 18 patients (20.9%) had lesions at more than one site involving both ovaries.

Treatment: NSAIDs (Ibuprofen), Hormonal therapy (Danazol, Elagolix sodium) and Surgery to remove affected tissue.

Conclusion. A significant proportion of women with endometriosis have lesions on more than one site and some cases appear like neoplasm. Endometriosis should be suspected in any women of reproductive age with an umbilical mass. This study shows that endometriosis is not as rare a disease among Africans as shown in early studies.

E-mail for correspondence: gin@med.sumdu.edu.ua

ANALYSIS OF RELATION BETWEEN VITAMIN D3 AND GLUCOCORTICOID RESISTANCE IN PATIENTS WITH HAND ECZEMA

Methkal A.M.

Research advisor: prof. Kuts L.V.

*Department of Family Medicine with a course of Dermatovenereology,
Medical Institute, Sumy State University, Ukraine.*

Introduction. Currently, there is a marked increase in the incidence of hand eczema worldwide. Moreover, the severity of the eczema course and its insensitivity to the therapy is also increasing.

Aim. Therefore, the purpose of our study was to analyze the association between vitamin D3 blood content and glucocorticoid resistance in patients with hand eczema.

Materials and methods. 143 patients with hand eczema (the mean age 42.2 ± 11.1 years) were used for study. Blood serum level of vitamin D3 was detected using 25-OH-Vitamin D direct ELISA Kit (IBL International GMBH, Hamburg, Germany). The severity of hand eczema was established according to Hand Eczema Severity Index (HECSI). Topical glucocorticoid was used for treatment in patients with mild and moderate eczema. Patients with severe hand eczema received topical corticosteroids along with dexamethasone intramuscular injection. After 2 weeks of the treatment, all patients were divided into "responder" and "non-responder" groups according to change of the HECSI score. Student t-test was used for statistical analysis of the data.

Results. Thus, 92 patients had a good response to treatment (HECSI score changes more than 50 %). The mean blood level of 25-OH-Vitamin D in this subgroup before treatment was (32.4 ± 12.2) ng/ml. 51 eczema patients did not have appreciable clinical response to glucocorticoid treatment (HECSI score changes less than 50 %). The mean serum concentration of 25-OH-Vitamin D before treatment in "non-responders" was (28.7 ± 10.4) ng/ml. However, no statistically significant difference between two subgroups was found ($p = 0.070$).

Conclusion. Thus, obtained results found no relationship between blood level of vitamin D3 and glucocorticoid resistance in patients with hand eczema.

E-mail for correspondence: methkalam@ukr.net

SARCOPENIA IN PATIENTS WITH LIVER CIRRHOSIS: PREVALENCE AND RELATION TO SEVERITY OF DISEASE

Motsiuk V.M., Pentiuk N.O.

National Pirogov Memorial Medical University, Vinnytsia, Ukraine.

Introduction. Liver cirrhosis (LC) is a global health problem, and the contribution of LC to the morbidity and mortality of the population has become increasingly. Malnutrition and its most relevant clinical manifestation - sarcopenia are common, but often neglected complications of LC. Recent studies have shown that alterations in nutritional status and muscle depletion are potentially associated with a higher incidence of LC complications, a negative impact on quality of life and decreased patient's survival.

Aim. To determine the prevalence of sarcopenia in hospitalized patients with LC and to estimate its relation to severity of LC and its essential complications.

Materials and methods. 80 patients with LC (55 men and 25 women) were examined. 18 patients had LC Child-Turcotte-Pugh (CTP) Class A, 29 had LC Class B and 33 patients had LC Class C, mean age was 54.7 ± 2.85 , 57.3 ± 2.49 and $61,3 \pm 2.18$ years, respectively. Viral etiology of LC was confirmed in 28 patients, alcoholic - in 44 patients. The psoas muscle index (PMI) at the L3 vertebral level computed tomography (CT) scan and relative handgrip strength (absolute handgrip strength, normalized to body weight) were assessed to evaluate sarcopenia.

Results. LC decompensation was associated with the significant decrease of PMI and relative handgrip strength. Sarcopenia (PMI males $<5.1 \text{ cm}^2 / \text{m}^2$; females $<4.3 \text{ cm}^2 / \text{m}^2$) was detected in 17%, 31% and 64% of patients with Class A, B, and C, respectively. The prevalence of sarcopenia was higher in men (51.1 vs 31.4% in women) and in patients with alcoholic LC (50.0 vs. 25.9% in patients with viral LC). Sarcopenic patients had significantly lower serum albumin level, prolonged prothrombin time, higher radiographic liver density, and bigger portal vein diameter on CT than patients with well-preserved muscle mass. The incidence of hepatic encephalopathy, refractory ascites, pleural effusion, esophageal varices grade 2 and 3 in patients with sarcopenia was high, it amounted to 63.6, 35.7, 42.2 and 56.7%, respectively vs. 31.9, 4.2, 2.1 and 27.9 % in patients without sarcopenia. PMI was correlated with CTP score, MELD score and serum albumin level ($r=-0.44$, $-0,46$, $0,39$, respectively, $p<0,05$).

Conclusion. Decline in muscle mass and muscle strength is common in patients with LC. Sarcopenia is more prevalent in patients with LC CTP Class C, especially alcoholic etiology, and it's associated with higher MELD score and essential LC complications.

E-mail for correspondence: vitalimotsiuk@gmail.com

SUICIDAL BEHAVIOR IN PATIENTS WITH DEMENTIA

Mudrenko I.H., Mudrenko V.Yu.

Research advisor: Mudrenko I.H.

Department Neurosurgery and Neurology, Medical Institute, Sumy State University.

Aim. The scientific work is devoted to the study of suicidal behavior (SB) in patients with different clinical variants of dementia (in Alzheimer's disease (AD), vascular (VD), mixed (MD)) based on the comprehensive clinical and psychopathological, pathopsychological, psychodiagnostic, neuroimaging, functional examinations of patients, assessment of psychogenic factors and resources of the environment in order to develop prognostic, diagnostic criteria of SB and complex differentiated program of medical and psychological rehabilitation (MPR) and SB prevention in various types of dementia.

Materials and methods. 203 patients were examined, including 75 with dementia at AD, 73 with VD and 60 patients with MD. Patients were divided into main and control group by the factor of presence / absence of signs of SB (intentions, attempts, thoughts, anti-vital mood, statements).

Results. The complex of factors of SB risk/anti-risk and suicide-genesis mechanisms in dementia, that became the targets for development of differentiated program for MPR patients with SB in dementia were distinguished.

The suicide-genesis concept in dementia that has complex structural and functional organization, formed by various clinical markers, being able to dynamic transformation under the influence of clinical and intra-personal indexes, was worked out. Intra-personal factors included clinical and psychopathological, pathopsychological and social special features of patient with SB, though extrapersonal – psychic traumatizing and surrounding resources. Psychopathological mechanisms of SB formation were studied. They depend on the form and level of dementia seriousness, presence of comorbide symptoms, namely: depressive, psychotic and cognitive and their dominance in various types of dementia, and the consistent pattern of phenomenological demonstration in various SB mechanisms. Thus, in the depressive mechanism the internal-behavioral forms of SB prevailed, in psychotic – external-behavioral forms, in cognitive mechanism the transformation of SB depending on the seriousness of cognitive deficiency was observed.

Accounting the formation mechanisms and SB predictors, special features of clinical and psychopathological, clinical and phenomenological SB demonstration in various types of dementia the complex and differentiated MPR program and SB prevention, realized on the basis of complex approach including usage of psychopharmacological, psychotherapeutic, psychoeducational psychosocial actions was worked out and tested.

Conclusion. The result of the developed system testing proved its high efficiency, which is supported by the positive dynamics of clinical and psychopathological indexes of suicide status and level of independence in the everyday life of patients with SB in dementia.

E-mail for correspondence: mudrenko.irina@gmail.com

ANALYSIS OF EFFECTIVE METHODS OF HEMOSTASIS IN WOMEN WITH MASSIVE OBSTETRIC BLEEDING (MOB)

Obinna N.C., Nwoke S.C. Babar T.

*Department of Obstetrics, Gynecology and family planning
Medical Institute, Sumy State University, Ukraine.*

Introduction. Over the years, Massive Obstetric Bleeding (MOB) has been one of the major elements of maternal mortality. According to the WHO (2017), 200 million women every year get pregnant, with 128.3 million pregnancies ending in childbirth, with about 500 thousand women dying from complications of pregnancy and childbirth. According to the Ministry of Health of Ukraine, in 2018, bleeding accounted for 24% of the structure of the causes of maternal mortality and ranked second after extra genital pathology, and in 2019, the MOB took first place and amounted to 28.0%.

Material and methods. Clinical, laboratory, instrumental and statistical.

Results. The work was performed on the basis of the Department of Obstetrics and Gynecology of the Medical Institute of the SSU, KS SOR "Regional Clinical Perinatal Center". There were processed 65 birth stories that occurred during 2017-2019 and complicated by the development of MOB with the use of various methods of surgical hemostasis. The first group consisted of 37 pregnant women who had undergone surgical hemostasis for organo-preservation techniques. The 2nd group consisted of 28 women who were undergoing extirpation of the uterus without appendages. The overwhelming majority of women in both groups had burdened obstetric and gynecological anamnesis. The violation of the menstrual cycle in the 2nd group was somewhat higher, inflammatory diseases of the pelvic organs were present in 33.8% of patients in group 1 and 45.1% of patients in group 2. The main causes of MOB development in both groups were uterine atony, premature placental abnormalities, placental pathology and trauma. MOB was noted in all 65 cases analyzed. In most cases, in both groups the volume of blood loss was at the level of 1000-1500 ml (72.6% and 27.4% respectively). Comparing the effectiveness of various methods of surgical hemostasis, the high clinical efficacy of organo-preservative methods of dressing up the trunk vessels of the uterus and their advantages over the traditional uterine extirpation was verified: faster bleeding (22.5 ± 3.0 min and 33.0 ± 2.0 min.), less duration of operation ($79,0 \pm 2,5$ min vs. $117,0 \pm 5,0$ min), lower intraoperative ($295,0 \pm 30,0$ ml versus $725,0 \pm 30,0$ ml, respectively) and total (1338.5 ± 39.1 ml, vs 1589.6 ± 58.3 ml) blood loss.

Conclusion. All women undergoing surgical hemostasis are recommend consulting and correctional work, sedative, native-metabolic therapy and a course of treatment with multivitamin preparations with a balanced content of trace elements with compulsory dispensary observation.

E-mail for correspondence: gin@med.sumdu.edu.ua

MODERN TREATMENT OF PATIENTS WITH WERDNI-G-HOFFMAN'S AMYOTROPHY

Obinna Nnamdi Clinton, Okoro Chidera Miracle

Research advisor: PhD Tkachenko Y.A.

*Department of Emergency Medical Care and Disaster Medicine,
Medical Institute, Sumy State University, Ukraine.*

Introduction. Werdnig-Hoffman's amyotrophy is the most malignant variant of Spinal muscular atrophy (SMA). It develops in the first years of a child's life. Such children are characterized by a weak cry, the inability to hold head, poor physical activity. Later bulbar disorders join, swallowing and cough reflexes weaken or completely disappear. The most difficult patients require mechanical ventilation and die before the age of 1 year. The disease is characterized by loss of anterior horn cells. In 1995, the SMA disease-causing gene, termed the survival motor neuron (SMN), was discovered. Each individual has 2 SMN genes, SMN1 and SMN2. More than 95% of patients with spinal muscular atrophy have a homozygous disruption in the SMN1 gene. However, all patients with spinal muscular atrophy retain at least 1 copy of SMN2, which generates only 10% of the amount of full-length SMN protein versus SMN1. This genomic organization provides a therapeutic pathway to promote SMN2, existing in all patients, to function like the missing SMN1 gene.

Aim. To describe the modern treatment the patients with SMA.

Materials and methods. In the last 5 years, the Sumy pediatric Hospital has recorded 3 cases of SMA. Two patients died due to ventilator-associated pneumonia until their first year of life. Nowadays in our region there is 1 patient with SMA. She is 9 months old.

Results. This patient spent 2.5 months on invasive ventilation through an endotracheal tube. Due to carriage of *Ps.aeruginosa* and risk of ventilator-associated pneumonia the child received several courses of antibiotic. Omeprazol used for prevention aspiration in small dose every day. After transfer to non-invasive ventilation, teaching parents to feed through a nasogastrical tube, working with suction, pulse oximeter, oxygen concentrator, stimulating cough child was discharged home. For prevention aspiration during nutrition the insertion of gastrostomy tube is planned upon reaching the age of 1 year. Apart from assisted ventilation in the treatment of such patients can be used gene therapy. In 2016 Nusinersen became the first drug used in curing SMA. It is an antisense nucleotide that modifies the alternative splicing of the SMN2 gene. But this drug hasn't registered in Ukraine yet.

Conclusion. Teaching parents how to care for their child can improve the patient's quality of life and even provide assisted ventilation at home, but the radical treatment is in gene therapy.

E-mail for correspondence: y.tkachenko@med.sumdu.edu.ua

POST-TRAUMATIC STRESS DISORDER IS A RISK FOR HYPERTENSION IN MILITARY VETERANS

Phukon A., Parmar J.

Research advisor: assist. Hordina M.A.

Family Medicine Department, Medical Institute, Sumy State University, Ukraine.

Introduction. Post-traumatic stress disorder (PTSD) is a condition that is triggered by a traumatic event, accompanied by hyperactivity, severe anxiety and flashbacks of trauma. PTSD is often detected in combatants and participants in armed conflicts. PTSD increases the risk of events of early cardiovascular diseases by 50% and hypertension (HTN) by 30%. Early PTSD detection, timely psychological assistance and treatment is a preventive measure for cardiovascular diseases in military veterans.

Aim. 2 years prospective for assessment of the risk of HTN in veterans with PTSD.

Materials and methods. We examined 82 male veterans, combatants in southeast of Ukraine, the age of the participants was 30-40 years ($36,2 \pm 0,39$ years). Patients screened for post-traumatic stress disorder by PTSD Checklist — Military Version (PCL-M). Patients divided into 2 groups with the PTSD (31 subj.) and without PTSD (51 subj.). The observation period was 2 years, blood pressure measurements carried out every 3 months. The presence of HTN diagnosed with an increase blood pressure above 140/90 mm Hg. Comparison made between groups of patients. At the starting point, all participants did not have HTN, did not differ of the risk factors for HTN (age, presents of overweight and obesity, smoking and alcohol consumption, cholesterol level). The endpoint of the study was the identification of cases of HTN in the subjects.

Results. The median time for HTN generation was 18 months, the risk of HTN developing in patients with PTSD was $RR=2,26$ (95% CI 1,02-5,01, $p=0,04$).

Conclusion. The results indicates that PTSD is a risk factor for HTN. Early screening of PTSD in combatants is necessary, as well as its treatment, which can give a favorable prognosis in the prevention of HTN.

E-mail for correspondence: margordina@gmail.com

MODERN APPROACH TO DIAGNOSTICS AND TREATMENT OF NECK CYSTS

Poluiko I., Vidmenko M.

Research advisor: PhD, ass. prof. Kravets O.

*Department of surgery, traumatology, orthopedics and phthisiology
Medical Institute, Sumy State University, Ukraine.*

Introduction. Neck cysts are a rare condition that can sometimes be difficult to diagnose and treatment for surgeons who rarely deal with this condition. It's leads to the development of complications during the operation and in the postoperative period. Improving the methods of diagnosis and treatment of neck cysts remains an urgent problem.

Aim. To improve the results of diagnosis and treatment of patients with neck cysts.

Materials and methods. The results of treatment of 58 patients with neck cysts were studied. In 19 (32.6%) cases, cyst suppuration was detected. Diagnostics was based on clinical data, the use of ultrasound, computed tomography, cyst puncture. After removal of the cyst the histological examination was required. The operations were performed using local anesthesia and endotracheal anesthesia.

Results. For operations on median cysts, a longitudinal incision was used. For lateral cysts, an incision was used along the anterior edge of the sternocleidomastoid muscle. Neck tissues were dissected layer by layer to the capsule. With the aim of facilitate the liberation of the cyst, reduce the length of the incision and improve the cosmetic result, a puncture of the gland was performed. The cyst was separate from the surrounding tissues by blunt and sharp methods and removed with a capsule. In case of cyst suppuration, the wound was washed with antiseptic solutions. The wound was sutured with drainage of the cavity. In 4 (6.8%) patients, the postoperative period was complicated by suppuration. In 6 (10.2%) patients, an inflammatory infiltrate of the postoperative scar was observed. No relapses were observed. The duration of inpatient treatment was 5.3 ± 1.4 days. The surgical material was represented by a rounded hollow formation of a soft-elastic consistency containing serous fluid or pus. On microscopic examination, the cyst wall is represented by dense fibrous connective tissue with mixed lymph-leukocyte infiltration with dyscirculatory disorders in the form of edema and plethora of blood vessels.

Conclusions. Neck cysts are a difficult pathology to diagnose, which has to be differentiated with a large number of neck diseases. The basic diagnosis of the disease includes an assessment of clinical symptoms, puncture, ultrasound, computed tomography and histological examination. Radical removal of the cyst prevents relapses of the disease.

E-mail for correspondence: inn3362@ukr.net

CEREBRAL PALSY. A MODERN VIEW OF THE PROBLEM

Pylypets O.

Research advisor: PhD Kasian S.

*Department of Emergency Medical Care and Disaster Medicine,
Medical Institute, Sumy State University, Ukraine.*

Introduction. The current demographic situation in Ukraine is characterized by declining birth rates and an increasing number of children with disabilities. In the structure of childhood disability, diseases of the central nervous system occupy the first place, and most of them are various forms of cerebral palsy. deformities of the extremities. Significant disorders of the musculoskeletal system limit the social freedom of the child and are the basis for the physical disability of the child and form the psychotype of the disabled.

Aim. To review domestic and foreign sources of literature related to etiological factors, clinical manifestations, diagnosis, treatment, prevention of this problem.

Materials and methods. 28 domestic and 23 foreign sources of scientific works on our chosen topic are analyzed.

Results. The results of the research showed a high prevalence of the disease both in Ukraine and abroad with a tendency to increase the incidence of children with cerebral palsy. Predictors of development of this pathological condition, leading clinical syndromes, methods of diagnosis, methods of treatment, rehabilitation, and also possibilities of prenatal prevention of this disease are studied.

Conclusion. Despite the fact that many scientists are dealing with this problem, the question of the priority of factors predictor properties of the development of cerebral palsy remains unresolved. Thus, our chosen research topic is relevant and needs further study.

E-mail for correspondence: svetlanakasyan15@gmail.com

CHANGES IN PERIPHERAL BLOOD COUNTS IN NEWBORNS ON THE BACKGROUND OF ANTIBIOTIC THERAPY

Romanenko T.

Research advisor: prof. Serhiy Popov

Department of Pediatrics, Medical Institute, Sumy State University, Ukraine.

Introduction. Antibiotic therapy is one of the most important treatments used in both adults and children. It can be used for a variety of diseases, both infectious and non-infectious when there is a risk of bacterial infection. Among complications of antibiotic therapy can be antibiotic-associated diarrhea, allergic reactions, as well as changes in the hematopoietic system. There are relatively few data on the effect of antibacterial agents on peripheral blood parameters, they are fragmentary in nature, most of them are devoted to older children.

Aim. To identify features and risk factors for changes in peripheral blood in sick newborns on the background of antibiotic therapy.

Material and methods. The study included 30 newborns who were treated in the hospital ward. They were divided into 2 groups depending on the diagnoses: with hypoxic-ischemic encephalopathy and with intrauterine infection. Assessment of blood parameters was performed by analysis at the end of antibiotic therapy, which generally was on days 14-21. For further analysis of the probability of development of changes in peripheral blood parameters when prescribing antibiotics, the odds ratio (OR) was used, the reliability was calculated according to the criteria of χ^2 and Fisher.

Results. Antibiotics have been shown to increase the risk of decreased red blood cell count, mean red blood cell volume, and mean hemoglobin in red blood cells in children with hypoxic-ischemic encephalopathy. The risk of a decrease in the absolute number and shift of neutrophils increased, and with treatment with 3 antibiotics, the risk of decreased rates increased. There were also changes in platelets - their size decreased, as did the average platelet volume. Indicators of intoxication also had a risk of decline.

Conclusion. In general, the use of antibiotics increases the risk of reducing all indicators of peripheral blood, in the highest degree of white blood - by 1,36 - 9 times, red blood - by 1,5 - 5, indicators of the platelet row - by 0,5 - 8 times. The administration of 3 antibiotics raises the risk of a 3,9 decrease in average. Hypoxic - ischemic encephalopathy, which is accompanied by multiple organ hypoxic lesions, is accompanied by more significant changes in peripheral blood indices than infants with intrauterine infection.

E-mail for correspondence: tanyushkavoloc@gmail.com

STUDY OF THE DIRECT CAUSES OF MORTALITY OF VICTIMS WITH COMBINED SKELETAL INJURY

Rud A.

Research advisor: PhD Badion Yu.

*Department of Emergency Medical Care and Disaster Medicine,
Medical Institute, Sumy State University, Ukraine.*

Introduction. According to the World Health Organization, about 300 thousand people of working age die every year, another 7–8 million become disabled. In Ukraine, mortality due to injuries has increased over the past decade by 32.6% and amounted to 91.8 cases per 100 thousand, which is significantly higher than in Western European countries.

Aim. To study the direct causes of mortality of victims with combined skeletal injury.

Materials and methods. A retrospective study included 105 observations of deaths of persons with traumatic injuries over the period 2016–2019. The deceased who were at least 18 years old and who had the verified combined skeletal injury were analyzed.

Results. As a result of the study, it was established that most often victims with combined skeletal injuries died as a consequence of road accidents – 55.24%, fall from a height – 28.57% or criminal offense – 7.62%. All other circumstances of death were 8.57%.

Studying the structure of fatal injuries of victims with combined skeletal injury, we found out that the main causes of death were swelling, dislocation and destruction of the brain or spinal cord – 45.71% of all injured, in 35.24% of victims death was caused by blood loss with the development of circulatory metabolic disorders. In 12.38% of persons death was due to the destruction of vital organs and in 6.67% of victims the cause of death was acute cardiovascular and pulmonary insufficiency.

In the course of studying the circumstances and time of death, it was determined that there was a significant discrepancy between the injured at the stage of medical care: 67.62% of the injured died during the pre-hospital phase and only 32.38% died in medical institutions.

Conclusion. The leading causes of death for victims with concomitant skeletal injuries were: primary massive brain destruction, swelling and dislocation, as well as blood loss followed by the development of a specific circulatory-metabolic syndrome and multiple organ failure, that is, a traumatic shock. It is likely that the occurrence of death in the category of people who died as a result of blood loss could potentially be prevented by reducing the period of transportation to hospital and the strict implementation of protocol recommendations for emergency care.

E-mail for correspondence: y.badion@med.sumdu.edu.ua

THE ISSUE OF THE LYMPHATIC DUCT TRAUMA

Rybkina D.

Research advisor: prof. Duzhyi I.

*Department of surgery, traumatology, orthopedics and phthisiology,
Medical Institute, Sumy State University, Ukraine.*

Introduction. Recent decades have been characterized by a high level of automation, mechanization and, including, motorization. These achievements of civilization have the opposite side of their advantages; like inevitable increase of trauma rate in society starting from domestic, industrial, traffic and ending with «street incidents». Human body is exposed to injuries of blunt force and to various types of penetrating traumas. Since the parts of the body that «saturated» with a significant number of such vital organs as the main arteries and veins, upper respiratory tract, esophagus, thoracic lymphatic duct are most commonly damaged, they suffer the most.

Relevance. Damage of Ductus lymphaticus is accompanied by a massive loss of proteins, fats and various salts, which can lead to hypovolemia, hypotension and multiple organ failure. It is difficult to verify the damage, and errors often lead to death or disability, which determines the urgency and relevance of the problem.

Aim. To specify reasons of possible injuries of a lymphatic channel and to develop diagnostic algorithm.

Materials and methods. Four patients with different genesis traumas (perforations/tearing) of duct were under surveillance.

Results. Two of patients were hospitalized after wounding (gunshot and stab), which was accompanied by bleeding, and two – after intense physical activity, after which a «pneumonia» developed. In all these cases, patients faced misdiagnosing for a long time.

Conclusions. We recommend the diagnostic algorithm, which was used in the process of diagnosis and treatment: 1) carefully collected history with special attention to possible injury, blunt trauma; intense vomiting; physical work with lifting loads; 2) physical examination to detect pleural effusion syndrome; 3) pleural puncture with aspiration of pleural contents, in case of watery-milk colored effusion – obligatory test with Sudan-III, in case of change of color of «effusion» from orange to black, the presence of lymph is verified; 4) with pleural fluid of another color – thoracoscopy; if possible damage is suspected in d. thoracicus (d. lymphaticus) lymphogonic drugs are prescribed, and after 3-4 hours thoracoscopy should be conducted. Treatment is mainly surgical.

E-mail for correspondence: dasha_ribka@ukr.net

METHODS OF TEMPORARY EXTERNAL HEMOSTASIS AT THE PRE-HOSPITAL STAGE OF EMERGENCY MEDICAL TREATMENT

Shapoval I.

*Research advisor: Doctor of Medicine, Professor Shkatula Y.
Department of Emergency Medical Care and Disaster Medicine,
Medical Institute, Sumy State University, Ukraine.*

Introduction. Bleeding is the main cause of potentially preventable death of victims at the pre-hospital stage. According to the researchers, from 53.7 to 80% of all those who die in the result of traumatic injuries, die for this reason

Aim. To study the efficiency of different methods of temporary external hemostasis at the pre-hospital stage of emergency medical treatment, taking into account the localization of injuries.

Materials and methods. 86 cases of pre-hospital emergency medical treatment for patients with external bleeding were studied. The data were collected on the victims (age, gender), clinical status (type and location of injuries, type of bleeding), the extent of emergency care (the hemostasis methods used, their efficiency, side effects, difficulty of use), the duration of the pre-hospital stage was also taken into account.

Results. The study found that the most common cause of external bleeding are domestic accidents (45.35% of cases). A tourniquet was the main method of hemostasis. Contact hemostatic agents were used only in 2.32% of cases at the pre-hospital stage. In some cases, when attempting to control external bleeding, several hemostatic agents were sequentially used in connection with the lack of their efficacy. The authors propose an algorithm for temporal control of external bleeding during emergency medical care at the pre-hospital stage.

Conclusion. The main principles that must be followed in choosing any of the methods for bleeding control are the speed and reliability of hemostasis during the total time of evacuation and the minimum damaging effect on the tissues. We consider it prospective that emergency medical services working with patients at the pre-hospital stage have a provision of local hemostatic agents.

E-mail for correspondence: y.shkatula@med.sumdu.edu.ua

ABOUT THE APPROPRIATENESS OF DETERMINING THE ALLGOWER SHOCK INDEX

Shapoval I., Zelenskyi Y., Kydyk S.

*Research advisor: Doctor of Medicine, Professor Shkatula Y.
Department of Emergency Medical Care and Disaster Medicine,
Medical Institute, Sumy State University, Ukraine.*

Introduction. Determining the amount of blood loss is the most important task of providing emergency medical care to injured people. The doctor relies on these data when carrying out treatment measures and evaluating their effectiveness. There are various methods for determining the amount of blood lost, but in the pre-hospital stage, diagnostic possibilities are limited.

The Allgower M., Burri S. shock index (1967) is traditionally mentioned in any textbook. According to it, the approximate volume of blood loss can be determined by calculating the ratio of heart rate to systolic blood pressure. Normally, it is 0.54 ± 0.021 units, and each subsequent increase of 0.1 indicates a loss of 200 ml of blood more, or 4% of total blood volume. When this indicator is increased to one ($Ps / AT - 100/100$), the volume of blood loss is 20.0% of total blood volume, which is equal to 1-1.2 liters for an adult.

Aim. To determine the appropriateness of using the Allgower index at the pre-hospital stage of treatment.

Materials and methods. Through a retrospective questionnaire and analysis of the accompanying documentation, we were able to determine the time required for an emergency medical worker from the moment he managed to control the external bleeding to decide on the need to start anti-shock infusion therapy. 26 cases have been analyzed.

Results. It has been found that when determining the shock index, the decision time increases from 2.7 ± 0.39 minutes to 4.83 ± 1.01 minutes.

We believe that in clinical practice, the amount of blood loss in the pre-hospital stage should be determined by visual assessment. The simplest and most characteristic signs of acute blood loss are a pulsating bleeding (visual or on palpation) and / or a puddle of blood that rapidly increases on the surface where the victim is located, and / or intense blood soaking of clothes in the area of the wound.

Additionally, it is necessary to determine the test of capillary filling or the symptom of "white spot" that allows you to assess capillary perfusion. It is performed by pressing on the nail, forehead, earlobe. Normally, the color is restored after 2 seconds.

It is possible to determine the amount of blood loss empirically, that is depending on the type of traumatic injury.

Conclusion. The shock index should be determined after deciding whether to start a reconstituted infusion. It should be noted that the Allgower index is uninformative in patients with hypertensive syndrome or in victims with traumatic brain injury and the development of hypotension of central origin and usually in the case of psycho-emotional excitement of the injured person.

E-mail for correspondence: y.shkatula@med.sumdu.edu.ua

STUDING THE EFFECT OF STATINS ON DYNAMICS INDICATORS OF SPIROMETRY IN PATIENT WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE AND ISCHEMIC HEART DISEASE

Shuba V.V., Vynnychenko L.B.

Medical Institute, Sumy State University, Sumy, Ukraine.

Aim. Study the effect of statins on dynamics of spirometry indices in patients with Chronic obstructive pulmonary disease (COPD) C group II and III degree of bronchial obstruction and Ischemic heart disease (IHD): stable angina FC II — III.

Materials and methods. The main group was included 45 patients with COPD C group II and III degree of bronchial obstruction and IHD): stable angina FC II — III (28 men and 17 women), taking in addition to standard therapy statins (rosuvastatin in a dose 10 mg per day during a year), aged 48 to 75. The control group included 40 patients (23 men and 17 women) with COPD II and III degree of bronchial obstruction and in combination with IHD, not taking statins, aged 49 up to 75. The COPD diagnosis was verified on the basis of the Ministry of Health of Ukraine Order # 555 of June 27, 2013 and GOLD standards. Statistical the study data was processed with using the Statistica 7.0 application package.

Results. When comparing spirometry indicators in the control group, a significant ($p < 0.05$) increase in all indicators after a year: Forced expiratory volume in 1 sec. (FEV1) from 52.1% to 61.4% by 9.3% in the 1-st group and from 53.5% to 57.8% by 5.3% in the 2-nd group; Forced vital capacity (FVC) from 52.1% to 63.2 by 11.1% in the 1-st group and from 51.9% to 57.2 by 5.2% in the 2-nd; FEV1/FVC ratio from 57.9% to 66.1% by 8.2% and from 58.1% to 54.2 by 6.1% in the 2-nd; Expiratory Peak expiratory flow (PEF) from 42.9% to 53.7 % by 10.8% in the 1-st group and from 42.5% to 47.8 by 5.3% in the 2-nd; Middle expiratory flow 25% FVC (MEF25) by 6.11% in the 1 – st group compare with 4,2% in the 2 – nd group; MEF 50 by 5.29% in the 1 – st group compare with 3,8% in the 2 – nd group; MEF 75 by 6.8% in the 1 – st group compare with 5,2% in the 2 – nd group. Having analyzed the lipid levels in patients from the main and control groups before and after treatment, the significant difference was observed. Thus, after treatment in patients of the main group, there was a significant reduction in blood levels of total cholesterol, triglycerides, LDL and increase in HDL ($p < 0.01$)

Conclusions. Statin use slows down rate of annual decline in key indicators spirometry, which may be due to one of numerous pleiotropic effects of statins - antiinflammatory.

E-mail for correspondence: v.shuba.97@ukr.net

FEATURES OF FOOD ALLERGIES IN EARLY CHILDREN DEPENDING ON THE TYPE OF FEEDING

Shvachko D., Aleksandrova L.

Research advisor: ass. prof. Zaitsev I.

Department of Pediatrics, Medical Institute, Sumy State University, Ukraine.

Introduction. Food allergy (FA) is a common allergic disease in children. The frequency of FA among the child population ranges from 4-6.7%. The problem of food allergy is also relevant for Ukraine. However, many aspects of the food allergy problem remain unresolved.

Aim. To study the clinic, the etiology of FA in young children, depending on the type of feeding.

Materials and methods. There were 177 young children under observation, including up to 1 year old - 39 (22.0%), from 1 to 2 years old - 60 (33.9%), from 2 to 3 years old - 78 (44.1%). There were 110 boys (62.1%) and 67 girls (37.9%). The diagnosis of the main and concomitant diseases was made on the basis of generally accepted methods of clinical and allergological examination of sick children.

Results and discussion. Analysis of the research results showed that the manifestations of the clinical symptoms of FA in young children are relatively dependent on the type of feeding. The following clinical forms of FA manifestation in young children were revealed: Gastrointestinal allergy - in 88 (49.7%), atopic dermatitis - in 35 (19.8%), respiratory allergies - in 28 (15.8%), acute urticaria and Quincke's edema - in 6 (4.7%). The duration of the disease ranged from several months to 3 years. Early symptoms of gastrointestinal tract damage were noted during the first year of life in 79 (89.7%) sick children. The range of symptoms of clinical manifestations of gastrointestinal allergy was quite wide: abdominal pain (pain syndrome) - in 66 (75%), intestinal dysfunction - in 62 (74.4%), stool disorder - in 44 (50.0%), flatulence - in 26 (29.5%), regurgitation and vomiting - in 52 (59.0%) sick children.

Clinical manifestations of gastrointestinal allergy debuted mainly during the first 3 months of life in 69.3% of cases, and by the end of the first year of life - only 3.4% of patients ($p < 0.05$). A thorough analysis of the data of the allergic history, food diary, the results of elimination-provocation tests and the test of indirect degranulation of mast cells made it possible to identify the cause of the body sensitization. Among exogenous allergens, proteins of cow's milk (71.6%), chicken eggs (59.1%) and fish (50.0%) took the first place, the second place was taken by cereals (wheat, corn, rice).

Conclusion. Thus, FA in young children is clinically more often manifested in the form of gastrointestinal allergy, allergic dermatitis and respiratory allergy. In the development of the disease, the absence of natural (breast) feeding and early mixed or artificial feeding are of great importance.

E-mail for correspondence: v.petrashenko@med.sumdu.edu.ua

PLASMA CONCENTRATION OF ENDOTHELIN-1 IN PATIENTS WITH HYPERTENSION WITH DIFFERENT BODY MASS INDEX DEPENDING ON THE STAGE AND DEGREE OF HYPERTENSION

Smiianova Yu. O.

Research advisor: Professor, MD L.N. Prystupa

Department of Internal Medicine, Medical Institute, Sumy State University, Ukraine.

Introduction. Endothelial dysfunction is considered as one of the main mechanisms of formation of arterial hypertension (AH) and its complications, and endothelin-1 (ET-1) plays one of the key roles in named process. ET-1 is currently treated as a marker and predictor of the stage and consequences of hypertension and other cardiovascular diseases.

Aim. To determine the plasma concentration of endothelin-1 in patients with hypertension with different body mass index (BMI) depending on the stage and degree of hypertension.

Materials and methods. The study involved 160 patients with hypertension of I, II stage and 1, 2, 3 degrees. These patients were divided into groups - 1 group of 75 patients with normal body weight, 2 -48 persons with overweight and 3 - 37 people with obesity. The concentration of ET-1 in the blood plasma of the subjects was determined by enzyme-linked immunosorbent assay.

Results. The concentration of ET-1 in patients with hypertension stage I in group 1 was 1,55 (0,50-4,20), in group 2 -6,6 (2,35-10,30), in group 3 -1, 5 (0,5 -5,0). In patients with stage II hypertension, the level of ET-1 in group 1 was 2,40 (1,1-7,70), in 2 - 5,7 (3,5-10,5), in 3-6,9 (3,3-9,6) fmol / ml.

In patients with grade 1 hypertension in group 1, the level of ET-1 was -3,3 (2,4-9,8), in 2-3,4 (1,75-6,95), in 3-8,4 (7,2-9,6). In patients with hypertension of 2 degree the following indicators were present: in 1 group -2,3 (0,80-6,85), in 2-4,6 (2,2-9,9), in 3-3,15 (1, 5-8,05). In patients with grade 3 of hypertension, the concentration of plasma ET-1 was as follows: in group 1-3,05 (0,4-7,92), in 2 -6,7 (5,65-11,77), in 3 - 6,1 (3,2-10,0).

Conclusion. For group 1, the level of ET-1 is the same for all stages of hypertension ($p = 0,226$). In overweight patients, the plasma concentration of the peptide is evenly distributed depending on the stage of hypertension ($p = 0,926$), and in obese patients with stage II hypertension ET-1 is 4,6 times higher than in stage I.

After analysis by the Kruskal-Wallis method, we found that the level of plasma concentration of ET-1 in patients with hypertension with normal body weight does not depend on the degree of hypertension ($p = 0,248$). We obtained the same results by analyzing the data of hypertensive patients with overweight and obesity (groups 2 and 3) - there is no statistically significant difference between the level of ET-1 in these patients with different degrees of hypertension ($p = 0,075$; $p = 0,498$, respectively).

E-mail for correspondence: y.smiianova@ukr.net

DYNAMICS OF THE COURSE OF ALLERGIC RHINITIS IN PREGNANT WOMEN

Steblovska D.A., Borchenko V.S.

Research advisor: PhD Khyzhnya Y.

*Department of Emergency Medical Care and Disaster Medicine,
Medical Institute, Sumy State University, Ukraine.*

Introduction. Allergic rhinitis is one of the chronic diseases that a global problem for all age groups, including patients reproductive age. The symptoms of rhinitis significantly reduce the quality of life, impair night sleep, which can complicate the course of pregnancy, increase the risk of placental failure, intrauterine growth retardation.

Aim. To analyse the course of allergic rhinitis in pregnant women.

Materials and methods. The features of the allergic rhinitis course in 47 pregnant women. The average age of the surveyed was 28 years (18-45 years old). 18 (38%) patients had a mild course, 25 (54%) had an average severity. Patients were selected according to the collection allergic history according to the generally accepted scheme, physical examination.

Considering that hormonal rhinitis is often observed during pregnancy pregnant women associated with the influence of progesterone. This fact makes it difficult to diagnose allergic rhinitis. In order to confirm the presence of allergies. Clinically relevant anatomical deformations of the intranasal structures that adversely affect nasal breathing, in no patients were observed. All patients were pregnant satisfactorily. Clinical syndromes were monitored, including daily self-assessment by patients of the main symptoms of the disease.

Results. Allergic rhinitis for the first time during pregnancy diagnosed in 8 patients. (65.6%) had a history of allergic rhinitis. Duration of allergic rhinitis in most patients (73.6%) were over 7 years old. Hereditary burden of allergic diseases were observed in 42.8% of women. All patients complained about various manifestations of rhinitis (nasal congestion, sneezing attacks, discharge from nose of a mucous nature). Nasal obstruction caused headaches daytime fatigue and sleep disturbances Worsening symptoms of allergic rhinitis distributed as follows: 21% in the first trimester, 45% in the second and 34% in the third trimester of pregnancy.

Conclusions. Allergies are one of the common causes of rhinitis in pregnant women. Have 60.7% patients with allergic rhinitis proceeds with an aggravation of the symptoms of the disease during pregnancy, with 45% in the second trimester. During pregnancy dynamic observation by an otorhinolaryngologist and an allergist is shown.

E-mail for correspondence: khyaroslava@ukr.net

PECULIARITIES OF COVID-19 COURSE IN CHILDREN IN SUMY

Steblovska D., Korniienko M., Alduwibi Abdrazag Abraham Hussein.

Research advisor: assoc. prof. Bynda T.

Department of pediatrics, Medical Institute, Sumy State University, Ukraine.

Introduction. The challenge of the 21st century is the emergence of a new disease, COVID-19. Today it is the main health problem in all countries of the world.

Aim. To study the features of the course of COVID-19 in children during the first months after the outbreak of the epidemic in Ukraine, namely among the children of the city Sumy.

Materials and methods. A retrospective study and analysis of 16 medical records of children for the period from March 3, 2020 to August 31, 2020, who were hospitalized at the city children's hospital with a confirmed diagnosis of COVID-19, was carried out. The diagnosis of COVID-19 was confirmed by PCR and ELISA in certified laboratories in Sumy.

Results. Over a 6-month period, 470 children aged 2 months to 18 years were admitted with suspected infection with the SARS-CoV-2 virus. The diagnosis of COVID-19 was confirmed in 16 (3.4 %) children aged 7 months to 13 years: in 13 children by PCR and in 3 by ELISA. The disease was more often diagnosed in boys (10 boys and 6 girls).

In 13 out of 16 children, the disease began acutely with an increase in body temperature to 38.0–40 °C and persisted for an average of 3–5 days with subsequent rapid normalization. Respiratory syndrome manifested itself in 8 (50 %) rhinitis, 4 (25 %) – pharyngitis, 3 (19 %) – catarrhal tonsillitis, 4 (25 %) – bronchitis and 2 (13 %) – pneumonia. The pneumonia was focal, the oxygen saturation remained normal and the children did not need oxygen support. Moreover, every third child had a lesion of the gastrointestinal tract in the form of vomiting and diarrhea.

The exception was 1 child in whom the disease was characterized by prolonged (29 days) high febrile fever, absence of respiratory tract lesions and the presence of skin lesions in the form of generalized multiple vesicular rash.

The children received symptomatic treatment. When pneumonia was diagnosed, antibacterial drugs were included in the treatment complex.

Conclusion. Thus, COVID-19 was rarely diagnosed in children in Sumy in the first six months of the epidemic the clinical picture of the disease resembled an acute respiratory infection with a predominant lesion of the upper respiratory tract, although every third child was diagnosed with lesions of the gastrointestinal mucosa.

E-mail for correspondence: ringbring15@gmail.com

FEATURES OF FAMILY TUBERCULOSIS

Symonenko I.

Research advisor: prof. Duzhyi I.

*Department of Surgery, Traumatology, Orthopedics and Phthisiology,
Medical Institute, Sumy State University, Ukraine.*

Introduction. The prevalence of tuberculosis continues to grow at stable numbers, practically not changing. However, the incidence of a child's illness from 0 to 14 years of age grew by 1.1 % in Ukraine and by 15.3 % in Sumy region. This is threatening. If tuberculosis is an infectious disease, the presence of contact with a patient with tuberculosis of any localization, especially pulmonary, has a great epidemiological importance, especially at a child's illness. In nowadays of the current pandemic due to the COVID-19 virus, which like tuberculosis affects people with impaired immunity, it's important to study epidemiological risks. What to expect from such a "duet" is difficult to predict in advance, but possible. This determines the urgency of the problem.

Aim. To highlight one of the parts of the problem, which in our opinion is very important, specifically, to study the impact of some epidemiological factors on the incidence of tuberculosis in our area.

Materials and methods. We retrospectively analyzed the dynamics of family tuberculosis for 2006–2011.

Results. It was established that in families primarily ill for tuberculosis were 86 individuals. Among them, male patients – 66 (76.7 %), female – 20 (23.3 %). Among them there were 25 inhabitants of the city (29.1 %), 61 inhabitants of the village (70.9%). At the same time, it was found that unemployed persons among the sources of tuberculosis were – 29 (33.7 %) drinkers – 23 (26.7 %), smokers – 19 (22.1 %), former prisoners – 4 (4.7%). The total number of sources of infection of this type was – 75 (87.3 %). The patients who worked were only 18 (20.9 %). It is known, that these epidemiological factors are risk factors for the development of tuberculosis in general, and contact - and in particular. The number of people who were infected and fell ill for tuberculosis as a result of the contact with these sources of infection, was in the same number – 86 (100 %). There were 43 (50.0 %) persons among sources of disease, who didn't want to take a treatment, so these persons, being in contact with their relatives at home, not merely were not actively treated, but also did not follow the basic rules of sanitation and hygiene, so that became the cause of infection and disease of contactors.

The answer to this question is found in the number of contactors who fell ill – 86 (100 %). That is, if we cured all patients with sources of tuberculosis infection, the total number of patients with tuberculosis did not decrease.

Conclusion. Thus, if the sources of infection during the treatment period were hospitalized and wouldn't remain at home without treatment, some, and possibly a significant number of contactors could avoid massive infection and disease.

E-mail for correspondence: irina_simonenko@i.ua

ANALYSIS OF SURGICAL TREATMENT OF CEPHALOHEMATES IN SUMY REGION

Tsyndrenko O.O., Pokhmura V.V., Priadka M.Y.

Research advisor: Kmyta O.P., PhD

*Department of Neurosurgery and Neurology with Courses of Psychiatry, Narcology,
Medical Psychology, Occupational Diseases
Medical Institute, Sumy State University, Ukraine.*

Introduction. Cephalohematoma is the most common birth injury of the scalp of newborns and is diagnosed in 0.2-0.3% of children, which in most cases encourages their surgical removal.

Aim. Of the work. Analyze the percentage of localization of the cephalohematoma.

Materials and object of research. Medical histories of 34 newborns were retrospectively analyzed. These newborns were hospitalized in the neurosurgical department of Sumy Regional Clinical Hospital in 2018-2019 with cephalohematomas that needed to be surgically removed, namely by puncture. All newborns underwent neurosonography with dynamic observation to exclude related pathology.

Results. According to our results, the most common site of cephalohematoma is the parietal area. Cephalohematoma of the parietal area found in 33 newborns (97%), on the right was observed in 19 newborns (55.9%), parietal area on the left - in 11 (32.3%), frontal area on the right – In 1 (2.9%), parietal areas with on both sides – in 3 (8.82%) newborns. Cephalohematomas of the temporal and occipital areas were not observed. The minimum volume of cephalohematoma that required removal was 5 ml, the average volume was 14 ml, and the maximum was 32 ml.

Conclusions. Based on the analysis of the statistical study, it can be concluded that neonatal cephalohematoma was more often localized in the parietal area, and the average volume that required surgical removal was 14 ml.

E-mail for correspondence: tsyndrenko777@gmail.com

RISK FACTORS FOR THE DEVELOPMENT OF ACUTE POISONING IN CHILDREN AT THE PRESENT STAGE

Yanovska L., Rudenko V., Romaniuk O.

Department of Pediatrics, Medical Institute, Sumy State University, Ukraine.

Introduction. The work was performed at Sumy State University, Medical Institute at the Department of Pediatrics 243 children with acute poisonings, aged 0 to 18, were treated at the Sumy City Children's Clinical Hospital (SCCCH) for the period from 2010 to 2019.

Methods. In order to study the most important risk factors for the development of acute poisoning in children at the present stage, 243 case histories with acute poisoning treated in SCCCH were analyzed.

Results. The frequency of acute poisoning in children also depended on age. At the same time, there are 2 groups of children who are most prone to poisoning: before preschool (1 - 3 years) 107 (45.7%) and senior school age (12 - 18 years) 81 (34.6%). Each age period is characterized by its own type of poison. The period of infancy and infancy (from 0 to 1 year) has no definite dominant substance, among them there are those that occur in everyday life and due to carelessness, negligence of parents, or for other reasons fell into the hands of the baby. In pre-school age (from 1 to 3 years) the dominant substance of poisoning is drugs. Preschool age (from 4 to 6 years): the predominance of drug poisonings was observed only in 2012 - 7 (87.5%) poisonings, while another type of poison was reported in 1 (12.5%) case. 2014 was not marked by such a characteristic, this time the type of poison was almost compared to 6 (54.5%) drug and 5 (45.5%) poisoning by another substance. In 2016, the types of poisons were compared and amounted to 3 (50%) cases of each of them. Early school age (7 to 11 years): mostly poisoning by an unknown substance - one case in 2011 and 2014 and 3 cases in 2016. Senior school age (from 12 to 18 years). At this age, the most common poisoning by alcohol surrogates was 18 (38%), the drug was in second place 15 (31%). The reason for the latter is not accidental, as in preschool age, but intentional. A significant share is occupied by poisoning by an unknown substance and drugs 15 (31%).

Conclusions. The frequency of acute poisoning is influenced by age: more often ill in preschool and high school age.

During the period from 2010 to 2019, there was a tendency to increase the number of acute poisonings.

Drug poisoning is more common.

Studies have shown that at any age it is possible for parents to give their children the wrong medication or the wrong dosage (5 cases of naftizin solution), regardless of age or individual sensitivity.

E-mail for correspondence: oksana.pedia@gmail.com

COMPARATIVE CHARACTERISTICS OF PREPARATIONS FOR SEDATION IN SPINAL ANESTHESIA.

Yusupova A.

Research advisor: Redko S.I.

*Department of Emergency Medical Care and Disaster Medicine,
Medical Institute, Sumy State University, Ukraine.*

Introduction. Adequate sedation during spinal anesthesia relieves the “presence” effect, reduces stress reactions and discomfort, protects the patient during surgery and improves prognosis. Requirements for modern sedative drugs are: a sufficient level of sedation, quick awakening, lack of respiratory depression.

Aim. To study the advantages and disadvantages of various methods of sedation during surgical procedures performed with the use of spinal anesthesia.

Materials and methods. The study involved 36 patients (22 men, 14 women), who underwent cystoscopic operations in the urology department of the 1st Sumy clinical hospital. The patients were divided into three groups. Group 1 - sedation with dexdor 0.5 mcg / kg / h, group 2 - sedation with diprivan 3-4 mg / kg / h; group 3 - sedation with sodium thiopental 1–2.5 mg / kg / h (n = 12 patients in each group). Sedation was completed 5-10 minutes before the end of the surgery. The level of sedation was assessed using the RAMSEY scale at 15 minutes from the start of sedation and at the end of the operation. The rate of post-anesthetic recovery at the 15th and 30th minutes after the end of the surgical treatment was assessed using the Bidway test.

Results. 15 minutes after the initiation of sedation, the level of sedation according to the RAMSEY scale in group 1 was distributed as follows: 3 points - 7 patients (60%), 4 points - 3 (30%), 2 points - 2 (10%). In group 2: 3 points - 9 (80%), 4 points - 3 (20%). In group 3, the sedation level was -3 points-3 patients (25%), 4 points-6 (45%), 5 points -3 (30%). Disappearance of postoperative sleepiness and restoration of orientation on the Bidway scale in group 1 15 minutes after the end of the operation, the average was 0.19 ± 0.1 points in group 2 - 0.5 ± 0.16 , in group 3 - 0.78 ± 0.16 . The findings indicate a slower recovery with diprivan compared with dexdor.

Conclusions. Dexdor and diprivan are the most optimal drugs for sedation in a spinal block. Thiopental sodium causes deeper anesthesia with the threat of respiratory depression and prolonged awakening.

E-mail for correspondence: ms.aziza.yusupova@gmail.com

**ANALYSIS OF THE STATE OF THE IMMUNE STATUS IN CHILDREN WITH
ACUTE OBSTRUCTIVE BRONCHITIS ON BACKGROUND OF
THYMOMEGALY**

Yusupova A., Kondratska N.

Research advisors: Plakhuta V., Shkolna I.

Department of Pediatrics, Medical Institute, Sumy State University, Ukraine.

Introduction. The problem of acute obstructive bronchitis is one of the most pressing in pediatrics, which is associated with high morbidity, severe course, frequent complications, transition to recurrent form and bronchial asthma, and even fatal consequences. Various disorders are registered in the immune status of children with obstructive bronchitis. The presence of immunodeficiency in children with obstructive bronchitis is sometimes associated with thymic dysfunction, especially thymomegaly.

Aim. Was to study the state of the cellular link of immunity in young children with acute obstructive bronchitis against the background of thymomegaly.

Materials and methods. We examined 86 children (1-3 years old) with acute obstructive bronchitis. The content of CD3 +, CD4 +, CD8 +, CD16 +, CD21 + was determined by immunofluorescence with monoclonal antibodies in the blood serum.

Results. We found a significant decrease of the concentration of CD3 +, CD4 + and CD8+ decreased and an increase of the level of CD16 + and CD21 +, ($p < 0.01$) in children with obstructive bronchitis and thymomegaly compared with healthy children.

Conclusion. It was found that the change in the parameters of the cellular component of immunity in the presence of concomitant thymomegaly was characterized by a significant decrease of content of CD3 +, CD4 +, CD8 + and an increase in B-lymphocyte subpopulations.

E-mail for correspondence: v.plakhuta@med.sumdu.edu.ua

BIOMATERIALS FOR MEDICINE

WETTABILITY AND ROUGHNESS PROFILE COATINGS OF MAGNESIUM OBTAINED BY PEO IN DIFFERENT SOLUTIONS

Dryhval B., Dudko J.

*Research advisor: Oleksandr Oleshko, Yevheniia Husak
Biomedical Research Centre, Sumy State University, Ukraine.*

Introduction. Magnesium (Mg) is the third generation material (bioactive, biodegradable, and bio-tolerant) for tissue engineering. As an active metal, it displays uncontrolled corrosion and degradation rate in the body fluid. Therefore, it requires additional treatment. The plasma electrolytic oxidation (PEO) modification can solve this issue. Obtained oxide coating can change the surface's physical and topographical features, such as roughness, porosity, wettability. New surface properties of the implant can positively affect tissue-to-implant interaction.

Aim. To examine the surface morphology of the PEO treated magnesium samples depending on the addition of different types of electrolyte solutions and modes.

Materials and methods. Polished magnesium samples (1sm×1sm×1sm) were ultrasonically cleaned in acetone. The anodic oxidation was provided under an impulse current density of 0.1 A cm⁻² and up to the final voltage for 10 min. Four types of electrolytes and different modes were used:

Sol1 Na₂SiO₃ 10 g/L, NH₄F 5g/L and NaOH 5 g/L at 300V, 350V;

Sol2 Na₂SiO₃ 10 g/L, NH₄F 5g/L and Ca(OH)₂ 5 g/L at 250V, 300V;

Sol3 NaOH 5 g/l, Na₂HPO₄ 10 g/l at 250V, 300V;

Sol4 NaOH 10 g/l, Na₂HPO₄ 10 g/l at 250V, 300V.

Contact angle (CA) measurements were examined using a video-based optical contact angle measuring instrument (OCA 15 EC, Series GM-10-473 V-5.0, Data Physics, Filderstadt, Germany). Surface roughness values (Ra, μm) were obtained using a surface roughness tester (SurfTest SJ-301, Mitutoyo, Kawasaki, Kanagawa, Japan).

Results. The coatings obtained in silicate solutions showed very favorable wetting properties. Especially samples Sol2 have absolute wettability at 300V. Phosphate solutions caused hydrophobic coatings. The CA correlated with an increase in the concentration of NaOH in the electrolyte and finally reached 109°.

The values of the roughness profile were high for alkali silicate solution (3.84±0.35 μm and 4.20±0.31 μm at 300V and 350V), whereas the addition of Ca(OH)₂ decreased Ra to 1.67±0.08 μm. The roughness profile of phosphate coating was within 0.32±0.02 μm to 2.88±0.30 μm.

Conclusion. According to the results, alkali silicate coating showed hydrophilic properties and a rougher profile that is more suitable for in-vitro investigation.

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E-mail for correspondence: b.dryhval@med.sumdu.edu.ua

DEVELOPMENT OF CRYOTECHNOLOGIES FOR OBTAINING PLACENTAL CELLS AS BIOMATERIAL FOR EXPERIMENTAL MEDICINE

*Prokopiuk O.S.¹, Shevchenko M.V.¹, Prokopiuk V.Yu.¹,
Musatova I.B.¹, Tertyshnyk D.Yu.².*

1 – Institute for Problems of Cryobiology and Cryomedicine of the National Academy of Sciences of Ukraine.

2 – Kharkiv National Medical University of the Ministry of Health of Ukraine.

Introduction. The high clinical efficacy of cryopreserved placental derivatives in the treatment of certain diseases necessitates further preclinical studies to expand the indications for their use, which requires the availability of cryopreserved placental biomaterial.

Aim. To study of cryoprotective effect of penetrating and non-penetrating cryoprotectants relative to placental cells, as a component of cryotechnology for obtaining placental biomaterial for experimental medicine.

Materials and methods. The study was performed on the placentas of Wistar rats and BALB/c mice, according to current bioethical standards. Cells from the placenta were obtained by the method of explants and enzymatic disaggregation using trypsin with EDTA or collagenase. The cells were cryopreserved in the culture medium with the addition of cryoprotectants: DMSO, propanediol, sucrose, ethylene glycol. Pharmacopoeial plasma substitutes were used as alternative cryoprotective media: polyglucin, neogemodez stabizol, rheosorbilact, which include substances with cryoprotective properties. Placental cells (PC) were frozen according to a two-stage program, stored in liquid nitrogen, thawed in a water bath at 37°C.

The morphological and functional parameters of PC were evaluated. The number of cells was counted in a hemocytometer using trypan blue and neutral red staining. Cell viability was assessed by vital staining, adhesion ability, and monolayer formation in culture. The metabolic activity of PC was determined using the MTT test, test for the restoration of resazurin, the activity of production of lactate dehydrogenase, alkaline phosphatase, and absorption of glucose from the nutrient medium.

Results. Typical changes in PC are identified at the stages of cryopreservation, in accordance with the action of various cryoprotective media. The results of the study suggest that the most effective as cryoprotectants for PC are DMSO, propanediol and ethylene glycol. It is determined that the development of non-toxic cryoprotective media for PC, considering GMP standards for clinical use, is promising when using propanediol.

Conclusion. The study affords ground for development of theoretical base and practical recommendations on protocols for cryopreservation of placental cells and their banking, for both research purposes and use in the field of experimental medicine.

E-mail for correspondence: mariia_shevchenko1981@ukr.net

ANTIMICROBIAL ACTIVITY OF ELECTROSPUN CHITOSAN NANOFIBROUS MEMBRANES WITH DICHLOROMETHANE (DMC) AND TRIFLUOROACETIC ACID (TFA) AS SOLVENTS

SavchenkoA., Varava J.

Research advisor: Korniienko V.

Biomedical Research Centre, Sumy State University, Ukraine.

Introduction. Chitosan is a biocompatible and biodegradable polysaccharide with antimicrobial effect. Electrospun nanofibrous materials based on chitosan are an attractive material for use in medical applications. Trifluoroacetic acid (TEA) and dichloromethane (DCM) are the most suitable solvents for chitosan solution making. Nevertheless, there is still little information on how these solvents and their ratio influence chitosan nanofibers' antibacterial properties.

Aim. To evaluate the antimicrobial activity of electrospun chitosan nanofibrous membranes with dichloromethane (DMC) and trifluoroacetic acid (TFA) solvents.

Materials and methods. Chitosan solution (3.5 %) was prepared by dissolving chitosan (Ch) powder in different ratios (7:3 and 9:1) of the TFA/DCM solution.

Ch-TFA/DCM membranes' antibacterial activity was assessed against *Staphylococcus aureus* (Gram-positive bacteria) and *Escherichia coli* (Gram-negative bacteria). The samples were incubated with bacterial suspension in a 105 CFU/ml concentration for 2, 4, 6 and 8 h. Then, 20 μ L aliquots were incubated on agar plates at 37°C for 24 h. The colonies were counted in CFU/mL. The untreated bacterial suspension (105 CFU/ml) was used as a control. The antibacterial effectiveness was assessed, calculating the antibacterial reduction rate (R) using the following equation (1):

$$R = (C-T) / C \times 100 (1);$$

where C and T are the amounts of surviving bacteria (CFU/mL) in the controls and tested samples, respectively.

Results. The bacteriological survey indicates that Ch-TFA/DCM 7:3 and Ch-TFA/DCM 9:1 samples possess more vital antibacterial ability against *E. coli* than against *S. aureus* after 2 h incubation, whereas at 4 h time point of assay *S. aureus* was more sensitive to the antibacterial effect of both samples. Compared to Ch-TFA/DCM 7:3 membranes, Ch-TFA/DCM 9:1 specimens showed inhibited growth of bacteria cells after 4 and 6 h of co-cultivation with *E. coli* ($p < 0.001$).

Conclusions. 1. Ch-TFA/DCM 9:1 membranes revealed better time-dependent antibacterial properties than Ch-TFA/DCM 7:3.

2. The ratio of solvents in chitosan solutions affects the samples' antibacterial properties on gram-negative and gram-positive bacteria in different ways.

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E-mail for correspondence: antonsvchnk@gmail.com

**ANTI-STAPHYLOCOCCUS AUREUS ACTIVITY OF
[1,2,3]TRIAZINETRIONES OF 9,10-ANTHRACENEDIONE**

Stasevych M.¹, Zvarych V.¹, Grecka K.², Szweda P.²

Research advisor: prof. Novikov V.P.¹, prof. Milewski S.²

1 – Department of Technology of Biologically Active Substances,
Pharmacy and Biotechnology, Lviv Polytechnic National University, Ukraine.

2 – Department of Pharmaceutical Technology and Biochemistry,
Gdańsk University of Technology, Poland.

Introduction. *Staphylococcus aureus* can cause a wide range of diseases from slight skin infections to serious neuroinfections and is still one of the most common causes of hospital-acquired infections. The emergence of antibiotic-resistant *S. aureus* strains, such as methicillin-resistant *S. aureus* (MRSA) is a global problem of clinical medicine.

Aim. The study of antibacterial effect of [1,2,3]triazinetrones derivatives of 9,10-anthracenedione for identifying new potential anti-*staphylococcus aureus* agents.

Materials and methods. The anti-staphylococcal activity of [1,2,3]triazinetrones derivatives of 9,10-anthracenedione was investigated with two-fold broth microdilution method according to the CLSI (Clinical Laboratory Standard Institute) methodology. In the preliminary step of the research the MIC (Minimum Inhibitory Concentration) values of all agents against three reference strains: *S. aureus* ATCC 25923, *S. aureus* ATCC 29213, *S. epidermidis* ATCC were determined. Subsequently the anti-staphylococcal potential of most promising agents was evaluated against eight MSSA and four MRSA clinical isolates derived from patients with different infections. For comparison of the activity of most efficient [1,2,3]triazinetrones derivatives of 9,10-anthracenedione with classical antibacterial antibiotics the MIC values of ampicillin, oxacillin, gentamicin, fusidic acid, levofloxacin, linezolid and daptomycin were also determined.

Results. The outcomes of the study revealed that some of the seventeen synthesized [1,2,3]triazinetrone 9,10-anthracenedione derivatives exhibit high efficiency in growth inhibition of *S. aureus* ATCC 25923, *S. aureus* ATCC 29213 and *S. epidermidis* ATCC12228 with MIC values of 1 µg/mL and lower. Subsequent evaluation of activity of most efficient agents against methicillin-resistant (MRSA) and methicillin-susceptible (MSSA) *S. aureus* clinical isolates confirmed their high anti-staphylococcal potential – comparable to the activity of classical antibiotics.

Conclusion. New promising anti-*staphylococcus aureus* agents with MIC=0.125–0.5 µg/mL against strains of *S. aureus* ATCC 25923, *S. aureus* ATCC 29213 and *S. epidermidis* ATCC12228 and against MRSA and MSSA *S. aureus* clinical isolates were identified among synthesized [1,2,3]triazinetrones derivatives of 9,10-anthracenedione. Obtained results is the base for further in-depth investigations in the search of effective agents with anti-*staphylococcus* activity.

E-mail for correspondence: maryna.v.stasevych@gmail.com

SWELLING CAPACITY OF MICROSPHERES BASED ON HYDROXYAPATITE AND HYDROXYAPATITE - ALGINATE

Yanko I.

Research advisor: Yanovska Anna, PhD, Theoretical and Applied Chemistry Department, Husak Yevheniia, Biomedical Research Centre, Sumy State University.

Introduction. Using sheets and nails for osteosynthesis can cause a great variety of clinical complications. Applying polymeric degradable biomaterials will not require a secondary surgical procedure for implant removal. Thus, bone tissue engineering with polymeric biomaterial can become an efficient alternative approach to solve this problem. The swelling capacity of calcium phosphate based materials affects their mechanical properties such as degradability and dimensional stability. The addition of sodium alginate to calcium phosphate materials and variation in drying conditions changes the swelling capacity of materials. The increase of water sorption ability allows water to penetrate into the matrix enabling water-soluble additives.

Aim. To study the water absorption rate of Hydroxyapatite (HA) and in combination with biopolymer sodium alginate for further cell culture assay.

Materials and methods. HA was synthesized by three following ways:

- 1) $10 \text{ Ca(OH)}_2 + 6 \text{ H}_3\text{PO}_4 \rightarrow \text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2 + 18 \text{ H}_2\text{O}$
- 2) $10 \text{ Ca(NO}_3)_2 \cdot 4 \text{ H}_2\text{O} + 6 (\text{NH}_4)_2\text{HPO}_4 + 8 \text{ NH}_3 \cdot \text{H}_2\text{O} \rightarrow \text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2 + 20 \text{ NH}_4\text{NO}_3 + 6 \text{ H}_2\text{O}$
- 3) $10 \text{ CaCl}_2 + 6 \text{ Na}_2\text{HPO}_4 + 8 \text{ NaOH} \rightarrow \text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2 + 20 \text{ NaCl} + 6 \text{ H}_2\text{O}$

Then HA was washed more than three times until neutral pH was obtained. Later, prepared HA slurry was mixed with 3% Sodium Alginate (Alg) in relation to 3:1. The obtained viscous solution was added dropwise into 0.1 M CaCl_2 solution for obtaining of HA-Alg granules. It is possible due to the ability of Sodium Alginate to form complexes with divalent ions.

Obtained microspheres were dried at 80°C for 12 h, sample 3 was sintered at 800°C and freeze-dried for comparison. For studying the water absorption rate, all test samples were immersed in 2 mL of the SBF solution (pH = 7.4, 37 °C) for 1 day. Then the absorbed liquid was removed and measured.

Results. All obtained granules showed an absorption rate from 1.78 mL to 2.28 mL of SBF per 0.1 g of samples. The sorption coefficients for heated samples (2.28 mL per 0.1 g) are higher than that for the composite obtained without temperature treatment.

Conclusion. Heating treatment could increase the absorption properties of the HA and HA-Alg materials. And these spheres can be used for cell culture investigation.

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E-mail for correspondence: yanko.ilya.brc@gmail.com

POST-GRADUATE STUDENTS AND YOUNG SCIENTISTS SECTION

PECULIARITIES OF CHANGE IN THE BODYWEIGHT OF RATS UNDER CONDITIONS OF EXPERIMENTAL ALLOXAN HYPERGLYCEMIA IN THE AGE ASPECT

Abraham Dhanaraj, Abhishek Singh

Research advisor : Teslyk T.P.

Department of Morphology, Medical Institute, Sumy State University, Ukraine.

Introduction. Diabetes has been and remains a global threat in these modern days, leading to disability, resulting in lifelong health complications or even to the extent of death. Interest in this pathology does not fade and has been encouraging scientists to seek new ways to diagnose and treat diabetes and its complications. It is well acknowledged in the endocrinology field, that diabetes is a manifestation of "failure" of the endocrine system, which is manifested by hyperglycemia.

Aim. To detect and investigate the changes of bodyweight in the rats of different age groups under the hyperglycemia experiment.

Materials and methods. Studies were performed on 36 white laboratory rats of both genders. The experimental animals were divided into two sections: Experimental and Intact. Each of the sections are divided into three groups depending on the age of the rats: young (2 months old), mature (8 months old) and old (20 months old). For experimental simulations of hyperglycemia, alloxan monohydrate was used at a rate of 20 mg per 100 g of rat bodyweight. The weight of the animal was determined using electronic scales KERN 442-432N (Germany). The level of glucose in the venous blood of rats was determined by glucose oxidase method using sets of reagents "Philisit" (Ukraine).

Results. After the introduction of alloxan at the end of the first day, animals of different age groups had developed polydipsia, polyphagia and polyuria. The level of glucose in the blood of experimental young animals was 19.3 ± 0.2 mmol/l; in mature - 14.8 ± 0.19 mmol/l; in the elderly - 22.7 ± 0.3 mmol/l. In animals of the intact group, the blood glucose level was within normal limits, namely: 6.3 ± 0.2 mmol/l, 3.5 ± 0.1 mmol/l, 6.5 ± 0.24 mmol/l, respectively. The bodyweight of Intact rats aged 2 months was 101.5 ± 0.87 g, in animals of the Experimental sections of the same group - 91.3 ± 0.47 g. The bodyweight of Intact rats aged 8 months was 193.2 ± 0.13 g, Experimental - 146.6 ± 0.3 g. Body weight in Intact animals of old age was 220.2 ± 0.19 g, in Experimental rats of the appropriate age - 178.03 ± 1.27 g. As a percentage of weight loss on the background of chronic hyperglycemia in young animals occurred by 11.2% ($p < 0.05$), in mature animals by 31.8% ($p < 0.05$), in elderly animals by 23.6% ($p < 0, 05$).

Conclusions. As a result, the development of alloxan hyperglycemia in young and old animals is been concluded severe hyperglycemia; in mature rats – the results were moderate. The most increased in deficiency of body weight had occurred in rats aged 8 months, the least recorded was in rats aged 2 months, which can be explained by enhanced compensatory and adaptive properties of young animals.

THE DISEASE SPREAD DYNAMICS OF PNEUMONIA AMONG CHILDREN IN SUMY AND MUNICIPALITY

Andrienko S.M., Rashevskaya J.O., Yanovskaya L.

Research advisor: prof. Smiiian O.I.

Department of Pediatrics, Medical Institute, Sumy State University, Ukraine.

Introduction. Child health is a qualitative indicator of the general social welfare as well as a subtle marker of all social and ecological problems. Respiratory pathologies determine, in no small extent, the child disease incidence and infant mortality rates. Pneumonia ranks third among child mortality causes in Ukraine. Respiratory diseases remain the most widespread pathologies in morbidity patterns of child mortality.

Aim. To conduct a retrospective study of incidents of illness and spread patterns of pneumonia among children of different age groups according to statistic data from 2018 and 2019 in Sumy and municipality.

Material and methods. The analysis of disease spread patterns among children of different age groups has been carried out; the aspects of dynamics of respiratory pathologies among other age groups and city population in comparison to the ones of child village population in 2018 and 2019 have been discovered.

Results. Disease spread patterns are one of the critical indicators of public health condition among adults and children. The analysis mentioned above showed that in 2018 and 2019 there had been a tendency of decreased incidence rates and disease spread rates of pneumonia among children aged 0-14 from 12.21% to 11.18%. There has also been a decrease in both of these indicators among children aged 7-17 from 9.4% to 8.91%. The tendency of decreased indicators (from 11.33% to 10.41%;) among children aged 0-17 is evident, as well. However, there has been an increase in indicators from 4.9% to 5.32% in 2018 and 2019 among children aged 0-17 living in villages. On the whole, the highest percentage of disease incidence is observed among children aged 0-14.

Conclusions. The analysis of disease spread patterns of pneumonia among children city population has shown a decrease of 11.8%, 8.91% and 10.41% respectively in 2018 and 2019. The older aged groups have shown lower incidence and spread rates of respiratory diseases. The highest percentage is observed among children aged 0-14; in the last two years there has been a tendency of decrease of these two indicators by 11.18 %. However, a slight increase among children living in a village has been observed which could be associated with worse on-site assistance and late referral to medical institutions. These incidence rates of pulmonary pathologies among children should become a vector for family practitioners and paediatricians directing them towards carrying out more effective preventive measures of ARVI and successive treatment, and prognostication of relapse and complication risks.

E-mail for correspondence: andrienkos1986@gmail.com

HISTOLOGICAL FEATURES OF TESTICULAR SEMINOMA

Brusovitsov D., Lyndin M., Sikora V., Hyriavenko N.

Research advisor: prof. A. Romaniuk

Department of Pathology, Medical Institute, Sumy State University, Ukraine.

Introduction. Tumors occupy one of the leading positions among the diseases, and annually its indicators continue growing. Testicular neoplasias are not an exemption. This pathology occurs in 3 % of young men of working age (15-45 years old) among all malignant neoplasms that worsen the reproductive health indicators. It underlines the importance of the detailed study of the testicle tumor features that will contribute to therapy individualization and increase the patient's overall survival rate.

Aim. To study the histological features of testicular seminoma.

Materials and methods. The samples of testicular tumors (testicular seminoma), taken from the Pathology Department of Sumy State University and Sumy regional clinical oncology dispensary, were analyzed.

Results. The histological examination allowed identifying the main histological criteria for the testicular seminoma. They are following: the size is in the range of 15-22 μm , tumor cells are round shaped with pale cytoplasm, nuclei are monomorphic with an increased number of atypical mitosis, tumors have growth variations (solid, palisade, tubular) with the invasion into the blood vessels, tunica albuginea, and spermatic cord. The layers of swollen connective tissue separate the tumor cells. Diffuse and/or focal inflammatory lymphocytic infiltration and foci of necrosis are typically revealed between neoplastic cells.

Conclusion. Testicular seminoma has specific histological features depending on the degree of malignancy. They are essential for correct differential diagnosis among the other testicular tumors.

E-mail for correspondence: unforgiven19071995@gmail.com

ASSOCIATION STUDY BETWEEN *BGLAP* RS1800247 SINGLE NUCLEOTIDE POLYMORPHISM AND TYPE 2 DIABETES MELLITUS DEVELOPMENT AMONG UKRAINIAN NON-SMOKERS

Chumachenko Ya.D., Harbuzova Ye.A.

Research advisor: prof. Ataman O.V.

*Department of physiology, pathophysiology and medical biology,
Medical Institute, Sumy State University, Ukraine.*

Introduction. Type 2 diabetes mellitus (T2DM) belongs to the diseases with hereditary predisposition, so both genetic and environmental factors contribute to its development. Nowadays it is known about bone-derived regulation of systemic glucose metabolism, which performs decarboxylated form of osteocalcin (OCN). Thus, the thymine (T) to cytosine (C) transition in OCN gene, *BGLAP* (rs1800247), could be associated with T2DM. The study was a part of the scientific project “Molecular-genetic and morphological features of lower limb tissues regeneration under conditions of chronic hyperglycemia” (0117U003926).

Aim. To study the association between *BGLAP* rs1800247-polymorphic variant and T2DM development among Ukrainian non-smokers.

Materials and methods. The study enrolled 323 Ukrainian non-smokers: 103 patients with diagnosed T2DM and 220 control subjects without any carbohydrate metabolism disorders. The main method of the research was polymerase chain reaction-restriction fragment length polymorphism analysis (PCR-RFLP). All statistical calculations were performed using SPSS 25.0 software. The association analysis was carried out within dominant, recessive, over-dominant and additive models of inheritance. $P < 0.05$ was accepted as statistically significant.

Results. It was found the following distribution of genotypes: TT – 68.9%, TC – 24.3%, CC – 6.8% for T2DM group and TT – 57.7%, TC – 37.3%, CC – 5.0%. It was established the absence of statistically significant differences between compared groups ($P = 0.066$) according to the χ^2 -test. Using binary logistic regression it was revealed that CT genotype had the reduced risk of T2DM development both in over-dominant ($P_c = 0.022$; $OR_c = 0.539$; 95 % CI = 0.318-0.914) and additive ($P_c = 0.026$; $OR_c = 0.545$; 95 % CI = 0.32-0.93) models of inheritance. Moreover, the statistical significance was preserved after the adjustment for age, sex, BMI and the presence of arterial hypertension in over-dominant ($P_a = 0.016$; $OR_a = 0.511$; 95 % CI = 0.296-0.882) as well as additive ($P_a = 0.024$; $OR_a = 0.528$; 95 % CI = 0.303-0.919) regression models.

Conclusion. The rs1800247-polymorphic locus of *BGLAP* is associated with T2DM emergence. It was found the protective effect of rs1800247CT-genotype against T2DM development among Ukrainian non-smokers.

E-mail for correspondence: dr.grbzv@gmail.com

**CELL POPULATION CHANGE IN HIPPOCAMPAL CA1- AND CA4-REGION
AFTER ELECTRICAL STIMULATION OF PARTIAL SEIZURES IN
EXPERIMENTAL MODEL**

Derevyanko M.¹, Siamionik I.¹, Melik-Kasumov T.¹

Research advisors: Rjabceva S.¹, Terekhov V.²

*1 – Centre of electron and light microscopy, Institute of physiology of
National academy of science of Belarus, Minsk, Belarus.*

*2 – Republican Research and Clinical Center of Neurology and Neurosurgery,
Minsk, Belarus.*

Introduction. Current theories of epilepsy pathophysiology stress neuronal dysfunction and damage as relevant factors of epileptogenesis. In animal kindling models was found that hippocampal cell in the CA1 were the most “sensitive” than neurons in the CA4 to chemical damage.

Aim. To analyze change of cell population in rat hippocampus CA1- and CA4-region after electrical stimulation (ES) in rat model of partial seizures.

Materials and methods. 15 adult Wistar rats (average weight 278 ± 1.5 g) were stimulated during 4-6 weeks. ES by the Medtronic Model 3625 Test Stimulator was started one week later after intracranial electrode implantation into right hemispheres. The ES parameters were: pulse rate – 120 pulses per second, pulse width – 800 mcsec, pulse amplitude – from 1.0 to 2.5 V. At the end of experiments, the rat brains were dissected out. After fixation in 10% formalin solution, the brain tissues were embedded in paraffin. The brains were analyzed counts of neurons and glial cells in the hippocampal CA1- and CA4-region of right hemispheres (bregma – 2.00mm). The Mann–Whitney test was used.

Results. In control group (without ES, n=10) the median of neuron count (NC) in the CA1 was 75.0 [72.0;84.0] and of glial cell count (GCC) – 4.0 [2.0;6.0]. In control group (without ES) the median of NC in the CA4 was 62.5 [51.5;69.0] and of GCC – 32.0 [26.0;38.0]. In second group after ES (n=15) the median of NC in the CA1 was 45.0 [37.0;48.0] and of GCC – 6.5 [3.0;10.0]. In stimulated group the median of NC in the CA4 was 37.0 [31.5;44.5] and of GCC – 27.0 [21.5;33.5]. Significant differences between groups were calculated: the neuron number in the CA1 and in the CA4 after ES was decreased (in 40% and 41%, respectively). The GCC was increased in the CA1 (in 38%) and was decreased in the CA4 (in 15%) of second group compare with control group.

Conclusion. After electrical stimulation of partial seizures we found different change of neurons count and glial cell number in CA1- and CA4- subfield of rat brain.

E-mail for correspondence: mari.derewianko@mail.ru

ANALYSIS OF THE PREVALENCE OF ALLERGIC RHINITIS IN CHILDREN OF SCHOOL AGE IN THE SUMY REGION DURING 2018-2019

Havrylenko A., Andrienko S., Rashevskaya J., Barma A.

Research advisor: prof. Smiiian O.I.

Department of Pediatrics, Medical Institute, Sumy State University, Ukraine.

Introduction. Allergic rhinitis (AR) is the most common respiratory allergic disease worldwide. Usually the symptoms of this disease debut before the age of 20, in about 40% of patients - before the age of 6. AR is the most common chronic condition in children aged 10-17. The results of large-scale research suggest that this problem should be taken seriously. AR is the cause of a significant reduction in the quality of life of patients. The importance of the problem of AR is due to its close connection with such diseases as bronchial asthma, acute and chronic rhinosinusitis, tonsil hypertrophy, allergic conjunctivitis.

Aim. To analyze the prevalence of AR in school-age children (7-17 years) in Sumy region during 2018-2019.

Materials and methods. A retrospective analysis of the prevalence of AR in children of school age in the Sumy region during 2018-2019.

Results. Such an important statistical indicator as the prevalence of AR, which reflects the state of health, among school-age children in Sumy region in 2017-2018 is at the average level in Ukraine. At the same time, after a retrospective study, we noted a general upward trend: the figure increased by 6.17% (from 551 to 585 cases). The prevalence has increased significantly in such areas as: Putivl district - by 117.95% (from 4.79 to 10.44 per 1000 children) and Okhtryka district - by 37.0% (from 8.46 to 11.59 by 1000 children).

The highest level of prevalence of AR for the studied period per 1000 children is observed in Yampil district (in 2018 - 15.09, in 2019 - 16.52 per 1000 children) and Buryn district (in 2018 - 14.30, in 2019 - 13.89 per 1,000 children). The studied indicator in the above-mentioned districts continues to grow, except for Buryn district, where the prevalence decreased by 2.88%.

Conclusion. In 2018-2019 there is an increase in the prevalence of AR - by 6.17% among school-age children in Sumy region. Putivl district is the leader in terms of growth of this indicator. Stably high prevalence remains in the Yampil district. The tendency to increase the prevalence indicates the urgency of developing preventive measures for AR among children, improving early diagnosis and the need for continuous statistical monitoring of key indicators.

E-mail for correspondence: dr.nania@gmail.com

THE ROLE OF PROLACTIN RECEPTOR EXPRESSION IN THE DEVELOPMENT OF BENIGN BREAST PATHOLOGY

*Kolomiets O.¹, Yazykov O.², Lukavenko I.², Andriushchenko V.²,
Romaniuk A.¹, Moskalenko R.¹*

1 – Department of Pathology

*2 – Department of Surgery, Traumatology, Orthopedics and Tuberculosis
Medical Institute, Sumy State University, Ukraine.*

Introduction. Today, hyperprolactinemia is considered as one of the main causes of breast pathology (BP) in women of reproductive age.

Aim. To investigate the relationship between the expression of prolactin receptors (PRL-R) and serum prolactin (PRL) in benign breast tumors and normal breast tissue.

Materials and methods. In the study involved 16 women with benign breast tumors (BBT) – fibroadenomas. The control was 16 samples of intact tissues of the same patients. All patients had serum PRL levels evaluated, and women divided into groups according to elevated serum PRL levels (8 women) and normal levels (8 women), and macroscopic, histological, and immunohistochemical postoperative studies were performed.

Statistical data processing was performed using Microsoft Excel 2010 with the application AtteStat 12.0: determination of the normality of the sample by the Shapiro-Wilk criterion, the Pearson correlation coefficient (r) and the reliability of the differences (p).

Results. The mean age of the women in the study was 27.9 ± 1.55 years, with an age range from 19 to 39 years. The average level of prolactin in the serum of the studied women corresponded to the value of 496.23 ± 79.9 IU / l, which exceeded the normal value of this hormone.

In the group of women with elevated serum PRL, a strong significant correlation was found ($p < 0.01$; $p = 0.92$) between PRL-R expression in BBT tissue and intact breast tissue in patients. There was a negative association of medium strength between age and PRL-R expression in BBT tissue and intact tissue ($p = -0.31$ and $p = -0.43$), respectively.

For patients with normal serum PRL levels, there is a strong positive significant association between PRL-R expression in BBT tissue and PRL levels ($p < 0.05$; $p = 0.8$).

Conclusions. The data obtained indicate that the increased level of expression of prolactin receptors in intact tissue is combined with a high level of expression of the same receptors in BBT tissue. There is a tendency to decrease the expression of prolactin receptors with age, which corresponds to age-related involutinal changes. A relationship was found between the expression of prolactin receptors in BBT and serum prolactin levels within the upper limits of norm.

E-mail for correspondence: o.kolomiets@med.sumdu.edu.ua

**LEUKOCYTE BLOOD FORMULA AND MORPHOFUNCTIONAL
PARAMETERS OF LYMPHOCYTES IN NONLINEAR LABORATORY RATS
UNDER THE INFLUENCE OF BIOLOGICALLY ACTIVE SUBSTANCES FROM
THE SALIVA OF HIRUDO VERBANA (CARENA, 1820)**

Kononenko D.V., Lytvynenko R.O.

Research advisor: PhD, senior lecturer, Lytvynenko R.O.

*Department of Physiology, Immunology and Biochemistry with the Course of Civil
Defense and Medicine, Faculty of Biology, Zaporizhzhia National University.*

Introduction. Against the growing side effects of pharmacotherapy, the medicinal leech (ML) began to be studied more effectively as a producer of natural biologically active substances (BAS). *H. verbana* is actively used for preventive and therapeutic purposes (D. Koeppen et al., 2020), but the molecular-cellular mechanisms of their action have not been fully studied yet.

Aim. To analyze changes in leukocyte blood formula and morphofunctional parameters of lymphocytes in old laboratory rats after hirudoinfluence.

Materials and methods. The study was performed on 14 white nonlinear male laboratory rats aged 20-24 months. The experimental animals (n=7) received hirudoinfluence 3 times with 1 ML at intervals of 2 days, other 7 animals were control. The count of leukocytes, leukocyte formula and cytomorphometric features of lymphocytes were analyzed in arteriovenous blood. Statistical processing was carried out using Mann-Whitney test.

Results. After hirudoinfluence in laboratory rats a slight decrease in leukocytes count was revealed, which is probably due to the deposition of immune cells at the site of leech bite. In absolute count of leukocyte formula were detected 2-fold decrease of eosinophils and 1.8 times decrease of neutrophils, in particular 1.9 times decrease of segmented neutrophils, but the number of segments in cells increased from 3.8 to 5.1. In relative count were detected 2-fold increase of banded neutrophils, 1.8 times increase of monocytes, 1.14 times increase of lymphocytes ($p < 0.05$). Simultaneously, the part of cells with a ring-shaped nucleus among banded neutrophils increase in 1.6 times ($p < 0.05$), which probably indicates the stimulation of granulocytogenesis. After hirudoinfluence revealed 1.6 times increase ($p < 0.05$) the part of small lymphocytes ($\leq 8.5 \mu\text{m}$), which are actively migrating postproliferative cells and 1.2 times decrease the part of medium-sized lymphocytes ($> 8.5 - < 11.0 \mu\text{m}$); revealed a tendency to 1.1 times reduce the part of large lymphocytes ($\geq 11.0 \mu\text{m}$). The surface area of circulating lymphocytes did not change, but the nucleus area decreased by 1.3 times and the cytoplasmic-nuclear ratio increased by 2.1 times ($p < 0.05$), which indicates the predominance part of small and medium lymphocytes in blood.

Conclusion. Revealed changes in leukocyte parameters of old rats after hirudoinfluence reflect the processes of their immune system restructuring in response to ML saliva BAS and probably indicates their immunomodulatory effect along with age-related changes.

E-mail for correspondence: r_litvinenko@ukr.net

MORPHOLOGICAL CHANGES IN TARGET ORGANS IN RATS AT EARLY STAGES OF DIABETES MELLITUS TYPE 2

Kovalchuk O.

Research advisor: Pedorenko K.

*Department of pathological anatomy, forensic medicine and law,
National Pirogov Memorial Medical University, Vinnytsya, Ukraine.*

Introduction. Diabetes mellitus (DM) is one of the most common diseases with a steady upward trend. According to the WHO, its frequency ranges from 1.5 - 4% of the total number of all diseases, significantly increasing in developed countries. DM has the main place not only in the structure of endocrine diseases but also diseases of non-endocrine nature (3rd place after cardiovascular and oncological pathology). In this case, almost 90% of patients with DM type 2.

Aim. To study the morphological changes in the tissues of the lungs, heart, liver and kidneys in experimental DM in rats, comparing our results with other studies and analyzing the data.

Materials and methods. To investigate the morphological changes of DM type 2, 20 rats were used in which for the 28 days DM type 2 was modeled. The micronutrients were studied on a morphometric complex of Olympus imaging CORP Model NoE-410DC7: 4VD56547931.

Results. There was a considerable weight loss (21.7%) in the group of rats with DM type 2 compared with the control group. We described that the mass of organs, such as the liver, kidneys and lungs loss the weight, as opposed the weight of the heart increased. In the liver steatosis was observed. Hepatocytes contained focal or generalized fat vacuoles, enlarged sinusoids and progressive loss of the general organ structure. Inflammatory changes were reported by lymphocytic infiltration, which was observed in 50% histological liver samples, fibrosis at 15%. In the lungs there was a thickening of interalveolar membranes, sclerosis of the walls of the vessels of the microcirculation, intraalveolar and alveolar edema. In the kidneys, the arteriolas afferens of glomeruli were first damaged. Also, there was an impression and arteriolas efferens with the development of "diabetic kidney". Observed diffuse glomerulosclerosis. Characteristic changes in the myocardium are an increase in the number of damaged cardiomyofibriles, while simultaneously increasing their proliferation. In the arteries there was a tenderness of intima, the mediums and the outer layers of the wall. Observed edema and diffuse moderate lymphocytic infiltration of the myocardium. There was deformation of cardiomyofibriles, disorganization of myofibrils, diffuse enlargement of connective tissue.

Conclusions. By studying biopsy material, it is possible to detect the transformation of DM type 2 at early, clinically negative stages by the way of authority tissues and provides timely treatment to reduce the proportion of hyperglycemia to the target organs.

E-mail for correspondence: lena.kovalchuk0303@gmail.com

LABORATORY EFFICACY OF TREATMENT OF ANEMIA OF CHRONIC INFLAMMATION IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

Kovchun A., Pustova A., Shevtsova K., Prystupa L.

Research advisor: Professor, MD L.N. Prystupa

Department of Internal Medicine, Medical Institute, Sumy State University, Ukraine.

Introduction. COPD has long been associated with polycythemia, however, an analysis of recent studies has shown that polycythemia occurs only in 6–10% of patients, while anemia in 17–27%. If there is a sufficient number of scientific studies on the frequency of anemia in COPD and its pathogenetic aspects, but there are practically no studies on the ways of its treatment.

Aims. To assess the laboratory effectiveness of the treatment of anemia of chronic disease (ACD) in patients with COPD.

Materials and methods. 52 COPD patients were included and randomized into 3 groups: 1st (n=20) – received 80 mg of Fe²⁺ 2 times per day per os (21 days), 2nd (n=20) – 100 mg of sucrose complex of iron hydroxide (III) iv 3 times per week (4 weeks), and 3rd (n=12) – 100 mg sucrose complex of iron hydroxide (III) iv and human recombinant erythropoietin 3,000 IU 3 times per week (4 weeks) sc. The hemoglobin (Hb), ferritin and hepcidin levels in the blood were evaluated before and after treatment (the 1-st and 36- days).

Results. The use of the sucrose complex of iron hydroxide (III) and EPO in the treatment of patients with COPD contributed to a decrease of the content of hepcidin (to 22.55 ± 2.64 ng/dl; $p < 0.001$) and ferritin (for men: to 351.17 ± 9.25 µg/l; $p < 0.001$ for women: up to 131.33 ± 7.76 µg/l; $p = 0.039$), which was not observed in patients receiving oral (hepcidin content after treatment: 27.56 ± 1.10 ng/dl; $p < 0.001$; ferritin for men – 409.38 ± 4.8 ; $p < 0.001$; for women – 185.57 ± 12.76 ; $p = 0.002$) or intravenous (hepcidin content after treatment: 27.45 ± 2.81 ng/dl; $p < 0.001$; ferritin for men – 399.42 ± 29.0 , $p < 0.001$; for women – 184.38 ± 5.70 ; $p = 0.001$) iron. Combination treatment contributed to an increase of the Hb content (for men: up to 123.85 ± 6.7 g/l, $p = 0.001$; for women: up to 125.66 ± 1.52 g/l, $p = 0.05$) compared with oral (increase of the Hb for men to 108.84 ± 2.11 g/l, $p < 0.001$; for women – to 109.42 ± 2.43 g/l, $p = 0.006$) and intravenous (increase of hemoglobin for men to 109.33 ± 4.86 g/l, $p < 0.001$; for women – up to 107.62 ± 2.19 g/l, $p = 0.002$) iron.

Conclusions. Combined treatment with the sucrose complex of iron hydroxide (III) iv and EPO sc led to a decrease of the content of hepcidin and ferritin, which contributed to the suppression of the chronic inflammatory process and an increase of the content of hemoglobin.

E-mail for correspondence: annakovchun@ukr.net

CLUSTERS OF FRACTAL DIMENSION OF THE HUMAN CEREBELLUM (MAGNETIC RESONANCE IMAGING STUDY)

Maryenko N.I.

*Research advisor: ass. prof. Stepanenko O.Yu.
Department of Histology, Cytology and Embryology,
Kharkiv National Medical University, Kharkiv, Ukraine.*

Introduction. In recent years, in morphology, fractal analysis is used as a morphometric method that allows to assess the degree of complexity of the organization of various biological structures. The cerebellum is a multifractal structure that has several clusters that correspond to different components of its tissue with different densities - white matter, granular and molecular layers of the cortex.

The aim of the study was to determine clusters of fractal dimension of various components of human cerebellar tissue to develop an algorithm for differential fractal analysis according to magnetic resonance imaging.

Materials and methods. Digital T2 weighted images of magnetic resonance imaging scans of 30 healthy patients were used in the study. A fractal analysis of white and gray matter of the cerebellum cortex was performed using the pixel dilation method in author's modification.

Results. The fractal dimension (FD) of cerebellar tissue for its components was determined. Three clusters of FD values corresponding to the main components of cerebellar tissue and average brightness values corresponding to them were determined: cerebellar white matter (70.684 ± 0.473), granular layer of cortex (84.263 ± 0.475), molecular layer of cortex (96.263 ± 0.449). The average fractal dimension for the brightness threshold 80 used for computer image segmentation (white matter) was $1,324 \pm 0,05$, for the brightness value 90 (white matter and the granular layer of the cortex) was $1,570 \pm 0,028$, for the value 100 (tissue of the cerebellum as a whole) was $1,694 \pm 0,01$. The average FD of the granular layer of the cortex (brightness range 81-90) was 1.367 ± 0.02 , the FD of the molecular layer of the cortex (range 91-100) was 1.350 ± 0.02 , the average FD of the cerebellar cortex as a whole (range 81-100) was 1.562 ± 0.018 .

Conclusion. The differential fractal analysis may be used as an additional diagnostic technique for the magnetic resonance imaging study. Three main clusters of the cerebellar tissue should be present. The values of the FD of the cerebellar white matter and cortex of the cerebellum may be used as criteria for diagnosing of the cerebellum using magnetic resonance imaging.

E-mail for correspondence: maryenko.n@gmail.com

EFFICIENCY OF EXPERIMENTAL CHRONIC PURULENT WOUNDS TREATMENT WITH SILVER NANOPARTICLES AND LOW-FREQUENCY ULTRASOUND

Myronov P.¹, Zahorodnya T.²

Research advisors: Bugaiov V, Holubnycha V.

1 – Department of Surgery, Traumatology, Orthopedics and Phthisiology,
Medical Institute, Sumy State University, Ukraine.

2 – Department of Electric Power Engineering, Sumy State University, Ukraine.

Introduction. The treatment of chronic purulent wounds is a serious challenge for modern surgery. More than 95% of microorganisms (MO) exist in the form of biofilms, which are very difficult to remove. The long-term persistence of pathogenic biofilms in wounds leads to the chronic wound process and an increase the wound healing period. The combination of chemical and physical methods for MO fighting can accelerate the healing process of chronic purulent wounds.

Aim. To estimate the effectiveness of chronic purulent wounds healing with the silver nanoparticles (AgNPs) and low-frequency ultrasound (US).

Materials and methods. We used 60 laboratory rats with simulated chronic purulent wound (1.0×1.5 cm), that were provoked for 10 days before the treatment by a mixture of planktonic and biofilm forms of *S. aureus*, *E. coli*, and *P. aeruginosa* (5×10⁹ CFU/ml of each strain). Low-frequency US (URSK 7N–22) with AgNPs (size 25-60 nm) were used as treatment agents in the experimental group (30 rats). In the control group (30 rats), the animals were treated with Chlorhexidine as standard wound treatment. The rate of wound healing, the presence of necrosis, granulation, and epithelialization in wounds were determined on days 1 to 28.

Results. The wounds were healed completely after 20.3±0.7 days in the experimental group and after 27.2±0.5 days (p<0.0001) in the control group. The average rate of wound surface reduction was 0.0768 cm²/day in the group with AgNPs and US treatment, and 0.0574 cm²/day in the Chlorhexidine group. The removing of the necrotic tissues from wound in experimental group was faster (7.2±0.5 days) than in control group (13.7±0.6 days), p<0.0001. Granulations appeared on days 8.3±0.2 and 12.0±0.5 (p<0.0001), as well as epithelialization was noted after 11.5±0.4 and 16.2±0.6 days (p<0.0001) respectively.

Conclusion. The use of AgNPs with low-frequency US significantly ameliorates the effectiveness of chronic purulent wounds healing.

E-mail for correspondence: petrmyronov@gmail.com

**THE ROLE OF CHRONIC ENDOMETRITIS ON THE BACKGROUND OF
CYTOMEGALOVIRUS INFECTION IN THE DEVELOPMENT OF
HYPERPROLIFERATIVE PATHOLOGY IN WOMEN
OF REPRODUCTIVE AGE**

*Nikitina I.M., Mykytyn K.V., Svikolnik A., Diadiushka Yu.V.
Department of obstetrics, gynecology and family planning,
Medical Institute, Sumy State University, Ukraine.*

Introduction. Among gynecological diseases one of the leading places belongs to local hyperproliferative processes of the endometrium (polyps of the uterine body and cervical canal) and atypical endometrial hyperplasia. The results of scientific researches testify in favor of inflammatory concept of developing the hyperproliferative processes of the endometrium. Chronic inflammatory diseases are the basis for the occurrence of hyperplastic processes endometrium, and infertility. Clinical symptoms are often variable, which in turn complicates not only the diagnosis, the choice of the correct tactics of patients, but their timely treatment.

Aim. To prove the role of cytomegalovirus (CMV) infection in the development of endometrial polyps by studying the levels of immunoglobulins G and M of cytomegalovirus in the serum of women of reproductive age.

Materials and methods. The study was conducted at the Sumy Regional Clinical Perinatal Center and the Department of Obstetrics and Gynecology of Sumy State University. The study included 92 women of reproductive age, which were divided into 2 groups: 1-st group (n = 58) of patients with non-atypical endometrial hyperplasia, 2-nd group (n = 34) consisted of women with local endometrial hyperplasia (endometrial polyps). The control group consisted of 30 healthy women. Aspirate from the uterine cavity was applied in the form of a smear-imprint, touching the surface of the wells on a slide. The smear was air-dried at a temperature of 22 ° C, after which it was fixed in 96% ethanol for 5 min. To determine the activity of the viral process in the endometrial epithelium was performed indirect Koon's method using fluorescent dye-labeled monoclonal antibodies to CMV. Immunofluorescence reaction was performed according to the diagnostic kits instruction. Solid-phase enzyme-linked immunosorbent analysis allowed assessing the nature and intensifying the humoral immunity against CMV – (serum specific antibody levels – Ig M, Ig G).

Results. The highest frequency of detection of CMV antigens in endometrial tissue was verified in the group of women with uterine body polyps – in $53,14 \pm 4,22\%$ of cases, in $34,12 \pm 4,26\%$ in non-atypical endometrial hyperplasia. The levels of Ig G and and Ig M to CMV in serum have a clear dependence on the degree of antigen expression in endometrial tissue.

Conclusions. The results indicate that there is a clear link between viral infection in the hyperproliferatively altered endometrium and the determination of a positive level of peripheral blood immunoglobulin, which may be a reliable marker.

E-mail for correspondence: nikitina1med@gmail.com

ANALYSIS OF CIRCULATING TUMOR DNA TO MONITOR DISEASE TREATMENT RADICALITY FOLLOWING COLORECTAL AND BREAST CANCER SURGERY

Pryvalova A.¹, Kostiuhenko V.^{1,2}, Vynnychenko O.^{1,2}, Moskalenko Y.¹

Research advisor: Vynnychenko I.^{1,2}

- 1 – Oncology and Radiology Department, Medical Institute, Sumy State University, Sumy, Ukraine.*
- 2 – Municipal non-profit enterprise of Sumy Regional Council Sumy Regional Clinical Oncology Dispensary, Sumy, Ukraine.*

Introduction. Despite of the progressive development of the new anti-cancer treatment we are still fighting with disease recurrence even after radical surgery. New knowledge obtained during numerous studies, gives us to know that changes in the molecular processes of the disease progression appear in the patient's blood earlier than any other signs or symptoms, including CT signs. To find universal molecular markers that appear while cancer recurrence is a new aim for modern scientists. Liquid biopsy is the method that gives a chance to achieve this goal and our team is going to do it.

Aim. To monitor ctDNA levels in blood samples taken before and after radical surgery in patients with breast and colorectal cancer.

Materials and methods. At the moment, 48 patients in total (19 patients with CRC and 29 with BC) are screened for study participation. The study group includes patients who have undergone radical surgery for breast cancer (BC) or colorectal cancer (CRC). We use BRAF, KRAS, TP53, and PIC3CA mutations as ctDNA marker for colorectal cancer, and the last two – for breast cancer. Blood samples are taken at the following time points: before surgery and after surgery post 3 hours, 5 days, 10 days, 1 month. To find out the correlation between liquid biopsy and tissue biopsy we also check the presence of these mutations in patients' tumor tissue samples obtained pre or during current surgery. QuantStudio 3D Digital PCR System (Applied Biosystems, USA) is used for mutation detection and data analysis.

Results. 75% of the already examined patients with CRC have at least one of the four mutations of interest in the tissue samples. It is worth noting that more than a third of CRC patients (36,4%) have different combinations of two mutations at once. TP53 gene mutation was detected in 20,7% of patients with BC, PIK3CA gene mutation - in 17%. Liquid biopsy results correspond to the tissue biopsy results and as it was expected showed a significant decrease of ctDNA in patients' blood in the postoperative period (with the exception of the data obtained from 3 hours post-surgery samples, where results were not so clear).

Conclusions. Analysis of changes in the amount of mutant ctDNA in blood samples taken before and after surgical treatment can help to assess the radicality of such treatment in breast and colorectal cancer, and in perspective, to identify disease relapse at the earliest stage.

E-mail for correspondence: privalova_nastya@ukr.net

THE DISEASE SPREAD DYNAMICS OF CHRONIC BRONCHITIS AMONG CHILDREN IN SUMY AND MUNICIPALITY

Rashevskaya J., Andrienko S., Havrylenko A., Kotliarova Y.

Research advisor: prof. Smilian O.I.

Department of Pediatrics, Medical Institute, Sumy State University, Ukraine.

Introduction. Respiratory diseases rank one of the highest positions in the list of child sicknesses, with chronic bronchitis in particular which is associated with a high spread rate in illness patterns of bronchopulmonary pathologies. The problem of respiratory diseases remains relevant in paediatrics due to the high prevalence and stable increase of the number of sick in the last few years (the number of case rates has increased by 3.6 times in 10 years).

Aim. To study incidents of illness and spread patterns of chronic bronchitis among children aged 0-17 according to statistic data from 2018 and 2019 in Sumy and municipality.

Material and methods. The analysis of disease spread patterns among children of different age groups has been carried out; the dynamics of respiratory pathologies among city population in comparison to the child village population in 2018 and 2019 have been studied.

Results. The analysis mentioned above showed that in 2018 and 2019 there had been a tendency of increased incidence rates and disease spread rates of chronic bronchitis among children aged 0- 17; spread rate has grown from 0.41% to 0.44% and the incidence rate has grown from 0.03% to 0.08%. There has also been a slight increase of the same indicators among children aged 0- 14; spread rate has grown from 0.25% to 0.26%, and the incidence rate has grown from 0.01% to 0.05%. The spread rate of disease among teenagers aged 15-17 living in villages has grown from 11.4% to 14.69% in 2018 and 2019. On the whole, the highest percentage of disease incidence is observed among children aged 0-17.

Conclusions. The analysis of disease spread patterns of chronic bronchitis among children city population has shown an increase in incidents of illness in 2018 and 2019. The highest percentage of disease incidence is observed among children aged 0-17; in the last two years, there has been a tendency of growth of spread and case rates. Also, there has been an increase in case of rates among children aged 15-17 living in villages which could be caused by late disease identification and delayed treatment, as well as late referral to medical institutions.

E-mail for correspondence: y.rashevskaya@med.sumdu.edu.ua

EARLY DIAGNOSIS OF DIABETIC NEPHROPATHY IN CHILDREN WITH TYPE 1 DIABETES MELLITUS USING THE RBP-4 BIOMARKER

Shandyba I.

Research advisor: DSi, Assoc. Prof. Loboda A.

Department of Pediatrics, Medical Institute, Sumy State University, Ukraine.

Introduction. Diabetes mellitus is a global health problem in the world. According to the International Diabetes Federation, in 2019, 463 million adults lived with diabetes and more than 1.1 million children suffered from diabetes type 1. Incidence of diabetes mellitus type 1 in most countries has at least doubled in the last 20 years. Diabetic nephropathy is one of the common complications of diabetes. Early diagnosis with specific biomarkers and adequate treatment play an important role in prevention chronic kidney disease. Retinol-binding protein 4 (RBP-4) a representative of the family of lipocalins produced in the liver and mature adipocytes. Its filtration processes occur in the glomerulus, and then the RBP4 is almost completely reabsorbed in the proximal tubules of the kidneys. High concentration of RBP4 in the urine was observed in patients with diabetic macro- and microvascular complications, which confirms the predictive role of RBP4. Increased urinary RBP4 was also observed in patients with diabetes mellitus without microalbuminuria.

Aim. To investigate the features RBP-4 levels in urine of children depending on the diabetes duration.

Materials and methods. We analyzed 3 groups of children with type 1 diabetes mellitus and comparison group of children without diabetes from Regional Children's Clinical Hospital in Sumy. RBP-4 was measured by ELISA using a Proteome Profiler Human Kidney Biomarker Antibody Array (R&D Systems, Minneapolis, MN, USA). Results were detected with BioRad ChemiDoc Touch. The arrays were analyzed semi-quantitatively using BioRad Image Lab Software.

Results. There were 47 children with diabetes and 8 children without diabetes. RBP-4 in urine increased by 27 percent in children with duration of diabetes less than one year compared to the control group. RBP-4 levels elevated by 33 percent in children with lasting of diabetes from one to five years. Marker increased by 54 percent in children with diabetes for more than five years.

Conclusion. Increase urinary RBP-4 was observed in the first year of diabetes in children. Measuring the level of RBP-4 in urine may be useful for the early diagnosis of diabetic nephropathy, disease control and prevention of such complications as chronic kidney insufficiency. RBP-4 is a potential marker of tubular damage that may increase before the onset of glomerular markers such as albuminuria and glomerular filtration rate (GFR).

E-mail for correspondence: i.shandyba@med.sumdu.edu.ua

CELL-MEDIATED AND HUMORAL IMMUNE ALTERATIONS IN CEREBRAL PALSY (CP) CHILDREN

Sharova O.

Research advisor: prof. Smiyan O.

Department of Pediatrics, Medical Institute, Sumy State University, Ukraine.

Introduction. CP is a group of non-progressive motor disabilities with predominantly spastic modifications of muscles. The morbidity and mortality were reported to associate predominantly with respiratory infection. In addition, inflammation and leukocyte-associated genes were reported to be altered in twins discordant for subsequent development of CP in epigenetic study. So, we decided to verify immune alterations via lymphocyte levels.

Aim. To evaluate lymphocyte status in CP children compared to healthy controls.

Materials and methods. Lymphocyte status (CD22+ B-cells, CD4+ and CD8+ T-cells) was evaluated in CP children (n = 23) and healthy controls (n = 15) via immunophenotyping in the direct antibody rosette assay. Statistical analysis was performed using RStudio software (Version 1.2.5033) with the MASS and clickR packages (rlm() and report() functions) to design robust linear regression model.

Results. The total number of CD22+ B-cells was $\approx 30\%$ higher in children with CP compared to healthy controls. We next assessed the levels of T-cells by CD4 and CD8 expression, and the total number of both T-cell subpopulations was $\approx 33\%$ higher in children with CP.

Conclusions. The increased numbers of B-cells and helper and cytotoxic T-cells is a pattern that allows us to hypothesize on the increased proliferation of immune cells.

E-mail for correspondence: o.sharova@med.sumdu.edu.ua

THE VALUE OF FRACTAL ANALYSIS OF RETINAL VESSELS IN MEDICINE

Stepanenko O., Orlova T.

*Department of histology, cytology and embryology
Kharkiv national medical university, Kharkiv, Ukraine.*

Introduction. Fractal retinal analysis is a mathematical method that allows you to assess the degree of vascular network branching. It was obtained that the branched vascular network of the normal retina is statistically self-similar and exhibits fractal properties and fractal analysis can be used for automated diagnosis of vascular diseases of the retina (Masters B. R., 2004).

Aim. To explore possible options and methods of studying of central retinal artery (CRA) using fractal analysis. Knowing the range of variability of the fractal dimension of the CRA, it is possible to make a new objective classification that will reproduce the variants of the CRA branching.

Materials and methods. The technique of photographing the fundus without dilating the pupil using a digital camera is the most relevant. A technician can perform this non-invasive method in a short period. This allows you to take digital photos that are been sent to a database for testing.

For data processing (retinal images), one of the methods using fractal analysis is a mathematical method that allows to estimate the complexity of the geometry of vascular networks. According to many studies, it is the most consistent and gives results that are more accurate.

Fractal measurement is one of the parameters used to characterize the complexity of blood networks. Since the retina of the human eye has a complex vascular network having a fractal structure, it provides a more accurate method of modeling the vascular network.

Results. With the disease development in retina, fractal anatomical structures, as well as other fractal structures in the human body, change the degree of their complexity. (Cherkasova M.S., 2019). The eye fundus is the only area in the body where the vascular system is fully accessible to direct non-invasive observation and is regarded as a window into the cerebral microcirculation, therefore, the development of methods for quantitative assessment of pathological changes in the retinal vessels is an urgent task. (Soifer V.A., 2001).

Conclusions. Fractal analysis of the vascular network formed on human retinal images can be used as a non-invasive method to detect vascular diseases, including diabetic retinopathy, and to facilitate the timely detection and treatment of diseases in the early stages (Cherkasova M.S., 2019).

E-mail for correspondence: tanya.dontworry@gmail.com

CLINICOMORPHOLOGICAL FEATURES OF GASTROINTESTINAL TUMORS

Yakovtsova I., Miroshnichenko Y., Chertenko T.

Kharkiv medical academy of postgraduate education, Kharkiv, Ukraine.

Introduction. Gastrointestinal stromal tumor (GIST) is a rare mesenchymal tumor that arose from the interstitial cells of Cajal. These tumors can have variable behavior, so for better understanding of these tumors, their treatment and prognosis very important to study all clinicomorphological features of GIST. Some GISTs are associated with other malignancies; the role of such association also is not fully explored. Aim of the study. To study clinicomorphological features of GISTs collected from 2013 until 2019 years in oncological centers of Kyiv and Kharkiv.

Materials and methods. Our study is based on 100 cases of GISTs collected from 4 hospitals: National cancer institute, Kyiv; Kharkiv regional clinical oncology center; Grigoriev institute for medical radiology. Kharkiv; Institute of general and urgent surgery, Kharkiv. Our data included the study of clinical history of patients and histological samples of tumors. We use data collected from protocols of surgical operation (gross appearance of tumors were taken from these protocols, especially their size and location) and such data as sex, age, histological features of tumors, TNM status and associated tumors, if they presented. All data were analyzed in Microsoft Excel 2013 and Statistica 10.0.

Results. We analyzed 100 cases of GISTs. 65% of patients were females, 35% – males. The mean age of patients were $57,96 \pm 8,2$ ($56,6 \pm 8,2$ for men and $57 \pm 7,48$ for women). The most common location of GISTs was small intestine (38%), then followed stomach (34%) and the 3rd place took large intestine (25%), the other location had 3% of tumors. In 63% of tumors, an accurate primary diagnosis was not possible without immunohistochemical testing with CD117 and DOG1. In 95% of all cases, regional lymph nodes were not affected. We found also, that most tumors were identified in T4 stage (50%), 33% got the primary diagnosis when tumor was in stage T3 and 17% patients had stage T2. 13% of patients had metastases in liver. The interesting finding was association of GISTs with other malignancies: 8% of GISTs associated with gastrointestinal adenocarcinoma and 3% with leukemia.

Conclusion. Our data shows that we need to develop better methods for GIST diagnostics. Finding GISTs in T1 or T2 stages can significantly improve the outcome of disease and quality of life the patients with these tumors. Further researches are needed to clarify the role of metachronous tumors in development of GIST.

E-mail for correspondence: manonlesko3@gmail.com

DENTISTRY

FEATURES OF TRIGGER ZONES OF CHEWING MUSCLES IN MYOFASCIAL PAIN SYNDROME

Guliuk S.A.¹, Schneider S.A.²

1 – Department of Dentistry, Odessa National Medical University, Ukraine;

2 – Doctor of Medicine, Professor, Head of the Department of Dentistry, Odessa National Medical University, Ukraine.

Introduction. Muscle spasm results from excessive stretching, prolonged contraction, or muscle fatigue and forms the basis of myofascial facial pain syndrome (MFPS). Local hypertensives become a source of local and reflected pain and turn into trigger points (TP). On the face of the TP are found more often in the chewing muscles, temporal, lateral and medial pterygoid muscles. The main method of detection of trigger points in clinical practice, as in the diagnosis of myofascial pain syndrome in general, is palpation of the chewing muscles.

Aim. To investigate the clinical characteristics of trigger zones of chewing muscles in myofascial pain syndrome.

Materials and methods. 45 patients (8 men and 37 women) were examined for the clinical definition of painful muscular seals (PMS) and myofascial trigger points (MTP) in chewing muscles on the background of occlusive dysfunction in facial pain syndrome. The presence of trigger zones was determined by palpation according to the method of Simons D.G., Travel J.G., Simons L.S. (1999) and consisted of determining the presence of pain areas of spasmodic muscle or painful muscle seals (PMS). These PMSs were designated as a critical point (TP) or myofascial critical point (MCP).

Results. As a result, it was found that the duration of the disease ranged from 6 months to 5 years. The occurrence of pain after the visit of the dentist was noted by 24 (53%) patients, of whom: in 13 (54%) patients the pain appeared after prosthetics, in 4 (17%) - after tooth extraction, in 7 (29%) patients - after dentistry. 11 (24%) patients associated the development of pain syndrome with TMJ pathology, 3 (8%) - with trigeminal lesions, 4 (10%) - with emotional stress and 2 (5%) with trauma. In these muscles, many active MCPs were palpated, irritation of which allowed to reproduce the pain complained of by patients. Palpation of the muscles of the opposite side was painless or moderately painful. Also found painless seals (latent MCP), irritation of which caused moderate pain without irradiation.

Conclusions. Occlusive disorders not only contribute to the onset of pain, but also significantly complicate its course. It should be noted the high frequency of development of MFPS after dental prosthetics, when the function of chewing muscles does not have time to adapt to unusual occlusion. Changes in occlusion can cause minimal abnormalities in the TMJ and can lead to degenerative changes in one or both joints.

E-mail for correspondence: galsidental@gmail.com

PREVALENCE OF CATARRHAL GINGIVITIS IN SMOKERS IN ADOLESCENTS AND ADOLESCENTS

Lisetska I.

Research advisor: prof. Rozhko M.

Department of Pediatric Dentistry,

Ivano-Frankivsk National Medical University, Ivano-Frankivsk, Ukraine.

Introduction. Smoking is an epidemic that has become widespread among adolescents and young people. According to statistics, every second teenager over the age of 15 smokes cigarettes. Today, cigarettes are considered drugs, WHO experts assess this situation as critical (Korolova N.D. et al., 2019). There is a growing popularity of alternative types of smoking, namely electronic cigarettes (E-cigarettes, vapes), devices for heating tobacco (IQOS). The oral cavity is the first barrier to tobacco smoke in the human body. Smoking has a negative effect on the organs of the oral cavity, contributes to the emergence, deepening and progression of periodontal disease.

Aim. To investigate the prevalence of catarrhal gingivitis in adolescents and adolescents who smoke.

Materials and methods. To achieve this goal, we examined 100 young people aged 16 to 24 years of somatic health. All respondents were divided into four groups: in group I we included 25 people who actively smoke traditional cigarettes; in group II - 23 people who smoke electronic cigarettes (Vape); in group III - 22 people who smoke ikos (IQOS); in group IV - 30 non-smokers. In each group, the distribution of persons by age and sex was uniform. A comprehensive dental examination was performed in accordance with WHO recommendations, which included determining the intensity of the pathological process in the periodontium.

Results. Our study results indicate a high intensity and prevalence of catarrhal gingivitis in adolescents and adolescents who smoke compared with non-smokers. Thus, in persons of group I in 78,5% of cases catarrhal gingivitis was diagnosed, which is 1,2 times higher than in persons of groups II and III, 1,4 times higher than in persons of group IV, respectively, 65,3% among E-cigarette smokers; 62,8% of people who smoke Ikos and 57,2% of people who do not smoke.

Conclusion. The presence of harmful smoking habits in adolescents and young adults can be considered one of the factors in the development of catarrhal gingivitis. However, a detailed study of the mechanisms of the negative impact of both traditional cigarettes and alternative types of smoking on the condition of periodontal tissues is needed, in order to develop a scheme of prevention and treatment.

E-mail for correspondence: Lisecka9@gmail.com

CHARACTERISTICS OF FEATURES OF VERTICAL AND HORIZONTAL COMPONENTS OF VIDEOKINESIOGRAMS

Okhrimenko I.V.

Research advisor: prof. Korol D.M., D. Med. Sc

Dentistry Department, Ukrainian Medical Stomatological Academy, Ukraine.

Introduction. During the survey of the respondents - 2nd year dentistry students of the Ukrainian Medical Stomatological Academy, regarding the dysfunction of the temporomandibular joint, a significant statistical frequency of changes in functioning (68 %) is determined, which implies the need to determine the relation between the amplitudes of movement of the lower jaw in the vertical and horizontal directions during the evaporation of vertical movements. The selection criteria were:

1. Consent to voluntary participation in the study;
2. Absence of defects in the tooth rows;
3. Physiological bite types;
4. Age 18 to 20

Aim. To examine the features of vertical and horizontal motions of the lower jaw with the aid of videokinesiology.

Materials and methods. The videokinesiology method have been used in the research, which is at the stage of cutting and perfection with the Faculty of Orthopaedic Dentistry and the active of the student scientific group. The method is based on the principle of registration of a token object in the video (video tracking).

Results. We recorded more than 30 samples of maximal downward (Δy) and sideways (Δx) for one person. For the statistical study of these scalar displays was introduced Index A, which equals $\Delta y/\Delta x$. The average was $A = 0.97$, with the amplitude of sampling 1.16 ($A_{min} = 0.62$, $A_{max} = 1.78$). Median was 0.96. The variative series was trimodal, with the values of the modes 0.65, 0.76, 0.96 - three times each.

Conclusion. The proposed index A has the prospect of being used as an indicative criterion for assessing the functioning of the temporomandibular joint and for determining possible pathological changes and processes. The ratios of maximal amplitude of the motions of the mandible vertically and horizontally can be distributed as an individual diagnostic indicator when planning and conducting similar studies in the future.

E-mail for correspondence: okhrimenko001@gmail.com

CHEMICAL COMPONENTS OF TOOTHPASTES AND THEIR EFFECT ON TOOTH TISSUES

Sydorenko Y.L.

Research advisor: Davidova L.M.

Dentistry Department, Medical Institute, Sumy State University, Ukraine.

Introduction. Rational hygiene of oral cavity is the most effective method of the prophylaxis of dental diseases which includes using multicomponent tooth pastes. One of main components is calcium hydroxyapatite (CHA), that is the most relative component to enamel. CHA has reparative effect, that provides anti-decay effect on the molecular level.

Aim. To create of own product for use in dentistry by collecting of necessary data of toothpastes based on CHA, drugs that bases on literature data and comparing them.

Materials and methods. We used the method of collecting and processing information alone with an in-person evaluation of oral care products to further compare and derive our own formula for creating a competitive product.

Toothpastes are multicomponent systems consisting of water, abrasives, aromatizers, moisturizers and hydrophilers, binders, may contain therapeutic and prophylactic substances, flavorings, surfactants, preservatives .

The composition and effects of modern toothpastes for deriving our own formula were compared. The main criterion was the presence in the composition of these products CHA or analogues with patented names. Samples of pastes from SPLAT, Sensodyne and Biomed were selected for comparison.

After evaluating the composition and properties of these toothpastes, we conducted a thorough analysis of the components of them. The choice of materials for the synthesis of toothpaste should include the following items: water, moisture retainers, thickeners, abrasives, sweeteners and flavors, and the active ingredient (CHA).

Verbena and rosemary were chosen as components of our product. Sodium alginate (E401) is perfectly suited to the role of gelling agent, thickener and moisturizer the natural component of water kelp, which has long been used in food products and has no irritating effect on any of the gastrointestinal tract. We intend to use CHA to restore the enamel at the molecular level and create a nanoabrasive effect: a perspective and safe component that is relevant, effective and cheap in production.

Results. We identified the main components of our product, basing on the analysis of toothpaste samples of modern brands, which was the goal.

Conclusion. Received information of creation of toothpastes and dental gels can be used to prepare your own product in dentistry.

E-mail for correspondence: yuiopyuiopovich@gmail.com

PUBLIC HEALTH

THE STATE OF EDUCATION OF UKRAINIAN YOUTH IN ISSUES OF DISEASE PREVENTION

Lysychyna S.

Research advisor: senior teacher Biloshytska O. K.

Faculty of Biomedical Engineering,

National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute".

Introduction. More than 80% of all deaths in Ukraine are results of non-communicable diseases caused by lifestyle and environmental conditions. Prevention and early diagnosis of these diseases are one of the key aspects in the transformation of health care system in Ukraine. Nowadays, it is advisable to focus not only on the provision of medical services, but also on promoting active prevention.

Aim. Assessing of the education and awareness state in matters of prevention and responsibility for their own health among young people aged 14 to 24. Identifying of the main problems for the formation of a new generation in our society, who has a conscious attitude to their health and precepts it as a value.

Methods. To achieve this goal, was developed a questionnaire to conduct a sociological survey, which consisted of questions related to health education at school, basic rules and principles of skin care, cancer prevention, sex education and health, as well as awareness of respondents about the signs and symptoms of some common diseases and clinical conditions during illness. The survey involved 133 people aged 14 to 24 (including women - 73% and men - 27%).

Results. 67% of respondents answered that they did not have the health and sex education lessons at school. 51% of respondents doesn't have a habit of protecting their skin from sunlight, 35% doesn't know the main symptoms of stroke, and 25% of respondents doesn't know the main signs of appendicitis. 86% could not talk openly about their health with teachers, and 80% consider the work of a psychologist at their school was ineffective.

To the open question "How do you usually stop nosebleeds?", 10% of respondents said that they throw their heads back, which is a wrong action. The results of the survey show some gaps in the system of sanitary education among schoolchildren and a low level of cooperation between the systems of education and public health.

According to the received data, may to conclude about insufficient education among youth in questions of prevention and preservation of the health at an initial level.

Conclusion. There is an obvious need to intensify the preventive direction in the program of medical reforms. One of the important ways to solve this problem is to move away from the old patterns of behavior, to start the formation of new habits for health prevention and health education among the youth. It is important to start doing this among children so new generations won't adopt outdated and ineffective patterns of behavior and attitudes toward health.

E-mail for correspondence: redred1916@gmail.com

THE THROMBOCYTOPOIESIS CONDITION IN ADULTHOOD DONORS OF THE PLATELETS

Omelchenko D.¹, Dubovskoy B.¹, Dmytruk S.², Pernakov M.¹, Dmytruk S.¹

Research advisor: PhD, assistant Dmytruk S.¹

1 – Department of Morphology, Medical Institute, Sumy State University, Ukraine.

2 – Sumy Regional Blood Center, Sumy State University, Ukraine.

Introduction. Platelet concentrate is an essential component of donated blood, used in modern clinical practice, both as the main treatment and as a component of the intensive accompanying therapy. The active donation of platelets is associated with a certain load on the donor's hematopoiesis system, requiring, the last one to have an adequate functional reserve, which should be regularly monitored using laboratory tests.

Aim. To estimate the condition of thrombocytopoiesis in active adulthood donors of the platelets.

Materials and methods. There are 130 active platelet donors took part in study: 68 men and 62 women aged 21-60 years old, who undergone 3-6 procedures of hardware thrombocytapheresis during the year. The study group was divided into 2 subgroups, according to biological characteristics: subgroup I - donors of the 1st period of adulthood (42 men 22-35 years old and 33 women of 21-35 years old), subgroup II - donors of the 2nd period of mature age (26 men 36-60 years old and 29 women 36-55 years old). The following parameters of donor's capillary blood have been investigated: Platelets (PLT), Platelet Distribution Width (PDW), Mean Platelet Volume (MPV), and Plateletcrit (PCT), obtained with hematology analyzer Sysmex XT-2000i.

Results. The indicators of the platelet production in donors of the study group were in reference ranges. In subgroup I the significant sex differences were identified in PLT and PCT indicators that have been higher in women by 8.5% and 6.9%, respectively. The identified differences apparently reflect the peculiarities of the functioning of the iron reduction system in a women body after physiological blood losses, and may also be associated with the known effect of sex hormones on the thrombocytopoiesis system. In subgroup II, the sex differences in platelet indicators have not been detected. Also, there were no differences in platelet indicators in a separate comparison of male donors and female donors of the I and II subgroups.

Conclusions. The platelet indicators of blood of 21-60 years old men and women of active platelet donors are within the reference ranges and demonstrate the stability in the indicated age range. This indicates a good functional reserve of the thrombocytopoiesis system in persons of this age group carrying out this type of blood components donation.

E-mail for correspondence: s.dmytruk@med.sumdu.edu.ua

THE ROLE OF TUBERCULIN DIAGNOSIS IN THE EARLY DETECTION OF PATIENT WITH TUBERCULOSIS

Tkachova A., Bodnar Y.

Research advisor: asst. Ovcharenko I.

Kharkiv National Medical University, Kharkiv, Ukraine.

Introduction. Tuberculosis has always been the main medical problem in society. Now medicine has made a big step in solving this problem. Improving the effectiveness of prevention and diagnosis is a priority of modern tuberculosis. Everybody argue that the results of treatment and the well-being of the epidemic situation depend on timely detection of patients with tuberculosis. In Ukraine, tuberculin testing is the leading method for early detection of this disease among the population aged 0-14 years. Despite a fairly good awareness of this method, there are many problems that do not allow to use it one hundred percent.

Aim. Analysis of the effectiveness of tuberculin diagnostics in children aged 0-14 years on the territory of Ukraine.

Materials and methods. Statistical data on the detection of tuberculosis patients with the help of tuberculin diagnostics in the regions of Ukraine in the period from 2014 to 2018 were analyzed.

Results. Analysis of statistics showed that in the period from 2014 to 2018, the lowest rate of detection of tuberculosis patients in the Kharkiv region was in 2016 - 50%, which may have been due to interruptions in the supply of tuberculin. The highest figure was in 2017 - 73.7%. In 2018, there was a slight decrease in the indicator - 65.7%, but still was higher than in Ukraine, which in 2018 was 43.4%.

The highest level of tuberculosis detection in Ukraine in 2018 was in Zaporizhia region - 87.7%, Ternopil region 75.0%, Dnipropetrovsk region 74.7%, Chernihiv region - 71.4%. The lowest rates of tuberculosis were in Cherkasy region - 4.0%, Lviv region - 4.3%, Volyn region - 6.3%, Zakarpattia region - 10.5%, Kyiv region 12.0%.

In all other regions of Ukraine, the level of detection of tuberculosis patients is average.

Conclusion. So, intradermal tuberculin test in modern conditions remains relevant. Due to regions with high rates, the level of detection of tuberculosis patients with the help of tuberculin diagnostics in Ukraine is average. To improve the average indicators, the level of active detection of tuberculosis patients in such regions as Lviv, Volyn and others should be increased. This can be achieved by improving the skills of medical staff, providing medical institutions with tuberculin, good quality control of biological products and raising public awareness.

E-mail for correspondence: lizalizabodnar@gmail.com

PHYSICAL REHABILITATION AND SPORTS MEDICINE

THERAPEUTIC EXERCISES FOR ANKLE INJURY IN THE POST-IMOBILIZATION PERIOD

Hostiev O.

Research advisor: PhD Olha Sytnyk

*Department of Physical Therapy, Occupational Therapy and Sports Medicine,
Medical Institute, Sumy State University, Ukraine.*

Introduction. The ankle joint is the main support of a person, it accounts for the entire weight of the body. Ankle injuries that require physical therapy include: bone fractures, Achilles tendon rupture, sprains and tears, bruises, dislocations. Injury of the joint leads to loss of static-dynamic balance and can further lead to the development of ankle instability, decreased mobility, bone pathology. Restoration of motor functions of the ankle joint after injury remains an important issue today.

Aim. To consider the means of physical therapy for ankle injury in the post-immobilization period.

Methods. Analysis of scientific and methodological literature.

Results. In the modern literature, among the means of physical therapy used in the recovery period are therapeutic exercises, therapeutic massage, hardware physiotherapy, mechanotherapy, hydrokinesiotherapy. In this paper, attention will be focused on therapeutic exercises - to improve the range of motion, strength exercises, exercises for balance and coordination.

Exercises to improve range of motion include active and passive exercises. Begin with passive exercises aimed at stretching the ligaments. These exercises can be done lying down with the help of a physiotherapist, standing on a sloping surface, carrying your weight forward. Stretching should be performed for 15-30 seconds, repeating 10 times, 3-4 times a day. In active movements, the patient should draw the letters of the alphabet in the air, both lowercase and uppercase. This exercise should be repeated 4-5 times a day.

Strength training exercises focus on the muscles of the tibia. It all starts with isometric performed over a stationary object in four directions of movement of the ankle joint and move on to isotonic exercises using weight and resistance.

To improve balance and proprioception, the simplest device is used as a balancing step platform. And they progress in that direction, that is, they use weight, moving from a two-sided position to a one-sided one, from open eyes to closed, hard surfaces to soft, uneven or moving ones.

Conclusion. The considered means of physical therapy help the patient to restore the normal functioning of the ankle joint quickly and prevent the development of further injuries and complications.

E-mail for correspondence: oleggostev92@gmail.com

MASSAGE IN PHYSICAL THERAPY FOR TYPE 2 DIABETES

Osadchyi A.

Research advisor: associate professor Sytnyk O.

*Department of Physical Rehabilitation and Sports Medicine Department,
Medical Institute, Sumy State University, Ukraine.*

Introduction. Type 2 diabetes mellitus (DM) is the most important medical and social problem of our time, due to its significant prevalence, high disability and mortality of patients who suffer from this disease. According to the International diabetes Federation (IDF), in 2020, the number of people with diabetes reached 425 million, including 212.4 million people who have undiagnosed type 2 diabetes, which is four times higher than in 1980, and, according to IDF forecasts, will reach 742 million by 2040.

Aim. Make the physical therapy program for treatment and prophylaxis for persons with diabetes of II stage.

Materials and methods. Analysis of scientific and methodological literature on the influence of massage in diabetes.

Results. The treatment program for type 2 diabetes is provided by an endocrinologist and specialists in physical therapy and occupational therapy. In previous studies, we have described programs using cyclic aerobic exercises (5 times a week) and the program of hydrokinesis therapy. In this study, it is advisable to present one of the components of a complex effect – massage. For type 2 diabetes, General and local massage is used in combination with other means of rehabilitation. Local massage, in which the focus is on those areas where there are violations (usually the lumbosacral zone, joints, soft tissues of the hands and feet). These procedures can be performed every day, but no more than 15 minutes. General massage, which is done no more than 3 times a week, lasting up to 40 minutes. The course is usually 12-15 procedures. Massage is introduced to the General program after the motor component in order to improve recovery. Massage technique is selected according to the condition of the limbs – for varicose veins and skin disorders, massage is contraindicated. The criterion for admission to the massage program is a moderate degree of diabetes at the compensation stage (HbA1c <7%).

Conclusion. Accordingly, the task of the work was to develop a program of physical therapy for people with type 2 diabetes using massage tools. The program included massage, hydrokinesotherapy and physical therapy. Means of physical therapy had a positive effect on the state of the cardiovascular system and carbohydrate metabolism.

E-mail for correspondence: artosad2017@gmail.com

COMPREHENSIVE CORRECTION OF DYSARTHRIA BY METHODS OF PHYSICAL REHABILITATION

Ryabokon D., Kolenko O.

*Department of Neurosurgery and Neurology
Medical Institute, Sumy State University, Ukraine.*

Introduction. The growing number of children with severe speech disorders dictates the need to improve correctional and speech therapy methods, complex speech rehabilitation methods, and specialists' involvement in related fields.

Aim. To find physical rehabilitation methods that can be used for the comprehensive treatment of children with dysarthria; to study the indicators of preschool children's articulatory apparatus with dysarthria.

Materials and methods. The analysis of scientific and pedagogical literature, medical documentation (outpatient cards, speech diagnostic cards, medical histories), speech therapy examination, clinical and neurological examination, and mathematical statistics methods were performed to solve the set tasks.

Results. Fifteen children with a subclinical form of dysarthria were monitored during the year. Traditional dysarthria correction methods were used in combination with conventional adaptive physical culture and combined with psychological correction. Unfortunately, some current conditions (an epidemiological situation, limitation of the length of stay in the hospital) did not make it possible to study all the indicators. The results of the clinical and neurological examination showed some improvement in the motor component of neurological status. Thus, 80% of children were a decrease in the articulatory apparatus's muscle tone.

Conclusion. The problem of physical rehabilitation is multidisciplinary. Based on the analysis of literature and empirical data, we can conclude that modern treatments have a sufficient reserve of methods. For the rehabilitation of preschool children, it is advisable to develop comprehensive programs based not only on medical but also psychological and pedagogical impact. Different types of massage, physical therapy, special rehabilitation techniques for children with cerebral palsy are closely intertwined and on different sides contribute to eliminating motor defects, correction of discoordination of respiratory disorders and speech. They are also useful for strengthening the body, strengthening the nervous system and changing attitudes to their defect.

E-mail for correspondence: o.kolenko@med.sumdu.edu.ua

FEATURES OF PHYSICAL THERAPY OF POST-STROKE PATIENTS AFTER SYSTEMIC THROMBOLYSIS

Samoday A., Buivalo V., Voitenko V.

*Department of Physical Therapy, Ergotherapy and Sports Medicine,
Medical Institute, Sumy State University, Ukraine.*

Introduction. According to the WHO, cerebrovascular diseases rank third in the structure of causes of death, and their most severe variant - stroke - is the leading cause of disability in Ukraine. According to official statistics, almost 200,000 strokes occur each year, of which 30-40% of patients die within the first 30 days and up to 50% within a year of the onset of the disease, 20-40% of surviving patients become dependent on the help of others and only about 10% return to full life. This situation requires adequate action, which should be manifested in the prevention of acute cerebrovascular disorders, the most effective drug therapy in the acute period, followed by physical rehabilitation. Modern methods of thrombolytic therapy for ischemic stroke give good results in 50% of patients. Thus thrombolysis, today, at an acute stroke is carried out only at 27% of patients. But the complete motor functions of patients are not restored, which requires further application of a set of physical exercises aimed at restoring impaired functions.

Aim. Choice of means of physical rehabilitation of post-stroke patients after thrombolysis.

Materials and methods. Analysis of scientific and methodological literature.

Results. The complexity of rehabilitation after stroke requires a constant search for new therapy options. An important role is played by the combined use of physical and medication methods that will enhance each other's medicinal and restorative effects. Progress in thrombolysis has led to new advances in the treatment of this pathology. Similarly, developments in physical therapy and recovery after stroke significantly expand the possibilities of rehabilitation of such patients. According to scientists, the leading means of restoring motility in post-stroke patients is kinesiotherapy, which includes individually selected methods of therapeutic gymnastics and occupational therapy, aimed at improving functionality, restoring lost functions and improving the quality of life in general.

Conclusions. Thus, today the rehabilitation of post-stroke patients requires a separate approach - more effective and perfect at all stages of the treatment and rehabilitation process. This requires an earlier and more accurate forecast of the recovery outcome. The use of physical therapy for post-stroke patients after thrombolytic therapy is a relevant and effective tool that can increase the effectiveness of the restoration of motor functions in post-stroke patients in the implementation of physical rehabilitation programs.

E-mail for correspondence: Angelina_Samoday@i.ua

FERTILITY AND OVARIAN RESERVE

Yatsenko O.Yu., Burlaka I.S., Gonchar Yu.V.

Research advisor: prof. Maloshtan L.M.

Department of normal and pathological physiology, National University of Pharmacy.

Introduction. Ovarian reserve is a concept that characterizes two indicators of the female reproductive system: the total number of ovarian follicles, which are able to develop eggs that are potentially suitable for further fertilization; as well as the entire supply of eggs of a woman ready for production at the current age. Many women postpone pregnancy to a later age due to higher education, career building. They hope that in the future they will be able to use assisted reproductive technologies and have a child. However, with age, the number of fertilizable eggs in women decreases.

Aim. Analysis of literature data on ovarian reserve reduction in women, factors of ovarian reserve reduction, laboratory indicators of ovarian reserve and methods of its support.

Materials and methods. The results of a number of clinical studies were processed, as well as graphs of basal body temperature of women aged 17 to 46 years, based on which it is possible with a high probability to calculate particularly favorable days of ovulation.

Results. Studies have shown there are many factors that affect the reduction of ovarian reserve. Above all, a woman's age, because with aging the number of follicles decreases. In addition, the inflammatory process in the pelvic organs, intoxication due to chemicals or industrial waste and the use of radiation and chemotherapy in the tumors medication, smoking, as well as surgery on the pelvic organs affect the reduction of ovarian reserve. Laboratory indicators include determination of sex hormone levels, including follicle-stimulating hormone (FSH), estradiol, inhibin B and anti-Müllerian hormone (AMH). These indicators also include dynamic tests, such as a test for exogenous FSH, a test with a load of clomiphene citrate using gonadotropin-releasing hormone analogues, ultrasound of the pelvic organs and Doppler mapping.

Conclusions. Currently, the results of clinical trials are being supplemented, and it should be noted that women who face this problem resort to artificial insemination, one of which is IVF.

E-mail for correspondence: is_burlaka@ukr.net

MEDICAL ASPECTS OF FACEBUILDING

Yatsenko E.Yu., Burlaka I.S., Kalashnik K.Y.

Research advisor: prof. Maloshtan L.M.

Department of normal and pathological physiology, National University of Pharmacy

Introduction. The face is covered with muscles that form a kind of skeleton. When they lose tone, the face falls. In addition, over time, there will be wrinkles due to improper lifestyle and skin care, bad habits, alcohol, smoking, lack of exercise and more. You do not need to wait for the first signs of skin aging, where it is better to prevent their occurrence. Therefore, all over the world, face building (gymnastics for facial muscles) is primarily as an alternative to plastic surgery and various anti-aging programs. This is another way to maintain skin tone and elasticity for a long time, tighten the oval face, make it more sculptural and clear by actively training the facial muscles. Together with other ways to affect the skin - using appropriate creams, masks, facial scrubs, proper sleep and proper nutrition, the training course will help you enjoy your own reflection in the mirror every day, which will shine with beauty and youth.

Aim. Research on the effectiveness of face building to preserve facial youth and prevent aging.

Materials and methods. Healthy participants aged 17 to 50 years with an interest in facial exercises were included. Participants received formal instruction on facial exercises for special muscle groups. Participants performed daily 60-minute exercises for 4 weeks at home (3-4 times per week).

Results. Studies have shown that gymnastics for facial muscles for one month helped women achieve noticeable results. Face building helped to outline the cheekbones, sharpen the contour of the chin, draw the angle of the lower jaw, which often "floats" with age. Exercises really tighten the cheeks, raise the eyebrows, smooth out the horizontal and vertical creases on the forehead, and lift the lowered corners of the mouth. The most difficult is with the center of the face, because there are a lot of muscles, and with the area around the eyes. However, on average, after 2.5 months of stable training, changes in all areas were noticeable.

Conclusions. There has been recent interest in the community in facial exercises or face building that can fresher the aging face, presumably by making underlying muscle growth. However, scientists periodically conduct research that proves the benefits of training. We saw our own results and saw the effectiveness of face building. Its meaning is to work with facial muscles. They need to be trained in the same way as the muscles of the body, and not to allow them to lose tone, become lethargic. If you've ever searched for a natural solution to sagging skin, you have to be familiar with facial exercises.

E-mail for correspondence: is_burlaka@ukr.net

PHYSICAL REHABILITATION OF ATHLETES WITH PATELLAR TENDINOPATHY

Yezhova O.

Research advisor: prof. Dovgan N.

Department of Health Care, Philip Orlyk International Classical University.

Introduction. Injuring and bruising of the knee joint is the most common among diseases of the lower extremities that athletes can get. Firstly, it is due to the large load on their ligaments when jumping and running, and secondly, to the peculiarities of the anatomical structure and biomechanics of movements in the knee joint.

Aim. Develop a program of physical rehabilitation of athletes with patellar tendinopathy.

Materials and methods. Theoretical methods include analysis of the medical literature, specification of theoretical knowledge, generalization, and systematization of empirical knowledge for the selection of the necessary tools and therapeutic exercises and their proper combination at different stages of physical rehabilitation.

Results. The program was based on the integrated use of physical rehabilitation, forms and methods of training aimed at the development of muscle strength of the quadriceps femoris, improvement of balance through training of the neuromuscular apparatus of the muscles involved in the movements of the knee joint, reduction of pain. The program has two blocks: the first block is a basic component; the second block is a variable component. The block of the basic component includes therapeutic exercises of various orientations, kinesiotaping, massage, and self-massage. The variable component includes means of physical rehabilitation, which will be added based on observation, survey, and diagnostic data: therapeutic exercises for other muscle groups, hydro-kinesiotherapy, aerobic exercises, hardware physiotherapy.

Among the therapeutic exercises of the basic component of the physical rehabilitation program: eccentric aimed at training the quadriceps femoris and stretch its tendons; exercises for the development of coordination and balance - exercises with various equipment with an unstable surface (platforms, plates, disks, etc.), exercises on a device with biofeedback (Tymo Therapy Plate); strength exercises.

A variable component of the physical rehabilitation program includes therapeutic exercises for different muscle groups: exercises for the muscles of the abdomen and back, exercises for the upper extremities; exercises with the use of strength and block simulators to increase overall performance; aerobic exercises of the cyclic character of average intensity.

Conclusions. The effectiveness of the developed program of physical rehabilitation of athletes with patellar tendinopathy will be determined after its implementation in the Department of Physical and Occupational Therapy and Sports Medicine of Sumy State University and Department of Health Care of Philip Orlyk International Classical University.

E-mail for correspondence: yezhov@yandex.ru

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
SUMY STATE UNIVERSITY
MEDICAL INSTITUTE

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Сумський державний університет,
вул. Римського-Корсакова, 2, м. Суми, 40007