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CONGRATULATIONS ON ANNIVERSARY

ORIGINAL ARTICLES

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CENTRAL MECHANISM OF ORGANIZATION AND IMPLEMENTATION OF MOVEMENTS

Introduction. Traditional research methods describe only the external structure of movements. There are a number of hypotheses and theories concerning the specificity of the motor centers role. At the same time to the primary motor cortex was assigned the role of "transmitting area" without clearly defined functional peculiarities. In recent years, attention to study the role of the motor cortex and limbic system structures in programming of voluntary movements significantly increased.
Taking into consideration all the above - mentioned, in case of use of one experimental model it is important to conduct the comprehensive study of several physiological processes in the motor cortex and associated brain centers during motor skills work out. Such studies are important both for theoretical physiology and for medical practice (particularly in improving the rehabilitation efficiency in neurological patients).
The aim of the study. To set time-spatial patterns of neural brain systems and neural ensembles of motor centers functioning while programme formation and implementation of motor component of operant reflex in rats.
Materials and methods. For the experiments we used: to determine the dynamics of food operant reflex formation - 15 rats, to map areas of the motor cortex - 44 rats, to register impulse activity of neurons of the motor cortex of hippocampus - 32 rats, to establish neuronal populations, activated during electrical stimulation of rats muscles - 12 rats, to determine brain centers organization in accordance with the early response protein c-Fos expression and distribution of NO synthesizing neurons - 32 rats.

To carry out experimental part of the study we used: 1) immunohistochemical and histochemical methods; 2) registration of neurons impulse activity; 3) developing, strengthening and modification of stereotyped food operant movements with simultaneous registration of neurons impulse activity;
4) photo and video recording of stereotyped movements settings; 5) statistical analysis of the results obtained by the methods of variation statistics.

Results. The process of developing of a new food operant reflex occurs in three stages: initial, transitional and perfect skills stage. In the process of operant reflex formation cortex area increases, microstimulation of which causes contralateral forelimb movements maximum on the 14th day of training ($r = 0,87$; $p < 0.01$). The formation of motor skills is accompanied by significant changes of the sensory properties of motor cortex neurons, significantly increases the part of neurons that respond by excitation type ($p<0,01$). The process of operant reflex development is accompanied by a tendency to increase the proportion of neurons that respond (from 45% to 58% ; $p>0,05$).

The significant number of neurons pairs (19.2%) with conjugate impulsive activity was found in the motor cortex. Immunohistochemical detection of early response protein c-Fos showed that there is the motor cortex in the system of neural networks on the final position, that receives afferent information from the motor, sensory and motivational centers and ensures the formation of cortical descending motor command. After muscles electrical stimulation not only activation of sensory proprioceptive structures, but also attraction of spinal parabrahio- amygdaloid and spinal parabhio-hypothalamic pathways occured.

Maximum activation in neurons motor cortex in layers 5 and 6 took place on the first day of training, and in neuronal layers 2 and 3 on the third day of training. Analysis of the electrical activity of hippocampus CA3 field neurons confirms its involvement into formation of rapid food-getting movement and also for launch and control of its fulfilment. Among rats motor cortex neurons we found NO-synthesizing neurons, that have direct contact with blood vessels (6.3% of the total number of labeled neurons).

Conclusions. Results of the study reveal neural mechanisms of modification of motor programs in the motor cortex and with the help of hippocampus can be used as a theoretical basis for methods to develop new skills in sports physiology, training of professional movements execution, as well as to improve the efficiency of neurological patients renewable rehabilitation.

Key words: motor cortex, hippocampus, rats, motor skills, impulse activity of neurons, passive motion, motor learning, c-Fos, NO.

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LAWS OF THE INFLUENCE FACTORS EDUCATIONAL PROCESS ON THE PHYSICAL DEVELOPMENT OF YOUNG MEN

Introduction. Adolescence - a period of complete growth process, forming a crucial stage of physical development that begins in high school, continues in adolescence, and passed in the first period of mature age in the last year of study in high school. The most common cause of these changes is leaving school and learning in higher education. Then comes the crucial stage of physical, psychological and social development. Described influence of pedagogical process in the physiological, psychological and social development of young men, but didn't research the morphological changes that consider external indicators of physical development. In addition research is often conducted on groups of students or individual students of the institution. The youths, students, pupils and students in different conditions influence the educational process that identified different approaches to physical and mental stress intensity. So identify patterns in the "educational process - physical development of young men," based on the features of educational process educational institutions of different types and levels of accreditation and studied changes in anthropometric parameters, performance components somatotype, component of body mass index harmonious physical development is important because to optimize the impact factors of the educational process, improve the physical development of young men.

Materials and methods. The research was carried out at M.I. Pyrohov Vinnytsia National Medical University and Vinnytsia Higher Vocational School of Civil Protection. The school is a departmental higherinstitution of the second accreditation level, belonging to the State Emergency Service of Ukraine (SES) where students and cadets are taught. Training cadets has its own features related to the service in the bodies and units of SES. All the cadets are employed in the SES, have special ranks, and their daily routine is compiled in accordance with the Charter of the Armed Forces of Ukraine. The conditions of the pupils differ from those of the cadets in less regulated daily routine and less physical activity. Medical University is a higher school of the fourth accreditation level of the Ministry of Health. Conditions of medical students are different from the living conditions of cadets and pupils. Their regime of the day is not regulated at all, their physical activity is lower and the teaching load is higher. We measured anthropometric parameters of 87 boys-cadets, 93 pupils, 92 students and analyzed the characteristics of their changes during the first year. An analysis of these parameters was carried out using STATISTICA-6,1 (StatSoft) using parametric and nonparametric methods for assessing the performance. To determine the structure changes, the dependence between the studied factors, as well as to establish the degree of influence of factors of the educational process in the anatomical and anthropometric parameters boys was used factor and correlation analysis.

Results. Discovered interdependence relationships and regularities factors influence the educational process on anthropometric parameters and indices somatotype components, a component of body mass index harmonious physical development of young men during their studies at universities of different types and levels of

accreditation. The cadets identified significant quantitative and qualitative increase diameters, mesomorphic somatotype component and a component of muscle mass of the body against the high achievement in physical education and moderate growth processes, indicating the positive effects of physical training on physical development of students during training. The pupils found a moderate increase in the quantitative and qualitative diameters moderate increase mesomorphic somatotype component and a component of muscle to body weight backdrop slight decrease skin-fat component of high achievement in physical education and moderate growth processes. These points to the positive effect of physical training on physical development, but compared to the cadets, this effect is less pronounced. A possible reason is the lack of the required additional physical training and sports and drill training in free time.

Conclusions. The students identified moderate partial change size, increase skin-fat component, a moderate increase during the training and ektomorphic, endomorphic somatotypes component and fat component of body weight, and a sharp reduction mesomorphic somatotypes component and a component of muscle weight gain on a background of intense mental stress (high performance in special and humanities) and low achievement or complete absence of physical education. This points to the negative impact of intense mental stress and reduce physical training on physical development of students during training. A possible reason is the small number of hours for physical training, no more mandatory physical education and sport in free time at high intensity mental stress and lack of a clear day regimen and balanced nutrition of adolescent students.

Key words: physical development, youth age, educational process.

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STRUCTURAL AND FUNCTIONAL CHANGES IN ENDOTHELIUM IN EXPERIMENTAL DELAYED TYPE OF HYPERSENSITIVITY

Introduction. Erythema Exudative Multiforme (EM) - an acute relapsing disease of the skin and mucous membranes. The disease is a common, systemic in nature, but most of the work focuses mostly on changes in the mucous membrane and the skin at the site of injury, the role of viruses and markers of inflammation and immunity dynamics. Local and general changes in the blood vessels, vascular tone and endothelium are still not fully understood.

The aim of the study was to examine the pathogenic mechanisms of endothelial dysfunction and to establish its role in the development of toxic and allergic process (delayed type hypersensitivity) in experimental model of mucosal lesions of the oral cavity.

Materials and methods. Research conducted on 40 white male rats, 180-200 g in accordance with the European Convention for the protection of vertebrate animals used for research and other scientific purposes (Strasbourg, 1986) All animals were divided into 2 groups: group 1 - 30 rats with simulated delayed type of hypersensitivity (DTH) by subcutaneous injection of dibutyl phthalate (DBP) in complete Freund's adjuvant (CFA). Damage of the oral mucosa modeled both inflammatory and immunological response in conditions of delayed type of hypersensitivity, and 2^{nd} group – control. Animals were deduced from experience after 5 and 29 days after the traumatic stomatitis simulation. In washings of wound surface the number of leukocytes and epithelial cells (EPC) was calculated, the ratio (%) of live / dead EPA in precipitate was evaluated. GPRS and aorta morphological evaluation was performed. In the blood plasma total number of endothelial cells, the ratio of cells at different stages of apoptosis were counted, and endothelin-1 (ET-1) level was determined by ELISA method. Statistical analysis was performed. Reliable considered the data at $p < 0.05$.

Results. After 5 days of GPRS injury in mucosal lavages significantly increased the number of leukocytes and epithelial cells decreased in 1.7 and 2.9 times, respectively increased number of monocytes and lymphocytes (2.3 and 1.4 fold, $p < 0,01$) compared with the control. Morphological studies have shown fading inflammatory response RBCU to 29 days. Histological examination revealed aortic enhancement defects on the 29th day of the study, and for histochemical - increasing the number of lipoproteins and decreased of NO-synthase activity. In the blood plasma on the 29^{th} day of the experiment 43.9% increase of endothelin-1 ($p < 0,01$), mobilization of vascular endothelial cells, particularly in the marked stages of apoptosis - more than in 2 times ($p < 0,001$).

Conclusion. In an experimental model of the induction of DTH morphological changes were found, testifying the endothelial dysfunction in the development of toxic and allergic type of oral cavity mucosal lesions. This is confirmed by the nature of the morphological changes in the damaged area of the mucosa and endothelial dysfunction markers even in large vessels (aorta) in exposed animals. This have to be taken into account in medical treatment development.

Key words: endothelium, delayed type hypersensitivity, endothelial dysfunction, NO-synthase, lipids, endothelin.

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PATTERNS MORPHOGENESIS OF NUCLEUS AMBIGUUS IN THE PRENATAL PERIOD OF HUMAN ONTOGENESIS

Introduction. A deeper understanding of the origin and differentiation of neurons in the medulla oblongata promote understanding of the functional importance of different neural systems, including and nucleus ambiguus. Also of interest, to determine whether the relationship between the development and differentiation of neurons and the appearance of nucleus ambiguus reflexes during the prenatal period of development, involving the muscles of the pharynx and larynx, for which they are effector organs.

The purpose - determine the structure, the morphometric parameters and the cytometric parameters of nucleus ambiguus in human embryos and fetuses of different gestational age

Materials and methods. A morphological and histological study of human embryos and fetuses from 6-7 to 39-40 weeks of fetal development. Material for the study was obtained after abortion, malformations of the central nervous system were absent. Also, studies done on stillborn, died of causes not related to disease brain or spinal cord in a relatively healthy mothers. Dissection held in the Regional Office postmortem s. Vinnytsa and hospitals s. Vinnitsa. The obtained preparations were fixed 10% neutral formaldehyde solution, preparing them paraffin blocks. The next performed serial sections of the brain, thickness 6-8 mm, which are stained with hematoxylin-eosin, toluidine blue and for Van-Gisoni.

Obtained drugs evaluated visually using microscopes Unico G380, MBS-9, perform video capture camera Trek. During morphometric study used a software ToupViev. Digital data were processed statistically.

Materials research is not contrary to the fundamental bioethical norms Helsinki Declaration adopted by the 59 General Assembly of the World Medical Association in 2008.

Results. The regularities change shape, structure, cellular structure of nucleus ambiguus in the prenatal period of development. Analyzes trends in the average area of nerve cells and the average area of the nuclei of nerve cells nucleus ambiguus in different age periods of development of the embryo and fetus.

Conclusions. The tendency to accelerate the pace of increase in the area of nucleus ambiguus set of human fetuses from 22-23 to 30-31 weeks of fetal development. The increase of the number kario- and somatohrom neurons of fetuses in each age group from 8-9 to 17-18 weeks, and reduce the density of their location from 17-18 to 39-40 weeks of fetal development. The changes form neuroblasts of nucleus ambiguus with spherical fetuses in from 8-9 to 17-18 week, the emergence and growth of polygonal nerve cells of 17-18 weeks, the emergence and growth of nerve cells in the fusiform fetuses 37-38 and 39-40 weeks gestation. Established tendency to rapid increase in the average area of neurons from 8-9 to 17-18 weeks of fetal development, stabilization of 17-18 to 30-31 weeks and the slow growth of 30-31 to 39-40 weeks of fetal development. The trend to increase the average area of the nuclei of neurons from 10-11 to 14-15 weeks of fetal development, stabilization of 14-15 to 22-23 a week and increase from 22-23 to 37-38 weeks of fetal development.

Key words: prenatal ontogenesis, nucleus ambiguous, morphogenesis, morphometric parameters, cytometrik parameters.

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COMPUTED TOMOGRAPHY CHARACTERISTICS DENTAL ARCH IN YOUNG MEN AND WOMEN WITH PHYSIOLOGICAL OCCLUSION DEPENDING ON THE HEAD FORM

Introduction. *Aim* of our work – identify the particular characteristics of the dental arch according to CT in boys and girls of different craniotypes with physiological bite.

Materials and methods. The primary indicator of the size of teeth and head boys and girls from Podillia with orthognathic bite (defined by 11-points of M.G. Bushan et al.) obtained from the data bank Scientific and Research Center Vinnitsa National Medical University named after Pirogov.

For this study used dental cone beam CT scan - Veraviewepocs 3D, Sea (Japan). Research carried out by own-developed scheme within the given characteristics. Volume three-dimensional image - cylinder 8x8 cm - thickness of layer 0.2 / 0,125 mm 0,11-0,48 mSv dose of radiation, voltage and amperage 60-90kV / 2-10mA. We determined the following characteristics of dental arches: napx_6 - the distance between the apex palatal roots of upper first molar teeth; dapx_6 - the distance between the apex of the distal vestibular roots of the upper first molar teeth; vapex_6 - the distance between the apex of the medial vestibular roots of the upper first molar teeth; mapx_46 - the distance between the apex medial roots of the lower first molar teeth; dapx_46 - the distance between the apex of the distal root of the lower first molar teeth; 13_23Bugr- the distance between the cutting hills of the upper canines; 13_23Apx - the distance between the apex of the roots of the upper canines; 33_43Bugr - the distance between the tops of the lower canines; 33_43Apx - the distance between the apex of the roots of the lower canines; PonM - the distance between molar points by Pon; PonPr - the distance between the pre-molar points by Pon; DL_C - canines sagittal distance of the upper jaw measured between the incisive point and point formed by the intersection line passing through the apex of the canines and the central line of the sagittal maxilla; DL_F - pre-molar sagittal distance of the upper jaw measured between the incisive point and point formed by the intersection line passing through the pre-molar Pon point and central sagittal line of maxilla; DL_S - molar sagittal distance measured between the upper jaw incisive point and point formed by the intersection line passing through the point Pon molar and central sagittal line of the upper jaw.. Also determined: GL_1 - depth of palate at the level of canines; GL_2 - depth of palate at the level of the first small molar teeth; GL_3 - depth of palate at the level of the first large molar teeth.

Cephalometric size measurement was conducted within the program of measurements corresponding list of Martin. Craniotype determined by the formula: the largest width of the head x 100 / longest length of head. Established the following distribution of craniotype: mesocephals boys - 16, boys brachycephales - 19, girls mesocephals - 16 girls brachycephales - 26.
Statistical analysis of the results was performed using the statistical software package licensed "Statistica 6,0" using non-parametric estimation methods.
Results. Not found significant differences or trends in size of the dental arches between mesocephalic and brachycephalic boys or girls.
In the study of gender differences of investigated parameters of dental arches established significantly greater or trend towards to higher values in boys, namely: in the general group - all indicators except DAPX_46, BUGR33_43 APX33_43 GL_2; in mesocephalic group - all indicators except DAPX_6 DAPX_46 VESTBUGM BUGR33_43 APX33_43 DL_C GL_3; in brachycephalic group - all indicators except NAPX_6, DAPX_6 MAPX_46 DAPX_46 BUGR13_23 BUGR33_43 APX33_43 DL_C GL_3 GL_1 GL_2 GL_3.
Conclusions. Absence of significant differences or trends in sizes of the dental arches between mesocephalic and brachycephalic both genders justify the provision better manifestation of interconnections in contrast (extreme options) of craniotypes. Sexual variability of morphometric parameters of dental arch consists in prevalence of all sizes in boys.
Key words: characteristics of the dental arch, boys, girls, mesocephalic, brachycephalic, cone-beam computed tomography.

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CORRELATION CONSTITUTIONAL PARAMETERS OF BODY IN PRACTICALLY HEALTHY WOMEN OF PODILLYA MESOMORPHIC SOMATOTYPE WITH INDICATORS OF CEREBRAL CIRCULATION

Introduction. *Aim* of our work – identify features connections anthropo-somatometric parameters in practically healthy women of Podillya mesomorphic somatotype with indexes of cerebral circulation.
Materials and methods. The results of anthropometric, somatotypological and rheoencephalography studies conducted in practically healthy urban male and female of Podillya taken from the data bank of the materials Scientific and Research Center of Vinnitsa National Medical University named after Pirogov.
Anthropometric studies under the scheme V. Bunak in the modification of P. Shaparenko. Somatotypes determined by the method J.Carter and B.Heath, component composition and body mass - by the method of J.Matiegka and formulas American Institute of Nutrition (AIH).

Rheoencephalography parameters determined by computer diagnostic complex that provides simultaneous registration of electrocardiograms, phonocardiograms, basic and differential tetrapolar rheogram and blood pressure. As a result of processing rheogram automatically define specific points on the curve, measured key indicators, shaped and justify conclusion on the state circulatory system of the investigated area.
Analysis of correlation of the results was performed using Spearman method in a statistical package "STATISTICA 6.0".
Results. Conclusions. Found that in women magnitude of *base impedance* has credible medium strength return (r = -0.36 to -0.40 from) relationships with TSFF on the back, on the front surface of the shoulder and chest. The value of the *duration of the cardiac cycle* has a credible medium strength back (r = -0,54) relationship with the largest width of the head. The value *time rising part of rheogram* has significant direct medium strength (r = 0.30 to 0.37) connection with height swivel point, the width of the distal epiphysis (WDE) forearm, thigh, shin, arm circumference in a strained condition, transverse mid-chest size, inter-awn length and outer conjugate of pelvis with muscle mass, determined by the formula AIH. The value time part of descending rheogram has credible medium strength back (r = -0,51) relationship with the largest width of the head. The value *time of fast blood supply* has reliable direct medium strength (r = 0.30 to 0.42) relations with a height of pubic and swivel points, WDE forearm and leg, with the between awn-basin distance, with bone mass by Matejko; significant weak straight (r = 0,29 in all cases) relationships with WDE of hip, circumference of foot and outer conjugate of the pelvis. The value *time of slow blood supply* has significant straight medium strength (r = 0.30 to 0.38) connection with height of swivel point, WDE of shin, arm circumference in a tense and stress-free state, with external pelvic conjugate, with TSFF under the shoulder blade, with muscle mass, determined by the formula AIH. The value *of systolic wave amplitude* has credible medium strength return (r = from -0.32 to -0.39) relationships with TSFF on stomach, side, hip, with endomorphic somatotype component by Heath-Carter, with fat mass by Matejko; reliable reverse weak (r = -0,29) connection with the circumference of the chest on inspiration. The value of the incisure amplitude has credible medium strength back (r = -0,37) relationship with the width of the face. *Diastolic wave amplitude* value has credible medium strength return (r = -0,31 both) connections with face widths, with TSFF on stomach. The value of the *amplitude fast blood supply* has reliable medium strength return (r = from -0.34 to -0.42) relationships with circumference of the chest on inspiration, TSFF on stomach, side, hip, with endomorphic somatotype component by Heath-Carter, with fat weight by Matejko. The value of the *dicrotic index* has credible medium strength return (r = from -0.31 to -0.38) relationships with the largest width of the head and face width, with height of swivel point, WDE of forearm. The value of *diastolic index* has credible medium strength return (r = from -0.30 to -0.32) relationships with the largest width of the head and face width, with WDE of forearm. The value of *average speed of fast blood supply* has reliable medium strength return (r = from -0.30 to -0.40) relationships with circumference of the chest on inspiration, with TSFF on stomach, side, hip, with endomorphic somatotype component by Hit- Carter, with fat mass by Matejko; reliable reverse weak (r = -0,29) connection with TSFF on shin.

The value of *average speed of slow blood supply* has reliable medium strength return (r = from -0.30 to -0.45) relationships with waist circumference, chest on inspiration, with TSFF under the shoulder blade, on the abdomen, side, thigh, with endomorphic somatotype component by Heath-Carter, with fat mass by Matejko. The value *index tone* all of arteries has significant straight medium strength (r = 0,30 and r = 0,40) relationships with the largest head width, height of swivel point. The value *index of large caliber arteries tone* has significant straight medium strength (r = 0,32 both) relationships with the largest head width, height of swivel point; reliable reverse weak (r = -0,29) connection with a maximum length of the head. The value of the *indicator tone arteries average and shallow caliber* has reliable straight weak (r = 0,29) connection with height of swivel point.

Key words: rheoencephalography, practically healthy women, anthropo-somatometric parameters, mesomorphic somatotype, cerebral circulation indicators.

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COMPARATIVE EVALUATION OF THE EFFECT OF AMANTADINE SULPHATE AND MEMANTINE ON THE INTENSIFICATION OF NEUROCYTODESTRUCTIVE, APOPTOTIC AND PROLIFERATIVE CHANGES IN THE RETINA OF RABBITS WITH A CONTUSION OF THE VISUAL ANALYZER

Introduction. Increasing neurocytodestructive, apoptotic and proliferative activity in retinal ganglion layers with concussion visual analyzer can be identified using the methods of flow cytometry and ELISA neurospecific markers blockers and excessive activity of NMDA-receptors - promising drugs for preclinical evaluation for their new purpose as neurocytoprotective drugs.

Purpose of the study. Using using flow-cytometric analysis together with verification activity and change titles neuronal markers to evaluate the effectiveness of NMDA-receptor blockers as possible drugs with neurocytoprotective activity

Materials and methods. The experiments, which were devoted to the influence of modulators of NMDA-receptor activity: amantadine sulfate (2,5 mg/kg intravenously (i/v)) and memantine (20 mg/kg intragastric (i/g)) on intensification neurocytodestructive, apoptotic and proliferative changes in the retina were conducted on rabbits in terms of contusion eye, which is caused by the action of carbon dioxide under pressure using the methods of flow cytometry and ELISA

neurospecific markers – the activity of neuron-specific enolazy (NSE) and protein titers S100.

Results. The first 7 days of the experimental eye contusion, caused by exposure to the visual analyzer of carbon dioxide flow under pressure, characterized by the simultaneous intensification of necrotic (neurocytodestructive), apoptotic and proliferative processes in the retina of rabbits. This was evidenced by a significant relative increase in the indices of intact animals NSE activity in average 43,3 fold increase in the percentage of cells with nuclear DNA fragmentation signs (apoptosis), and increase the number of cells in the DNA synthesis phase (phase S – proliferative activity) to the total number of tissue suspension on average 14,66 times, and 4,41 ($p<0,05$), as well as significant escalation of S100 protein titers on 7 day in 39,7 times. Amantadine sulphate solution dose of 2.5 mg/kg i/v and pelletized form of memantine 20 mg/kg i/g to have reduced relative to the control group pathology percentage of cells with nuclear DNA fragmentation signs on 51,1 and 25,3%, and those which are in S-phase of the cell cycle respectively on average on 44,0 and 25,3% ($p<0,05$). At the same time, the effectiveness of the original drug PK-Merz (amantadine sulfate) was significantly higher for oral adamantane antiapoptotic activity on average 34,5%, and exceeded its antiproliferative effect by on 25%. Separate administration of amantadine sulphate or memantine contributed accurate de-escalation in the blood of rabbits NSE activity after 24 hours of the experiment an average of 1,89 and 1,59 times, and the S100 protein titers on 7 day in the eyes contusion 1,74 and 1,53 times, respectively.

Conclusions. Both drugs as memantine, and amantadine sulfate, are carriers neurocytodestructive activity that is associated with the implementation of the background to their administration in a contusion cytoprotective eyes anitapoptotic and antiproliferative action. By its efficiency in terms of the model eye contusion, amantadine sulfate conditionally effective dose of 2,5 mg/kg i/v in significantly superior memantine 20 mg/kg i/g.

Key words: eye contusion, amantadine sulphate, memantine, apoptosis, neuron-specific enolase (NSE), the S100 protein.

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THE RELATIONSHIP BETWEEN THE MANIFESTATIONS OF ALLERGIC REACTIONS AND CONCENTRATION OF HERBS' POLLEN

Introduction. Hayfever is one of the most common allergic diseases caused by pollen allergies and accompanied by acute inflammation of the mucosa of the respiratory tract, eyes, and nose. Thus, according to different sources, from 5 to 30% of the population in Europe and in Ukraine are allegro-sensitive to pollen. For our country, the source of most important allergens are considered ragweed (Ambrosia),

wormwood (Artemisia) and genus Poaceae plants. Therefore, the objective of our study was to establish causal-and-effect relationship patterns for incidence of allergic diseases depending on the concentration of pollen from herbaceous plants, which is essential for management of prevention and improvement of diagnostics and treatment of hayfever in the population.

Materials and methods. The study was conducted at the premises of the Vinnytsia National Pyrohov Memorial Medical University in 2012-2014. The data of aerobiologic monitoring of concentrations of allergenic aeropalinoflory pollen were obtained by Burkard spore trap, located on the roof of chemical building of the VNMU at a relative height of 25 m. Every year observations have been conducted from March 1 to October 31.

To determine the connection between the volume and time of plants pollination and a degree of manifestation of clinically significant symptoms in patients sensitive to pollen from herbaceous plants, we conducted the study of medical records provided by the allergy ward of Vinnytsia Municipal Clinical Hospital No.l for three pollination seasons of 2012-2014.

To identity the cause-significant allergens, all patients were taken skin test using prick-tests manufactured by TOV "Immunoloh", Vinnytsia, Ukraine. Results.

During the study, in 2012-2014, 164 patients aged from 14 to 89 visited the allergy ward of Vinnytsia Municipal Clinical Hospital No. 1 with complaints for allergy to pollen from herbaceous plants.

Results. 25-44-year-old patients were the most important group among the age groups of patients suffering from allergies. The second ranked was the group consisting of 15-24-year-old patients. The third place occupied the group of 45-59-year-old patients. The results of reaction on mixed allergens were correlated with the rank scale of measurements, namely "mild," "moderate", "severe", and "very severe" reaction.

For these types of variables, the correlation analysis was performed using contingency tables.

In the presence of pollen grains (PG) of Artemisia (ARTE_B=1), "very severe" reactions met twice as high as "moderate": 20.83% against 12.50%, respectively. In the absence of Artemisia, 70% of patients did not present any allergic reactions. "Moderate" response occurred in 6.4% of cases in the absence of wormwood pollen, and in the presence of Artemisia pollen - in 12.5%) of cases. For "very severe" reaction, all values were 12.77%) and 20.83%), respectively. That means that "moderate" and "severe" reactions were presented with wormwood PG twice as likely as in their absence.

In the presence of ragweed pollen, "very severe" response occurred twice as likely as "moderate" one: in 33.33%) of patients against 16.67%). In the absence of ragweed pollen, 90% of patients did not present any allergic reactions. "Moderate" response in the absence of Ambrosia pollen in the ambient air occurred in 6.78% of allergy cases, and in the presence of Ambrosia PG — in 16.67% of cases, respectively. For "moderate" reaction, these figures were 11.86%) and 33.33%, respectively.

Therefore, "moderate" and "severe" reactions of patients occurred in the presence of Ambrosia PG twice as likely as in their absence.

In the absence of Poaceae pollen in the ambient air, 60% of patients did not present any allergic reactions.
We calculated the risk of allergies depending on concentration of pollen in the air of Vinnitsa.
Conclusion. 1. In the presence of ragweed and wormwood pollen in the ambient air of Vinnytsia, "moderate" and "severe" reactions occurred in patients twice as high as in the absence of pollen. 2. In the absence of ragweed pollen grains, 90% of patients did not present any allergic reactions. In the absence of wormwood pollen, 70% of patients had manifestations of allergies. In the absence of grass pollen, 60% of patients did not have allergic reactions to a mix, containing Poaceae pollen. 3. We established and statistically proved that the greatest risk of seasonal allergies for residents of Vinnytsia in 2012-2014 presented ragweed (RR — 1.35, 1.28-1.41; p <0.05) and wormwood (RR = 1.2, 1.14-1.31; p <0.05). Grass pollen allergens presented lower risk of allergy development (RR= 1.09, 1.01-1.19; p<0.05). 4. In the future research, we consider reasonable studying dependence of the severity of manifestation of allergic reaction on total intensity of herbaceous plants" pollination and peak concentration of pollen grains during the pollination season.
Key words: herbaceous plants" pollen, pollen mix, allergic reactions.

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FEATURE CENTRAL HEMODYNAMICS, INTRACRANIAL PRESSURE AND MICROCIRCULATION IN THE CAPILLARIES CEREBRAL CORTEX OF RATS WITH DIFFERENT HEMORRHAGIC STROKE SUBTYPES THE BACKGROUND INFUSIONS OF ADEMOL OR NIMODIPINE

Introduction. The presence at solution of Ademol stimulatory effect on cerebral blood flow in the basin of the internal carotid artery with subarachnoid hemorrhage, became the basis for the study of its impact on microcirculation in the cerebral cortex at different types of hemorrhagic stroke and its effect on the central hemodynamics and intracranial pressure as factors forming a stable brain blood flow.
Purpose of the study. Conduct a comparative description of the impact of nimodipine infusion Ademolu aba changes in cerebral perfusion in the cerebral cortex and its dependence on the state and central hemodynamics in intracranial pressure in rats with different subtypes of hemorrhagic stroke.
Materials and methods. Impact assessment infusion solution of Ademol aba nimodipine on cerebral perfusion changes in the cerebral cortex and its dependence

on the state and central hemodynamics in intracranial pressure in hemorrhagic stroke, conducted on models of intracerebral and subarachnoid hemorrhage in rats.
Results. Coursework infusion in rats with model hemorrhagic stroke ampoule 1,0 % solution of "Ademol" and the reference drug nimodipipin in doses respectively 2 mg/kg and 30 mkg/kg, falling amortized process of brain perfusion, stabilizing its performance in the microcirculation coefficient levels that exceeded similar to those in the control group pathology on average 3,99 and 2,76 times (intracerebral hemorrhage (ICH)) and 7,30 and 4,74 times, respectively, with subarachnoid hemorrhage (SAH), $p<0.05$. The magnitude of the stimulating effect on the microcirculation in the cortex adjacent to the middle cerebral artery, solution of "Ademol" significantly superior to nimodipine with ICH in an average of 1,44, while the SAC 1,54 times, respectively.
Conclusions. The basis for the restoration of microcirculation and oxygenation in the blood vessels of the microvasculature of the brain against the background of the separate treatment of hemorrhagic stroke solutions of "Ademol" and nimodipine, is the stabilization of indicators reflecting the state of the central of hemodynamics and de-escalation of intracranial pressure.Solution of Ademol is a promising drug for the treatment of hemodynamic disorders in hemorahchnomu stroke and neuroprotective efficacy and mechanisms of action is - a priority for future research.
Key words: ademol, nimodipine, hemorrhagic stroke, laser Doppler.

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PSYCHOPHYSIOLOGICAL ANALYSIS OF FORMATION OF AGGRESSIVE AND ANXIETY MANIFESTATIONS OF PERSONALITY AND ADAPTABILITY OF THE ORGANISM OF STUDENTS WHO WERE IN IN A SITUATION OF THE PRE-EXAM AND EXAM STRESS

Introduction. Pre-examination and examination stress is one of the most powerful factors that cause psychological stress among students. Also it is as a kind of critical situation, the result of which could have a direct impact on the situation of students in school, and, literally, to his fate [Dyrbye et al., 2006; Kötter, 2016]. Additional circumstances that increase the impact of stress on students is the need to demonstrate their knowledge and skills in a very brief period of time. According to current scientific literature medical students on all continents have relatively high levels of depression, anxiety, fatigue and show initial signs of emotional burnout [Dyrbye et al., 2006; Higuchi, 2016; Kim, 2016; Kötter T., 2016; Shim et al., 2016].
The aim of the study is to perform the psychophysiological analysis of formation of aggressive and anxiety manifestations of personality and adaptability of the organism of students who were in in a situation of the pre-exam and exam stress.
Materials and methods. For the study 67 third year students (35 females and 32

males) of Vinnitsya National Medical University named Pirogov were recruited. Initial evaluation of psychophysiological characteristics was performed a month before examination and then it was repeated exactly prior examination. To assess the characteristics of situational and trait anxiety questionnaire Spielberger in Hanin's modification was used, to determine the level of expression of aggressive manifestations we used Buss and Durkee Hostility Inventory [Raigorodskyi, 2011]. Statistical analysis of the results was performed using the applications of multivariate statistical analysis "Statistica 6.1 for Windows" (owned Vinnitsya National Medical University named Pirogov, license № AXX910A374605FA).

Results. During this study the psychophysiological analysis of the regularities of formation of anxiety and aggressive manifestations of personality and adaptive capabilities of students in higher medical educational institutions in the conditions of pre-examination and examination stress was performed. The evaluation of situational anxiety showed a substantial increase in the severity of its criteria indicators during the period of preparation for the exams ($p(t)<0,05$-$0,01$). Considerably more stable indicators were personal anxiety, although the level of which in the dynamics of the study period grew up, but it was not significant.

In assessing of the individual aggressive manifestations it`s quite stable character during the study period was observed, and it coincided with the time of preparation for the exam tests. In fact, during the last month of learning there were observed only a significant increase in the level of irritation ($p(t)<0,05$) and a slight increase in the level of physical and indirect aggression, suspiciousness and "resentment" among girls, as well as a significant increase in the level of verbal aggression ($p(t)<0,05$) and the growth of "resentment" and "a sense of guilt" – among youth.

Conclusions. The evaluation of situational anxiety showed a substantial increase in the severity of its indicators during the period of preparation for the exams. Personal anxiety was more stable. The level of personal anxiety during the study period grew up, but it was not significant. Individual aggressive manifestations had stable character during the study period, and it coincided with the time of preparation for the exam tests.

Key words: students, situational anxiety, trait anxiety, aggressive manifestations, examination stress, psychophysiological analysis.

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CORRELATION INDICES OF RHEOENCEPHALOGRAPHY WITH THE INDEX STRUCTURE AND BODY SIZES IN PRACTICALLY HEALTHY GIRLS FROM PODILLYA

Introduction. *Aim of our work* – determining characteristics of connections anthropometric, somatotypological indicators and body weight component in almost healthy girls from Podillya with indicators of cerebral circulation.

Materials and methods. Anthropometric, somatotypological and rheoencephalography study conducted in 150 almost healthy urban women aged from 16 to 20 years, in the third generation residents of Podilskiy region of Ukraine on the basis of Research Centre Vinnitsa National Medical University named after Pirogov. Committee on Bioethics Vinnitsa National Medical University named after Pirogov found that materials of research does not deny the major bioethical standards of the Helsinki Declaration, the European Convention on Human Rights and Biomedicine (1977), the relevant provisions of the WHO and the laws of Ukraine.

Anthropometric studies conducted under the scheme V. Bunak. Somatotypes determined by the method of J.Carter and B.Heath, component composition of body mass - by the method J.Matiegka and the American Institute of Nutrition (AIN).

Rheoencephalography parameters determined by computer diagnostic complex. As a result of processing rheogram automatically define specific points on the curve, measured key indicators, shaped and justified opinion on the circulatory system of the investigated area.

Analysis of the results connections performed using Pearson method in the license statistical package "STATISTICA 6.1".

Results. Clearly aware that rheographic method allows to register some value related with blood supply, but also depends on several factors such as the resistivity of the blood and tissues, middle section of body segments, which in turn depend on the size of the segment (hypokinetic type of circulation is characteristic for people with high values of physical development and relative brachycephaly and, conversely, hyperkinetic type of hemodynamics are investigated with reduced rates of physical development and relative dolichomorphic type), we, nevertheless, considered it appropriate to conduct a comparative analysis of the research which purpose was to study rheographic options of cerebral vessels and other anatomic sites investigated in a similar sample.

In the works relating rheoencephalography marked most similar to the patterns obtained by us: direction and quality characteristics of correlations (mostly direct links with longitudinal dimensions of the head, totally, longitudinal, covering body size, mesomorphic somatotype component, muscle and bone mass by Matejko and feedback with the smallest width of the head and ectomorphic component somatotype).

This allows us to confirm the data on the circulation of the brain affecting a number of factors specific to him.

Conclusions. Cerebral hemodynamics different from the blood supply of other organs not only in greater intensity and constancy, but also in close relationship with the movement of liquor and features of collateral circulation. In addition, the anatomical features of cerebral arteries and a late completion of the mechanisms of central hemodynamics and mechanisms of autoregulation of cerebral blood flow in patients with various somatotypes also affect their tone

Key words: rheoencephalography, practically healthy girls, constitutional body parameters, indicators of cerebral circulation.

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TEMPERAMENT CHARACTERISTICS IN TEENAGERS WITH PSYCHOSOMATIC DISORDERS

Introduction. Study of peculiarities of the character, temperament and individual differences associated with them, is an urgent problem in adolescents, because it is temperament that determines the nature and intensity of emotional experience, individual human reaction to stressful situation that can lead to the development of psychosomatic disorders.

Materials and methods. The study included 202 adolescent students of Khmelnitsky high schools №1, №2 and boarding school. Using clinical and psychopathological method a comprehensive assessment of mental status of respondents was carried out. Adolescents were divided by social status and age groups: younger adolescents (10-14 years), middle school age (15-16 years) and older teens or youths (17-18 years).

Personality questionnaire (Aizenko method for teenagers) designed for the diagnosis of extra- and introversion and neuroticism (stability-instability) was used to determine the characteristics of temperament. Statistical analysis was done using Statistica 5.5.

Results. Analysis of the survey results found that in all age groups sanguine temperament (34.65%) and choleric (31.19%) one were the most common. Thus, among the adolescents from complete families sanguine characteristics were defined significantly more often (46.15%) compared with other types of temperament. Phlegmatics (20.0%), mixed type (13.85%), melancholics (12.31%), cholerics (7.69%) were equally distributed with the lowest number of representatives of unbalanced temperament type.

Among schoolchildren from incomplete families the distribution by temperament types was the following: cholerics - 45.16%, melancholics - 38.71%, sanguinics - 29.03%, indicating an equal distribution of temperament types; phlegmatic type was determined in 12.90%, mixed type – in 6.45% of adolescents.

Orphans often had choleric temperament - 41.51% and sanguine temperament - 29.25%; phlegmatic (16.04%), melancholic (11.32%), mixed type (1.89%) occurred more rarely.

Research of temperament in adolescents depending on psychopathological syndromes found that choleric temperament occurred significantly more often in anxious-depressive syndrome (56.25%), while in asthenic-neurotic syndrome - sanguine (42.6%) and choleric temperament (30.0%) predominated. In anxiety-phobic and conversive-dissociative syndrome all types of temperament were determined equally.

Conclusions. 1. The most common in all age groups was sanguine temperament (from 28.57% in older teens to 36.79% in early adolescence) and choleric type (from

29.25% in the younger adolescents to 42.86% in the older adolescents).
2. Sanguine characteristics were defined in significantly greater number of adolescents from complete families (46.15%), whereas in single-parent families - in 29.03%, and in orphans - in 29.25%. By contrast, choleric temperament was found in 45.16% of those from incomplete families, orphans - 41.51% and 7.69% - in adolescents from complete families.
3. In anxiety-depressive syndrome choleric temperament was significantly more common (56.25%), while in asthenic-neurotic - sanguine temperament (42.6%) and choleric one (30.0%) prevailed. In anxiety-phobic and conversive-dissociative syndromes types of temperament were distributed equally.
Key words: psychosomatic disorders, temperament, neuroticism, extroversion, introversion, teenagers.

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LINEAR INDICES CORRELATION OF MANDIBLE WITH POSITION OF TEETH CHARACTERISTICS AND FACE SOFT TISSUE PROFILE AMONG ADOLESCENCE RESIDENTS OF UKRAINE

Introduction. Aim of our work – establish connections features linear performance of the lower jaw with characteristics position of the teeth and soft tissue facial profile in adolescents residents of Ukraine with orthognathic bite.
Materials and methods. Using the device Veraviewepocs 3D, Morita (Japan) in 38 boys (age from 17 to 21 years) and 55 girls (aged from 16 to 20 years) with orthognathic bite were obtained and analyzed lateral teleroentgenograms and scans.
Cephalometric points and measurements were performed according to the recommendations of C.C. Steiner (1959), and anatomical - by Basavaraj Subhashchandra Phulari (2013) and S.I. Doroshenko and Ye.A. Kulhynskiy (2007).
We determined linear performance lower jaw angle characteristics of locking plane angular and linear characteristics position of the teeth, angular and linear properties of soft tissues.
Statistical analysis of the results carried out in the license package "Statistica 6,0" using nonparametric methods for evaluation of the results.
Results. In summary form the most important for practical medicine correlation analysis results can be summarized as follows:
the effective length of the mandible in young men will be greater at higher values of distance 1u_Avert, angles Z and Max1_SN, distance Pog_NB and less - at higher values of angles YGOCLPl, SN_OcP, POr_OcP and distance Ls_NsPog ', and in girls will be greater at higher values of angles YGNEBAPX and Max1_SN, distances and

1u_Avert 1u_NA.
the length of mandible in boys will be greater at higher values of thickness of soft tissue chin distances Pog_NB and Sm_H line, angle Z, upper lip thickness and depth of the nasolabial folds and smaller - with higher values of angles YGOCLPl and SN_OcP, vestibular-lingual inclination of 14 and 15 teeth, Holdaway ratio, rotation of 46_l tooth, and in girls will be greater at higher values of the thickness of the upper lip and distance Pog_NB.
distance PFH in boys will be greater at higher values of the angle YG33_34, with vestibular-lingual inclination of 13 tooth, angle 1l_MeGo and distance 1u_Avert, corners IMPA, Mand1_ML, Max1_SN, depth of nasolabial folds, angle Z, distance 1u_NA and angle Max1_NA and less - with larger values of angles POr_DOP, POr_OcP, SN_OcP, Mand1_MeIm, Max1_SpP, nasolabial angle, and in girls will be greater at higher values of YGNEBAPX angle, mesio-distal inclination of tooth 41 and the distance Pog_NB and less - at higher values of angles YGOCLPl and SN_OcP.
distance PN_Pog in boys will be greater at higher values of distance 1u_Avert, vestibular-lingual inclination of 12 and 13 teeth, angle of inclination of the upper canines in the lateral projection, angle Max1_SN and FMIA, the thickness of soft tissue chin, depth of nasolabial folds, angle Z and smaller - with larger value of the angle POr_DOP, POr_OcP, YGOCLPl and SN_OcP, 14 tooth rotation, angle Max1_SpP and depth of nose, and in girls will be greater at higher values of vestibular-lingual inclination of 11 and 13 teeth, angles of inclination of the upper and lower canines in the lateral projection, distance 1u_Avert, corners Mand1_MeIm, Max1_SN, FMIA, Z and lower - with higher values of angles POr_DOP, POr_OcP, YGOCLPl and SN_OcP, vestibular-lingual inclination of 41, 43 and 44 teeth, angle Max1_SpP and depth nose, mesio-distal and vestibular-lingual inclination of 42 of the tooth and the distance 1l_NB.
length of branches of the mandible in boys will be greater at higher values of vestibular-lingual inclination of 13 tooth, angle 1l_MeGo, distance 1u_Avert, angle IMPA and Mand1_ML, depth of nasolabial folds, angle Z, rotation of the 11 tooth and smaller - with greater value of the angle POr_OcP, POr_DOP and SN_OcP, Mand1_MeIm, nasolabial angle, rotation of 14 tooth, and in girls will be greater at higher values of distance Pog_NB and Sn_H line, angle Z and lower - with higher values of distances Li_NsPog 'Li_H line and Ls_NsPog'.
Conclusions. S_L distance will be greater in boys with larger value of the angle Max1_SN, vestibular-lingual inclination of 11 and 13 teeth, angle of inclination of upper and lower canines in the lateral projection, distance 1u_Avert, Max1_NA angle, thickness of soft tissue chin, distance Sm_H line, the depth of nasolabial fold, angle Z, the thickness of the bases of the upper lip and upper lip, corners BCH_NCH_R and Mand1_MeIm and smaller - at higher values of angles YGOCLPl, SN_OcP and Max1_SpP, POr_DOP, POr_OcP, inter-incisal angle on CT, Holdaway ratio, angle II, nasolabial angle, depth of nose, and in girls will be greater at higher values with angle of inclination of the lower canines in the lateral projection, with angle YGNEBAPX, with angles Max1_SN and FMIA, with distance Pog_NB and angle Z, angle of the upper canines in lateral projection and smaller - at higher values of angles SN_OcP, YGOCLPl , POr_DOP and POr_OcP, BCH_NCH_L, distance 1l_NB, Holdaway ratio,

angles and Mand1_NB Max1_SpP, mesio-distal inclination of 44 teeth, angle BCH_NCH_R and distance 1l_APog.
Key words: cephalometry, odontometry, boys, girls, linear indicators mandible, indicators position of the teeth and soft tissue profile.

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ASSESSMENT HAEMOSTATIC EFFECT OF DESIGNED METHOD ENDOSCOPIC REPARATORY-HEMOSTATIC INJECTING THERAPY GASTROINTESTINAL BLEEDING

Introduction. Treatment of ulcerative gastro-duodenal bleeding is one of the most pressing problems of abdominal surgery for a long time. The majority of patients were operated on profuse bleeding in the early hours of hospitalization. Using the techniques of endoscopic hemostasis has reduced the level of open surgery by 72%. A perspective direction is local administration stimulators of reparative processes in addition to injecting standard hemostatic therapy. There is a need to study the possibility of introducing local platelet-rich plasma, to accelerate regeneration during endoscopic hemostasis.
The aim of study was to estimate an efficiency of hemostasis on local transplantation of platelet-rich plasma during reparatory-hemostatic injecting therapy experiment.
Materials and methods. The proposed method has been applied in experiments on 5 rabbits of both sexes weighting 3-5 kg. Blood sampling (8 ml) was performed from ear veins. Received whole blood was centrifuged at a speed of 160g for 8 minutes. Then supernatant liquid was selected into a separate syringe. Was received about 4 ml platelet-rich plasma in average.
After modeling bleeding from anterior wall of the stomach was performed a standard injecting therapy by physiological saline. After modeling bleeding from posterior wall of the stomach injecting hemostatic therapy was complemented by local administration of platelet-rich plasma. The results were evaluated at 1, 7, 14 days.
Results. There is no rebleeding in any case within 2 minutes after an endoscopic hemostasis. In different stages of the study were evaluated such factors as red blood cells, hemoglobin and blood oxygen saturation levels. The data analysis shows the effectiveness of proposed links hemostatic techniques. Dynamics of laboratory parameters and blood oxygen saturation level indicates the absence of rebleeding and stability of hemostasis ($p<0,05$, t – Student's criterion).
Conclusions: The proposed method allows to achieve stable and reliable hemostatic effect in of gastrointestinal bleeding model.
Key words: gastrointestinal bleeding, endoscopic hemostasis, platelet-rich plasma.

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IMPACT OF BENZOGEKSONY ON INTRAABDOMINAL PRESSURE IN RATS WITH ACUTE PANCREATITIS

Introduction. The severity of patients and mortality in AP is largely dependent on the presence of organ failure, and intra-abdominal hypertension is one of the reasons for the development and strengthening of organ failure in AP. Treatment of hypertension is complex and may involve a number of directions, including rational infusion therapy, improving abdominal wall compliance, evacuation intestinal content and fight with paresis bowel evacuation and intra- at extraperitoneal accumulation of fluid. We are interested to reduce the use of substances other IAP, namely ganglioplegic causing blockade of N-cholinergic receptors of autonomic ganglia, and in high doses they block N-cholinergic receptors of the central nervous system and neuromuscular synapses. Blockade of N-cholinergic receptors of skeletal muscle leads to the fact that skeletal muscles cease to contract, leading to their relaxation, abdominal volume increase and decrease IAP.
Materials and methods. The study conducted on 27 white nonlinear rats aged 4-6 months (weight 130-277 g) are kept in conditions accredited vivarium. All animals were divided into 3 groups: group 1 (n = 6) - intact control without simulation AP, group 2 (n = 11) - modeling AP without correction IAP, group 3 (n = 10) - correction of intraabdominal hypertension by benzogeksony (benzogeksony -zdorovya) after modeling AP. AP modeled by intraperitoneal administration of 20% L-arginine at a dose of 1 g / kg rat at intervals of 1 hour. The presence AP confirmed morphologically and biochemically in the works of these authors. The study was conducted for 5 days after modeling AP where most improvement was noted IAP. During the days before the experiment rats were on hunger with free access to water. The animals were anesthetized urethane (Sigma, USA) (1,1 g / kg). Research carried out by IAP measurement of pressure in the rectum in rats using container method. In the rectum injected with latex container size 0.7 x 0.3 cm, which is filled with water (water temperature 37 ° C, volume - 0,02-0,04 ml). During the 60 minutes recorded basal pressure, after which the group intact rats and control rats in group 2 of the AP intramuscularly injected water for injection, rats 3rd group were injected intramuscularly ganglioplegic benzogeksony (3.2 mg / kg). Then continued to record pressure in the rectum for a further 120 minutes. To characterize the pressure used settings are automatically determine by computer program and were transferred in cm of water column.
Results. As a result of studies found that in healthy control group rats IAP average was 1,18 ± 0,28 cm of water column. On the contrary, in rats with AP IAP sharply

increased and amounted to 5,36 ± 0,13 cm water. c. that 4.5 times (p <0,001) higher than the figure in control. The results are consistent with the literature, which is accompanied by increased IAP. Next, we investigated the effects benzogeksony at IAP in rats with AP. It is shown that the introduction benzoheksony 60 minutes of the experiment led to the fall of IAP reactionin latent period of 40 minutes. In the 100th minute of the experiment, 40 minutes after the injection, we observed a statistically significant reduction in IAP at 26,6% (p <0,001). Reducing IAP observed by the end of the experiment - to 180 th minute.

Conclusions. 1. L-arginine model of AP is optimal for studying of intraabdominal hypertension and ways of its correction at AP.

2. Benzogeksoniy means to reduce IAP at AP. Benzogeksony dose of 3.2 mg / kg is optimal because enough reduces IAP and do not causes complications in experimental rats.

3. Benzogeksoniy can be recommended for use in clinical settings to reduce intraabdominal pressure in acute pancreatitis subject to control and correction of hemodynamic parameters in patients.

Key words: acute pancreatitis, intraabdominal pressure, benzogeksony.

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SEXUAL DIMORPHISM OF VASCULAR TONE REGULATION IN RATS

Introduction. Hydrogen sulfide (H_2S) is a biologically active metabolite of sulfur-containing amino acids, gasotransmitter, antioxidant. It plays an important role in regulation of vascular tone [Kimura H., Shibuya N., Kimura Y., 2012]. However, it remains unclear existence of sex differences in the effects of hydrogen sulfide on vascular tone.

The aim was to study the influence of hydrogen sulfide donor ($Na_2S \cdot 9H_2O$) on contractile of rat aortic artery rings, content of hydrogen sulfide in aorta, endothelial function and activity of serum antioxidant systems in male and female rats.

Materials and methods. The experiment was conducted on 30 white rats of both sexes (Rattus norvegicus). Animals were in standard mode with natural light day/night, receiving water and feed ad libitum. We studied the aortic contractility, content of hydrogen sulfide in aorta, the level of malondialdehyde, protein carbonyl groups and sVCAM-1 in serum. To assess differences in the studied parameters used parametric t-test Student (normal distribution), to assess the relationships between parameters was performed by Pearson correlation analysis. Plausible data considered at p <0.05.

Results. In our research we found that $Na_2S \cdot 9H_2O$ caused vasorelaxation of rat aortic rings in a dose-dependent manner. Hydrogen sulfide donors dilated aortic rings in female to a greater extent (6.25±0.56%; 13.8±2,25%; 35.8±1,46%; 62.3±1,14% at

concentrations of 1, 10, 100, 1000 μmol/L, respectively) than aortic rings in male (5.95±0.56%; 11.1±2.53%; 29.8±1.24%; 57.5±1.10% at concentrations of 1, 10, 100, 1000 μmol/L, respectively).
In female rats the sensitivity of rat aortic artery rings to vasodilatation of hydrogen sulfide is significantly higher (EC_{50} of the vasorelaxant effect H_2S was 74.3±5,84 μmol/L) than in males (EC_{50} of the vasorelaxant effect H_2S was 95.7±6,68 μmol/L).
Hydrogen sulfide levels in the aorta was significantly higher in females (20.9%), whereas serum sVCAM-1 and activity of lipid and protein peroxidation significantly higher in males (13.8-23.5%).
The index of aorta sensitivity to the relaxing action of H_2S (EC_{50}) significantly and inversely correlates with the content in serum of sVCAM-1, malonyl dialdehyde and protein carbonyl groups (r=0,59-0,70), while the strength of these connections is significantly higher in females than in males.
The identification of more profound mechanisms involved in sexual dimorphism of H_2S-induced vasorelaxation of aortic artery rings requires further investigation.
Conclusion. In female aortic rings the sensitivity to vasodilatation of hydrogen sulfide is significantly higher than in males, which is associated with higher levels in female of hydrogen sulfide in aorta, lower level of serum sVCAM-1 and lower activity of processes of lipid and protein peroxidation.
Key words: hydrogen sulfide, aorta, vasodilatation, males, endothelium, peroxidation of lipids and proteins

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EFFECT OF IMPROVEMENT MOTOR SKILLS IN HEART RATE IN RATS

Introduction. Reactions of cardiovascular system on exercise stress are studied in details both in humans and in animals: dependency of inotropic and chronotropic cardiac function from exercise stress [Klabunde, 2012, Nyhmatullyna, 1999], trained bradycardia at rest state [Abzalov, 2000], direct dependence of the work capacity recovery speed from the level of training [Pavlov, 2012] were determined. Movements implementation, usually is accompanied by an increase in heart rate (HR) [Klabunde, 2012].
In the previous work we established that the learning process is characterized not only by increasing forelimb use, increased accuracy of goals reaching, efficiency of movements, but at the stage of perfect skill is accompanied by severe short-term bradycardia [Vlasenko, etc., 2010].
The aim of the study. To study the heart rate in rats during the implementation of operant food-getting reflex by forelimbs in various stages of training.

Materials and methods. Results were obtained in 8 sexually mature male rats, their weight was 250-320 g, Wistar selection from vivarium O.O. Bogomolets Institute of Physiology, NAS of Ukraine in compliance with the rules of bioethics. Inder conditions of ketamine anesthesia (100 mg / kg, intraperinetoneal) on rat chest we wore backpack with a mini microphone to record phonocardiogram (PCG) [Buzyka, etc., 2011]. Within 10 - 12 daily training sessions feeding was carried out exclusively in original modified Mejiryan cage [Moroz, etc., 2010]. The steady motor skills were formed on the 8 - 9 day of training. For heart rate we calculated mean value (M), the average error (m) and 95% confidential variations interval ($M \pm 1{,}96 \times m$); the possibility of differences was determined by nonparametric Mann-Whitney criterion.
Results. During the experiment in rats, which performed operant food-getting movements we found three stages of learning: the first stage – initial, from the first to the fifth day of training, the second - transitional (from the sixth to the eighth day of training), the third stage - "Plateau "stage of improved skills (from the ninth to twelfth day), which was characterized by automated fulfilment of food-getting operant movements. In the first stage of training, during the successful implementation of operant movement the lowest value of HR-1s was recorded 1 second before the disappearance of food ball from feeder, which was significantly ($p < 0{,}001$) lower in relation to the start of food-getting movement realization for 2 seconds before the disappearance of food ball from the feeder. On the ninth day (advanced skills stage) which was characterized by automated food-getting operant movements implementation, the lowest value of HR-1s was recorded 1 second before the disappearance of food ball from feeder, which was significantly ($p < 0{,}001$) lower in relation to the start of food-getting movement realization for 2 seconds before the disappearance of food ball from the feeder. Comparing HR-1s and HR-0s (at the moment, when food ball disappeared from the trough), indicated for a significant ($p < 0{,}05$) differences in this data. Comparing HR-1s in the first and second stages of learning we have noted significant differences ($p < 0{,}02$) between them, which amounted $386{,}0 \pm 5{,}1$ and $354{,}6 \pm 4{,}2$ min-1, respectively. However, compared with each other the second and the third stage of training, at the moment of successful operant movement performance, we noted the unreliable ($p > 0{,}133$) HR-1s. Thus, the most severe motor bradycardia at the moment of operant movement realization by forelimb in rats was on the third (advanced) stage of training.
Conclusion. Therefore, short-term development of negative chronotropic effect can lead to easiness of proprioceptive information passing, increased monosynaptic spinal reflexes and improvement of the efficiency and accuracy of movements, aimed at achieving the goal.
Key words: training, operant reflex, bradycardia, rats.

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COMPARISON OF REPARATIVE PROCESSES IN FULLTHIKNESS SKIN WOUNDS UNDER THE INFLUENCE OF NONFERMENTING MICROORGANISMS

Introduction. The wound healing is one of the key issues of medicine. Nowadays wounds are contaminated by microorganisms existing in the form of a biofilm. Biofilm consist of biologically active molecules that affect the viability and differentiation of cells providing wound healing.
Material and methods. The paper defines the features of reparative processes of fullthikness skin wounds in the presence of biofilm-enriched medium of A. baumannii. The experiment was conducted on 18 adult rats. In the animal's wounds plankton A. baumannii or biofilm-enriched medium of A. baumannii without physiologically active cells were inoculated. For the analysis of wound healing macroscopic and histological examination were performed.
Results. It is shown that in wounds that healed in the presence of biofilm-enriched medium signs of inflammation were less pronounced, inflammation was constrained by experimental wound boundaries. With the onset of the proliferative phase neutrophylic leukocytes gradually disappear, unlike in artificially contaminated and control wounds where infiltration continues. Abortion of the inflammatory response in the short term, in the wounds, which were under the influence of the components of bacterial biofilms, creates the conditions for the correct connective tissue proliferation. This is confirmed by the appearance of mature collagen fibers and earlier fibroblasts differentiation. The symptoms of inflammation and epithelial defect remained in the wound, which were inoculated by the plankton A. baumannii the longest.
Conclusion. This study shows a regulating effect of the wound's microbes on reparative processes in the wound. The development of this approach can change the idea of the necessity of eradication of microorganisms in the wound.
Key words: surgical wound infection, bacterial biofilm, wound healing, A.baumannii.

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CORRELATION SONOGRAPHIC PARAMETERS OF LIVER, GALLBLADDER AND PANCREAS WITH CONSTITUTIONAL PARAMETERS OF A BODY IN PRACTICALLY HEALTHY MEN FROM PODILLYA

Introduction. *Aim of our work* – establishing and analysis communications sonographic performance of liver and its blood vessels, pancreas and gallbladder with constitutional parameters of body in practically healthy male of Podillya of first mature age and generally by distribution into age groups up to and over 25 years.

Materials and methods

On the basis of Scientific and Research Center Vinnitsa National Medical University named after Pirogov as a result of a comprehensive survey of urban men by age from 22 to 35, in the third generation residing in Podilskiy region of Ukraine were selected 92 healthy men (56 – from 22 to 25 years old and 36 – from 26 to 35 years).

Ultrasonography of abdominal organs was performed using ultrasound diagnostic system "CAPASEE" SSA-220A (Toshiba, Japan) convex transducer with an operating frequency of 3.75 MHz according to conventional methods. Defined: slanting vertical size of the right lobe of the liver on inhale and exhale, the thickness of the right lobe of the liver on inhale and exhale, cranio-caudal size and thickness of the left lobe of the liver on inhale and exhale, length and thickness of the caudate lobe of the liver; the diameters of portal vein and the left, right and middle hepatic veins; thickness, width and height of the pancreatic head, thickness and height of the body of the pancreas, thickness and height of the tail of the pancreas; length, width and thickness of the gallbladder, an longitudinal and cross-sectional area of gallbladder. Gallbladder volume calculated by a formula that allows define the volume of ellipse: $V=0{,}524\times \text{length} \times \text{width} \times \text{thickness}$.

Anthropometric survey was conducted in accordance with the scheme V. Bunak in modification of P.P. Shaparenko. To evaluate the somatotype used mathematical scheme of J. L. Carter and B. H. Heath. Component composition of body weight was determined by methods J. Matiegka and the American Institute of Nutrition.

Correlation analysis was performed in license pack "STATISTICA 6.1" using methods of Pearson and Spearman.

Results. Conclusion. In men, of the first mature age, set following distribution of significant correlations sonographic liver size and its vessels, gall bladder and pancreas with constitutional parameters of the body: with the size of the liver (211 of 580 possible - 36.4%, most of them direct weak - 16.4 % and average power - 15.7%), most of them with total (22 of 30 - 73.3%), covering body size (78 of 150 - 52.0%), the component indices of body weight (20 of 40 - 50.0%), body diameter (23 of 70 - 32.9%) and somatotype components (13 out of 40 - 32.5%, most of them return); with the size of the vessels of the liver (35 out of 232 possible - 15.1%, most of which direct medium strength - 8.2% and weak - 6.5%), most of them with total (4 of 12 - 33.3%), longitudinal body size (6 of 20 - 30.0%) and the component indexes of body weight (5 of 16 - 31.3%); with size of the gallbladder (80 of 348 possible - 23.0%, most of them direct weak - 13.5% and average force - 6.6%), most of them with TSFF (29 of 54 - 53.7%) and somatotype components (10 of 24 - 41.7%, almost half of them return); with the size of the pancreas (99 of 406 possible - 24.4%, most of them direct weak - 14.3% and average force - 8.9%), most of them with total (14 out of 21 - 66.7%) , including body size (47 of 105 - 44.8%), the component indices of body weight (11 of 28 - 39.3%) and the diameter of the body (16 of 49 - 32.7%).

In men 22-25 years the number of significant correlations of sonographic liver size and its vessels, gall bladder and pancreas with the constitutional parameters of the body by 28% less than in men of overall group (according for the size of the liver - 177 against 211, the vessels of the liver - 22 against 35, gall bladder - 45 vs 80; pancreas - 62 versus 99), but their power is growing (50.4% of the average force against 39.4% in the total group); men 26-35 years the number of significant (193, of which 170 direct and 23 reverse) and average force false (129, of which 113 direct and 16 reverse) correlations by 24.0% less than in men of overall group (mainly due to fewer ties with the size of the liver), but their strength is also increasing (48.2% credible medium strength).

In representatives of different age groups, the largest number of reliable and unreliable medium strength (only in men of age 26-35 years) correlations with constitutional body parameters set: in men 22-25 years - for liver size (177 - 30.5%, most of them direct medium strength - 20.7% and weak - 6.2%) with total (13 of 30 - 43.3%), covering (56 of 150 - 37.3%), longitudinal body size (15 from 50 - 30 0%), body diameter (21 of 70 - 30.0%) and TSFF (31 of 90 - 34.4%, almost half of them return); for size of the gallbladder (45 - 12.9%, most of which are direct medium strength - 8.6% and - 4.3% weak) with TSFF (25 of 54 - 46.3%); with size of the pancreas (62 - 15.3%, most of which are direct medium strength - 13.3%) with total body size (8 of 21 - 38.1%); in men 26-35 years - for liver size (107 - 18.4%, most of which are direct credible medium strength - 12.2%) with covering body size (49 of 150 - 32.7%); for vessels of the liver size (40 - 17.2%, most of which are direct credible medium strength - 8.6% and inaccurate - 6.9%) with longitudinal (11 of 20 - 55.0%) with total body size (4 of 12 - 33.3%) and the component indexes of body weight (5 of 16 - 31.3%); with size of the gallbladder (71 - 20.4%, most of which are direct credible medium strength - 11.5%) with covering body size (29 of 90 - 32.2%) and TSFF (17 of 54 - 31.5%); with size of the pancreas (105 - 25.9%, most of them direct unreliable medium strength - 14.3% and reliable - 9.6%) with the covering (51 of 105 - 48.6%), total body size (7 of 21 - 33.3%) and the component indexes of body weight (12 of 28 - 42.9%).

Key words: correlations, liver, gallbladder, pancreas, ultrasound, men, body size.

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CORRELATION OF HEMODYNAMIC PARAMETERS HIP WITH CONSTITUTIONAL CHARACTERISTICS OF SPORTSMEN WITH MESOMORPHIC SOMATOTYPE

Introduction. Today, numerous studies examining the relationships between the features of the constitutional bodies and functional parameters of organs. Particular

attention is paid to the cardiovascular system, including peripheral hemodynamics parameters changes depending on the anthropometric dimensions.

The aim of our study was to determine the links between hemodynamic parameters hip and constitutional characteristics of the athletes mesomorphic somatotype.

Material and methods. Conducted a comprehensive survey of athletes youthful period of ontogenesis (from 17 to 21, inclusive) high level of sportsmanship (the first adult category to sport masters) who were divided into 3 groups: volleyball (60), athletes (88 persons) and wrestlers (61 person). The group included athletes sprinters athletes (running at 100 m, 200 m, 400 m, 110 m hurdles). Wrestlers were light and medium weight categories. Assessment of quantitative parameters conducted by the method Ronkin and Ivanov. We conducted anthropometric research methodology of Bunak, somatotypological - estimated by a modification of Heath-Carter, determining a component of body weight by the method Matejko. Analysis of the results conducted using STATISTICA 5.5 (license № AXXR910A374605FA) using nonparametric methods for assessing performance. Analysis of correlations were performed using the statistical method of Spearman.

Results. After dividing the athletes with different types of muscular activity somatotype was found that most of the people in all groups was compared mesomorphic type of constitution (40 fighters, 51 athlete, volleyball 32). Numerical relationship established time parameters reovazohramy hips with total and partial body size in mesomorph who were engaged in the struggle.

We found direct connections constitutional characteristics over time, slow blood supply make it possible to assert that it is increasing the diameter of the body, limb circumference and chest, muscle size and bone components of the body weight leads to increased vascular tone and, consequently, the extension phase of slow blood supply. Conversely, a decrease in these indicators external structure of the body resulting in increased time of descending reovazohramy, which depends primarily on heart rate.

It was found that athletes of different sports (volleyball, wrestling, track and field), but with the same constitutional type (mesomorphic) have a different number and power of credible links between rheovasographic parameters of hip and indicators of the external structure of the body.

Conclusion. 1. wrestlers and volleyball mesomorphic somatotype force and the number of correlations higher than the total group of athletes. 2. fighters mesomorph most numerous correlations with anthropo-performance somatotypological body had time and tonic indicators rheogram hip, girth and width distal epiphysis femur and tibia, the size of the chest, pelvis, bone and muscle masses of the body. 3. mesomorph most numerous athletes had a relationship rheographic wave and descending parts rheogram, amplitude parameters rheographic wave speed slow blood supply. With longitudinal, obhvatnymy, cross body size, muscular component somatotype and body weight set by feedback from the general indicators zhyrovidkladennya - direct connection. 4. volleyball mesomorph correlations were most numerous of the ascending rheogram slow blood supply, arterial tone parameters (only direct connection) and average speed slow blood supply (usually reversible).

Key words: correlation, rheovasography of the hip, anthropometric dimensions, components of the somatotype and body weight, athletes, mesomorphic somatotype.

CLINICAL ARTICLES

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PHYSIOLOGICAL-HYGIENIC ASPECTS OF COMPLEX ASSESSMENT OF ANXIETY, ASTHENIA AND DEPRESSIVE MANIFESTATIONS OF STUDENTS WHO ACQUIRE DENTAL SPECIALTIES IN HIGHER MEDICAL EDUCATIONAL INSTITUTIONS

Introduction. One of the crucial components fully adequate to meet modern demands a complex physiological-hygienic assessment of personality of students is to study the leading characteristics of anxiety, asthenia and depressive manifestations that determine the patterns of the formation features of emotional state and behavioral manifestations of girls and youths (Serheta, Bardov, 1997; Chubarovskyy, 2005; Bodrov, 2006; Vary, 2007; Sukhareva et al., 2009).
The aim of the study is to examine the physiological-hygienic aspects of the complex assessment of anxiety and depressive and asthenic manifestations of students who acquire dental specialties in higher medical educational institutions.
Materials and methods. The study was conducted among students of Dental Faculty of Vinnitsya National Medical University named Pirogov at different stages in higher medical education, particularly of the studied groups were classified first-year students (30 girls and 30 youths), third-year (30 girls and 30 youths) and fifth-year (30 girls and 30 youths) courses. To assessment the characteristics of situational and trait anxiety used personality questionnaire Spielberger in Hanin's modification, to determine the level of expression of asthenic and depressive manifestations – personal questionnaire Malkova in Chernova's adaptation, and psychometric scales Zung self-assessment depression [Raigorodskii, 2008]. Statistical analysis of the results was performed using the application package applications of multivariate statistical analysis "Statistica 6.1 for Windows" (owned Vinnitsya National Medical University named Pirogov, license № AXX910A374605FA).
Results. While research aimed at determining the characteristics of situational anxiety, realized in human life as a complex emotional reactions of the individual in the form of anxiety, concern and nervousness at some particular point, and, above all, as a response to stressors living conditions, it was found that the level of criterion of performance among first-year students girls and youths is 46,50±1,35 points and 42,10±2,02 points, among third-year students girls and youths – 44,06±1.43 points

($p(t)_{1-3}>0,05$) and 36,50±2,04 points ($p(t)_{1-3}>0,05$), among fifth-year students girls and youths – 43,60±1,35 points ($p(t)_{3-5}>0,05$; $p(t)_{1-5}>0,05$) and 46,06±1,17 points ($p(t)_{3-5}>0.05$, $p(t)_{1-5}<0,001$).

The degree of expression of indicators of trait anxiety among first-year students girls and youths is 44,76±1,09 points and 41,20±1,76 points among third-year students girls and youths – 45,83 ± 1,59 points ($p(t)_{1-3}>0,05$) and 42,40±1,82 points ($p(t)_{1-3}>0,05$), among fifth-year students girls and youths – 46,60±1,09 points ($p(t)_{3-5}>0,05$; $p(t)_{1-5}>0,05$) and 45,36±1,41 points ($p(t)_{3-5}>0.05$, $p(t)_{1-5}>0,05$).

The level of expression of asthenic manifestations among first-year students girls and youths is 51,23±2,72 points and 47,73±1,80 points, among third-year students girls and youths grew to 53,43±2,84 points ($p(t)_{1-3}>0,05$) in first and up to 48,20±2,18 points ($p(t)_{1-3}>0,05$) in others, decreasing in the future among fifth-year students to 49,70±2,32 points ($p(t)_{3-5}>0,05$; $p(t)_{1-5}>0,05$) in girls and increasing to 49,80±2,66 points ($p(t)_{3-5}>0,05$; $p(t)_{1-5}>0,05$) in youths.

The degree of expression of depressive manifestations among first-year students girls and youths is 41,13±1,29 points and 40,83±1,52 points, among third-year students girls and youths grew to 41,40±1,18 points ($p(t)_{1-3}>0,05$) in first and up to 41,33±1,56 points ($p(t)_{1-3}>0,05$) among others, decreasing in the future among fifth-year students to 40,36±1,09 points ($p(t)_{3-5}>0,05$; $p(t)_{1-5}>0,05$) in girls and increasing to 41,40±1,30 points ($p(t)_{3-5}>0,05$; $p(t)_{1-5}>0,05$) in youths.

Conclusions. Established that among girls the level of situational anxiety during the stay in higher medical educational institution is gradually reduced, among youths –- at first reduced to the lowest level in the course of research third-year students in significantly increasing the final stage of being in higher medical education. However indicators of trait anxiety marked the gradual growth of its performance among girls and youths. The level of expression of asthenic manifestations among girls during in higher medical educational institutions characterized by paraboloid picture changes with the highest level of development in the mid-time study at an institution of higher education, among youths – slowly, but steadily, increasing, the degree of expression of major depressive manifestations among girls characterized by paraboloid picture changes with the highest level of development in the mid-time study at an institution of higher education, among youths – slowly, but steadily increasing.

Key words: students, dental specialties, anxiety, asthenia manifestations, depressive manifestations, physiological-hygienic assessment.

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THE ROLE OF INFLAMMATORY BIOMARKERS IN ASSESSING THE PROGNOSIS OF PATIENTS WITH CORONARY HEART DISEASE

Introduction. The purpose of research: to assess the predictive value of

inflammation biomarkers in patients with stable and unstable course of coronary heart disease and the possibility of using them for the evaluation of the destabilization process.
Materials and methods. The study involved 173 patients with verified coronary heart disease (CHD) (124 men and 49 women): 92 patients with stable angina (45 – with II functional class (FC) and 47 – with III FC) and 81 patients with acute coronary syndromes (ACS) (43 – with unstable (progressive) angina (UA) and 38 – with acute myocardial infarction (MI)). 30 healthy persons were included in the control group. In addition to standard screening tests, we define blood lipid values, blood level of fibrinogen, the plasma level of CRP and TNF-α by ELISA using test kits "hsCRP" (USA) and "TNF-α ELISA kit" (France). Duration of observation was 12 months or the first adverse event. We lost contacts of 5 patients (2.9%) and their data were excluded from further analysis. There were 30 adverse cardiovascular events in 27 from 168 patients (16.1%). As a result of years of observation, all patients were divided into two groups. The first group included 27 patients with a poor result, the second group included 141 patients without developing complications.
Results. The development of adverse cardiovascular events was not significantly dependent on the gender of patients. There were significant relationships between the adverse cardiovascular events development on the one hand and patients' age, presence of MI previously, initial decrease of left ventricular ejection fraction, CRP, TNF-α and less fibrinogen and LDL-C on the other hand.
The results of multivariate analysis showed that the strongest significant prognostic variable was the increased level of TNF-α more than 2.44 pg/ml. When we used two markers (CRP more 2.57 mg/l and TNF-α more 2.44 pg/ml) together, the model significance of CHD destabilization significantly increased.
Conclusion. Predictors of adverse CHD course during 12 months of observation in both groups with ACS and stable CHD were: TNF-α and CRP levels, presence of MI previously, initial reduced of left ventricular ejection fraction less than 50%. Determination of the main markers of inflammation in patients with CHD allows the differentiated approach to its treatment and creating the most efficient, most effective set of individual methods of cardiac events prevention.
Keywords: coronary heart disease, systemic inflammation, tumor necrosis factor-α, C-reactive protein.

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VASCULAR MOBILE ENDOTHELIAL FUNCTION AND STRUCTURAL VASCULAR WALL CHANGES IN PATIENTS WITH STAGE II ESSENTIAL HYPERTENSION AND CONCOMITANT NONALCOHOLIC FATTY LIVER DISEASE

Introduction. Very often in patients with essential hypertension (EH) and nonalcoholic fatty liver disease (NAFLD) functional and structural changes of the heart and blood vessels are marked. However, there is a little number of studies among patients with EH, combined with NAFLD, especially, on the stage of its "fat" infiltration – steatohepatosis (SP) and their results differ very much.

The aim of this study was to investigate and to evaluate vascular mobile endothelial function and structural changes of the vascular wall in patients with stage II EH and concomitant NAFLD.

Materials and methods. The study involved 170 patients with stage II EH, treated at the cardiology department of the Vinnytsia Regional Clinical Hospital named after M. I. Pirogov. Depending on the detection of concomitant SP among patients with stage II EH all persons were divided into 2 groups. The first group included 109 (64.1%) patients with concomitant SP, the second - 61 (35.9%) patients with no signs of SP. Vascular mobile endothelial function and vazodilating function were determined by D. Celermajer et al. (1992 y.) method. The structural condition of the carotid arteries was assessed using ultrasound. Arterial stiffness (AS) index was calculated as the ratio of pulse blood pressure to left ventricle stroke volume, calculated by echocardiography. Statistical calculation of the results was made using the program StatSoft "Statistica" v.12.

Results. Test with occlusion identified a significant difference of endotelial dependent vasodilatation (EDVD) between patients with stage II EH compared to the control ($p<0,05$), but there wasn't a significant difference depending on the presence of NAFLD ($p<0,05$). Test with nitroglycerin found a significant decrease of endotelial nondependent vasodilatation (ENDVD) among the patients compared with controls ($p<0,05$). Analysis of ENDVD between subjects with or without concomitantNAFLD recorded a clear trend into its decreasing ($p=0,05$) in patients with concomitant SP. Although there were no significant differences of EDVD and ENDVD between patients with stage II EH depending on the presence of concomitant NAFLD, however, a significant ($p<0,000001$) inverse correlation was estimated between SP and EDVD ($r_s=-0,62$) and ENDVD ($r_s=-0,56$). In addition, the integral index of endothelial dysfunction (EDI), which reflects the ratio EDVD to ENDVD, was significantly lower in patients with EH and concomitant SP compared to the control group ($p<0,0001$) and patients without SP ($p=0,01$). Also inverse correlation was marked between SP and EDI ($r_s=-0,58$; $p<0,000001$).

According to the results of carotid arteries (CA) ultrasound among patients with stage II EH intimamedia thickness index (IMT) didn't exceed the upper normal limit (0.9 mm). Also a significant difference of IMT wasn't observed between patients according to the presence of concomitant NAFLD ($p<0,05$). However, the incidence of atherosclerotic plaques detection in CA was significantly higher in patients with SP compared with patients without SP ($p<0,05$) and was 27,5% on both sides, while frequency of atherosclerotic plaques registration in patients with stage II EH but without SP was 14,8% in the right CA and 13,1% – in the left CA. A significant direct correlation between SP and the presence of atherosclerotic plaques of CA on both sides was registered ($r_s=0,30$; $p<0,000001$). Among all observed patients

hemodynamically important narrowing of the CA wasn't marked.
The calculation of the AS index revealed significant growth of this marker in patients with stage II EH compared with healthy individuals. Analysis, based on the presence of concomitant NAFLD, also found an increased AS index by 15,7% in the group with "fatty" liver infiltration (p=0,02). The significant direct correlation between the AS index and SP was marked (r_s=0,41; p<0,000001).
Thus, the lack of significant differences of EDVD, ENDVD and IMT in hypertensive patients with concomitant NAFLD or without it, in our opinion, may be due to exclusion from the study patients with complicated forms of hypertension, concomitant cardiovascular diseases and signs of steatohepatitis. EDI and AS, characterizing the initial changes in the functional and structural condition of the vessel wall, significantly grow in patients with SP and can be regarded as additional markers for accession of the overall cardiovascular risk in patients with stage II EH and concomitant NAFLD.
Conclusions. 1. Concomitant NAFLD in patients with stage II EH accompanied by a decrease of EDVD and next significant EDI decreasing to 0,57 (0,37; 0,65) unit compared with patients with stage II EH but without an impression of the liver (p<0,05). 2. In patients with stage II EH and concomitant NAFLD, although IMT didn't exceed the upper normal limit, incidence of detection of atherosclerotic plaques of CA was significantly higher compared to patients without NAFLD (p<0,05) and was 27,5% on both sides. 3. In patients with stage II EH progressive growth of AS index was registered versus control (p<0,05), which was significantly higher in the presence of concomitant NAFLD than in the group without SP (p<0,05).
Key words: hypertension, nonalcoholic fatty liver disease, endothelial dysfunction, arterial stiffness.

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PULMONARY FUNCTION AFTER ESOPHAGECTOMY DEPENDING ON THE TYPE OF POSTOPERATIVE ANALGESIA

Introduction. In the scientific literature found few reports on the use of thoracic paravertebral block (TPB) when performing operations on the esophagus. In Ukraine, this technique with thoraco-abdominal surgeries is not applicable. The *aim* of the research was to study the lung function after esophagectomy in patients with esophageal cancer, depending on the type of postoperative analgesia.
Materials and methods. An improved method of postoperative analgesia was using two catheters. A first catheter was placed before the operation in the epidural space Th5-Th7 level, the second – in the intraoperative paravertebral space at the level of performance of thoracotomy. The study included 80 patients operated in NIST named after A.A. Shalimov of malignant tumors of the esophagus, who underwent radical

surgery combined thoraco-abdominal access (Lewis or Garlock-Osawa): (control group – for 40 patients used postoperative thoracic epidural analgesia (TEA); research group – for 40 patients used the combined post-operative analgesia (TEA + thoracic paravertebral block)).

Results. Determined that oxygen saturation parameters were higher in the study group with a statistically significant difference in 4-48 hours after surgery (48 hours: 95,2±0,2 against 93,5±0,2; $p<0,01$). $PaCO_2$ indicators were higher in the control group (43,5±0,2 against 37,2±0,2; $p<0,01$). In studying the ratio of P/F in patients of the study and control groups at different time intervals the figure was higher in the study group (370,2±0,2 against 330,5±0,2; $p<0,03$). In 4 patients in the control group marked respiratory complications in the form of right-sided pneumonia nyzhnodolovoyi (2 patients) and pleuritis (2 patients) treated conservatively by applying antibiotic therapy.

Conclusions. Established that patients who performed surgery for esophagial cancer postoperative analgesia using thoracic paravertebral block improves indices of lung function, manifested in higher values of oxygen saturation, lower PaCO2.

Improvement of methods of combined post-operative analgesia (TEA and TPB) compared with TEA proves its efficiency with better lung function and absence of complications such as hypotension and respiratory disorders and can be recommended in clinical practice.

Key words: esophagean cancer, surgery, thoracic epidural anesthesia, thoracic paravertebral block, lung function.

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DEFINITIONS PATHOGNOMONIC SYMPTOM ARTICULAR SOFT TISSUE DAMAGES POST-TRAUMATIC COXARTHROSIS

Introduction. Deforming arthrosis of the hip joint − coxarthrosis (CA) is the most common degenerative diseases of the musculoskeletal system. In different regions of the world, its frequency varies from 7% to 25% of the adult population. SV in 60% of cases results in lower efficiency and 11,5% − disability.

This demonstrates the high medical and social significance of the spacecraft as a problem, leading to significant economic losses. Therefore, the study of new approaches to the early diagnosis, prevention and treatment of CA is today the urgent issues of modern orthopedics.

Clinical CA traumatic etiology (PT KA) depends on the nature of the injury and the effectiveness of treatment. The main factors leading to the development of this

disease include circulatory disorders of the femoral head and dyskonhruentnist joint surfaces with residual deformation. Perhaps the combination of both.
Intra soft tissue lesion elements of hip (ISTLEH) that can accompany a variety of PT KA, including: traumatic and degenerative damage atsetabulyarnoyi lips, round ligament, cartilage articular surfaces of the femoral head and vertlyuhovoyi depression faymoreau atsetabulyarnyy impindzhment-free body hip.
The initial lesions of the articular cartilage. which characterizes the I-II stage CA, hip arthroscopy is the "gold standard" the diagnosis and treatment that allows you to visually assess not only the structural and functional state of articular structures, but also to identify the relationship and their behavior during movement in the joint.
We believe interest in scientific and practical terms of a clinical study to determine which determined the pathognomonic symtomokompleksiv damage articular structures in PT KA and which were confirmed by arthroscopic.
Materials and methods. It examined 30 patients with post-traumatic osteoarthritis of the hip joint stage I-II [J. Kellgren, J. Lawrence, 1957]. Among all patients were 9 women and 21 men aged 23 to 72 years (mean age – 40,3 ± 11,34 years). The purpose of the survey was to investigate the clinical specificity and information content and research methods of radiation compared to arthroscopy in the diagnosis of intra-articular soft tissue damage in patients with early spacecraft. All these patients underwent Arthroscopic surgery at the traumatology department of Vinnitsa Regional Hospital. E. Pirogov in the period 2006-2015.
To assess the prevalence of soft tissue injuries elements articular structures (cartilage lip, round ties, synovial folds) and periarticular structures (bursa and rotator) in patients with impaired function of the hip joint (patients with initial stages of arthrosis) and their combination was conducted frequency analysis.
Results. Analyzing the data by symptoms and syndrome are characteristic ISTLEH at PT KA. Believed reliable data constituted ≥0,75. These include the following symptoms (tests): impindzhment, FABER (Patrick), Stinchfilda (lifting straight. Feet of hem. Op.), McCarthy, Log roll and symptom (a combination of 2 tests): Stinchfilda + McCarthy, Stinchfilda + Log roll, Stinchfilda + FABER, Stinchfilda + impindzhment; combination of three tests: impindzhment + FABER (Patrick) + Stinchfilda. The most informative of chastotoj ≥0,8 is symtomokompleks (combination test): + Stinchfilda McCarthy, Stinchfilda + Log roll, Stinchfilda + FABER, Stinchfilda + impindzhment.
Conclusions: 1. Defined pathognomonic symtomokompleksy characterizing intra articular lesions m`yahkotkanynnyh elements of the hip joint during the initial stages of posttraumatic spacecraft. These include combination tests: Stinchfilda + McCarthy, Stinchfilda + Log roll, Stinchfilda + FABER, Stinchfilda + impindzhment. 2. The definition above pathognomonic symptom, will improve the quality of diagnosis of intra articular lesions hip early detection, followed by surgery, reducing the progression of osteoarthritis of the hip.
Key words: diagnosis, clinical symptoms, internally the articular damage of the hip, coxarthrosis.

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INTRAUTERINE ADHESIONS IN LATE REPRODUCTIVE AND PREMENOPAUSAL AGE

Introduction. The most common cause of intrauterine adhesions, or Asherman's syndrome, are the previous mechanical injury of the basal layer of the endometrium, resulting in partial or complete obliteration of the uterine cavity, endometrial damage and the formation of adhesions. According to Evans-Hoeker E.A., Young S.L. frequency of adhesions after abortions ranges from 16 to 24%, and after hysteroscopic myomectomy – from 31 to 45%. Damage to the endometrium may occur as a result of any intrauterine surgery (medical abortion, the use of intrauterine contraceptive devices, curettage of the uterus, myomectomy, metroplasty, conization), but most authors believe that most of intrauterine adhesions occur after curettage of the uterus after childbirth or abortion. The exact mechanisms of dysregulation of post-traumatic recovery of the endometrium is not fully understood, but they include hypoxia, neovascularization, as well as increased production of cytokines and other biologically active substances. The role of infection in the pathogenesis of intrauterine adhesions remains unclear. The best method of diagnosis and treatment of intrauterine adhesions is hysteroscopy.
Objective: to study the clinical and medical history characteristics and quality of life of patients with BC as compared to other types of endometrial pathology in the late reproductive period.
Material and methods. A total of 325 women of 35-55 years old with different forms of endometrial pathology were examined: endometrial polyp was detected in 192 (59,1%), endometrial hyperplasia – in 99 (30,5%), chronic endometritis – in 113 (34,8%), simple hyperplasia with atypia – in 7 (2,2%). Intrauterine adhesions were diagnosed in 20 (6,2%) patients. Chlamydia, ureaplasma and candida were detected significantly more often in women with adhesions.
Results. The results of anamnestic, clinical, hysteroscopic and histological examination showed that the patients with adhesions were characterized by increased frequency of infertility among comorbidities. Analysis of the SF-36 questionnaire showed that patients with adhesions rated their quality of life much better than women without adhesions.
The average age of a group of women with adhesions snutrimatochnymi equaled 39,9±0,77 years. Age at menarche patients with intrauterine adhesions was 13,3±0,35, in the control group 13,1±0,07 years, $p>0,05$. The average duration of menstruation in the group with intrauterine adhesions equal to 4,8±0,31 days in the control group - 5,5±0,10 days, $p>0,05$; the average length of the menstrual cycle was 31,3±3,15 days and 28,1±0,28 days, $p>0,05$.
Menstrual disorders, endometrial hyperplasia, cervical polyps, fibroids, abnormal uterine, endometriosis, ectopic and cervical dysplasia, cysts and polycystic ovaries, a

bilateral chronic adnexitis and the use of intrauterine contraceptive observed in both study groups.
Secondary infertility is significantly more likely to suffer a patient with intrauterine adhesions.
Conclusion. It was concluded that adhesions were the hysteroscopic finding in every fourth case. Suspicion for the presence of adhesions is a critical aspect of infertility on the background of the transferred urogenital infections and hysteroscopy should be considered as a diagnostic standard for these patients. More than a third of patients have relapse within 1,5 years after hysteroscopic treatment of adhesions.
Key words: intrauterine adhesions, Asherman's syndrome, late reproductive and premenopausal age, quality of life.

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CHRONIC STRESS AS THE MAIN MECHANISM TO INITIATE AND SUPPORT DEVELOPMENT OF STRESS-INDUCED INFERTILITY

Introduction. Exceptional role of psychological stress in the genesis of the primary stress-induced infertility necessitates us conducting study of load stress features in infertile women. Psychological stress plays an important role in implementation of all physiological functions, and the reproductive system is considered the one of the most sensitive systems due to its close psychosomatic interaction.
The purpose of our study was to examine special features of chronic stress on occurrence of primary stress-induced infertility.
Materials and methods. A clinical, social, psychological, instrumental and laboratory study involved 120 women diagnosed primary stress-induced infertility, registered with health care institutions of Vinnytsia. The average duration of infertility in whole was 3,3±1,1 years in women with infertility term up to 3 years inclusively – 2,7±0,5 years; in women with infertility term over 3 years – 4,5±1,1 years. The diagnosis of primary stress-induced infertility was established based on medical history survey, clinical, laboratory and instrumental data, and results of psychological examination. Enrolled in the study were active women with childbearing potential (24-35 years) with primary stress-induced infertility and emotional stress history, but without the history of organic pathology as an infertility cause (pituitary, thyroid, adrenal, ovary, and uterus tumors). The psychological study based on a clinical interview. We have also studied the intensity features of psychological stress factors in women with primary stress-induced infertility.
Results. The share of women with a history of weak or very weak acute psychological stress was small – in general – 5,8% and 11,7%, accordingly; in women with an infertility term up to 2 years – 6,0% and 12,2% accordingly; with the infertility term ranging from 2 to 5 years – 5,3% and 10,5% respectively. However,

the majority of examined women were exposed to moderate (37,5%, 35,4% and 42,1%, respectively) and severe acute stress (35,0%, 35,4% and 34,2%, respectively). Some women with primary stress-induced infertility were also exposed to extremely severe acute stress (10,0%, 11,0% and 7,9%, respectively).

Conclusion. Therefore, the data gathered by us on occurrence of chronic stress in infertile women and on its characteristics demonstrate close relationship between infertility and chronic psychological stress, and allow us to consider the latter as the main cause of infertility in studied female population.

Acute stress can play the role of trigger that launches the pathologic response of the body. However, the chronic psychological stress plays the leading role in occurrence and chronization of stress-induced reproductive disorders.

Key words: stress-induced infertility, chronic stress, reproductive function.

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BIOLOGICAL CHARACTERISTICS OF ANTIMICROBIAL AGENT FOR *HELICOBACTER PYLORI* ERADICATION

Introduction. The bacteria *Helicobacter pylori* is the most common etiological factor for dyspepsia and peptic ulcer disease of the stomach and duodenum, and is associated with the development of adenocarcinoma and MALT-lymphoma of the stomach. The widespread use of antimicrobial combinations led to a significant drop in their clinical efficiency – up to 70% or lower, which is linked with increasing levels of resistance to clarithromycin and metronidazole. Also it is proved that the incidence of adverse events during the use of any regimens of eradication is approaching to 40%. "Granules POLIDEKANIT" containing nitazole as the main active substance, being active against *Bacteroides, Clostridia, Peptococci, Peptostreptococci, Streptococci, Staphylococci*? is a well-known for the treatment of acute intestinal infections.

The drug for *H. pylori* eradication HELICOCIN® can be considered as the closest analog to the proposed drug. It contains 750 mg of amoxicillin and 500 mg metronidazole. The reasons that prevent the desired technical result include the above-mentioned side effects caused by the wide spectrum of antimicrobial activity of the combination and distribution of resistant to metronidazole strains of *H. pylori*.

The aim of the research is to develop the drug for the treatment of stomach and duodenal ulcers associated with *H. pylori*, which is called up to minimize the negative side effects of the eradication therapy by selecting a combination of

antimicrobial agents and a complex of substances that perform protective for intestinal mucosa functions.

Materials and methods. The problem is solved by the following composition of water-soluble granules by weight %: amoxicillin 25,0-30,0, nitazole 2,5-3,0, glycyram 0,08-0,12, decametoxin 0,008-0,012, pectin 8,0-12,0, sorbic acid 0,3-0,5, microcrystalline cellulose 16,0-24,0, starch 16,0-24,0, sugar – the rest.

Comparative evaluation of the effectiveness of antimicrobial combination, which is part of the proposed drug and drug HELICOCIN® was conducted on twelve clinical strains of *H. pylori*, isolated from autopsy material of 38 patients diagnosed with gastric cancer stage II-III. The determination of the sensitivity of isolated cultures was performed in microaerophilic conditions within 48 hours at t = 37°C. The study of sensivity was conducted by the method of serial dilutions in Mueller-Hinton broth with 10% horse serum by generally known methods. The minimum inhibitory concentration (MIC) anti-Helicobacter drugs was defined concerning to amoxicillin.

Results. The results of the study of the proposed drug that was so called "Antimicrobial agent 1" demonstrated its high activity. Strains of *H. pylori were sensitive to* Antimicrobial agent 1 (MIC 1,25±0,89 mkg/ml). These minimal inhibitory concentrations of Antimicrobial agent 1 calculated on amoxicillin was less by 46,9% than of the drug-analogue HELICOCIN® ($p<0,05$). The proposed remedy for *H. pylori* eradication has a good activity that can be seen from the results of the research.

Conclusion. The proposed antimicrobial agent for the treatment of gastric and duodenal ulcer diseases associated with *H. pylori*, in *in vitro* studies showed an antibacterial activity at a dose of 1 micro g/ml, which significantly predominates in twice the known drug Helicocin® (2 micro g/ml). The prospect studies of clinical testing of the proposed agent with a determination of the level of *H. pylori* eradication in patients suffering from *Helicobacter*-associated gastro-duodenal pathology are needed.

Key words: stress-inductive infertility, chronical stress, reproductive function.

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FEATURES OF METABOLIC CHANGES OF LIPIDS IN SERUM OF BLOOD IN PATIENTS WITH POLYPS OF INTESTINE AND STOMACH

Introduction. Examine and assess the metabolism of lipids by means determine the composition of fatty acids in the blood serum of patients with polyps in the intestines and stomach.

Materials and methods. We examined 35 (21,7%) healthy individuals (group I, comparison), 64 (39,8%) patients with intestinal polyps (II group) and 62 (38,5%)

patients with polyps of the stomach (group III). The fatty-acid composition of lipids in the blood serum was studied for patients with the intestinal and stomach polyps biochemical method on the gas-liquid chromatographic series of «Cvet – 500» within the isothermal mode. The quantitative estimation of composition of fatty-acid lipids in the blood serum was conducted after the method of setting of normal area by determination of peaks of methyl ethers of fatty-acid and their particles (in %).

Results. For patients with the intestinal and stomach polyps the fatty-acid composition of lipids is changed. This change is characterized by the increase of the amount of unsaturated fatty-acids (including polyunsaturated acids). This amount may grow up to (54,7±1,8)% and higher ($p<0,001$). At the same time the amount of saturated fatty-acids decreases to (45,3±1,8)% and lower ($p<0,001$). These changes in fatty-acid composition testify the deviation of lipid metabolism; healthy individuals have deviation of (43,0±2,0)% and (57,0±2,0)% correspondingly. Number of palmitic ($C_{16:0}$) and stearic ($C_{18:0}$) fatty acids in blood serum of patients with polyps of the stomach and the intestine is decreased to (28,6±1,5)and (5,8±0,6)% and less ($p<0,001$). Healthy individuals have deviation of (41,9±0,9) and (15,1±1,3)% correspondingly. When the number of polyps increases changes are more substantial.

Conclusions. Research results have established the need for correction of fatty acids in the treatment of patients with polyps of the intestine and stomach.

Key words: fatty-acid, serum of blood, intestinal and stomach polyps.

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RESULTS OF SURGICAL THERAPY OF WOUNDS IN PATIENTS WITH DIFFERENT BODY WEIGHT AND OBESITY

Introduction. Obesity is the factor that affects prognosis and the clinical state of the main sickness. Problems, connected with surgery of patients with obesity, are well-known to doctors. Because during the surgical service the adipose system complicates the surgeon's manipulations, increases the time of the whole operation and promotes traumatism of body tissues of the ventral abdominal wall in the place of the surgical wound.

In the present study, *our purpose* was to compare characteristics of surgical therapy of postoperative wounds of people with standard weight and with obesity.

Materials and methods. Retrospectively we analyzed medical records of 260 patients aged from 16 up to 85 years old, who had hospital care in Vinnytsia surgical departments from 2004 to 2010.

Patients were divided into 4 groups according to their body mass index (BMI). The first group was the control set and included 92 patients with the average BMI 22,51±0,22, the second group – 74 patients (BMI 28,05±0,13), the third group – 54 patients (BMI 37,68±0,16), the fourth group – 40 patients (BMI 45,80±0,63).

These patients were also divided according to the types of surgical interference: with clean operations there were 77 sick people, with clean-contamined surgical interferences there were 133 people and with contamined operations there were 50 patients.

Results. After clean operations the average operational time in the first group was 56,35±2,07 min, in the second group – 59,40±2,52 min, in the third group - 75,00±3,25 min, and in the fourth group – 95,07±4,72 min. After clean-contamined surgical interferences the average operational time in the first group was 54,80±2,65 min, patients of the second group had 73,19±3,53 min (in 1,34 times). In the third group the time was 92,06±4,57 min, and the fourth group had 86,67±4,33 min (in 1,68 та 1,58 times). After contamined surgical interferences the average operational time in the first group was 68,06±3,40 min, in the second group – 78,08±3,69 min, in the third group – 109,38±5,26 min, and in the fourth group – 96,36±4,28 min. The general characteristics of the average operational time of the second, third and the fourth groups in comparison with the first group increased in 1,20; 1,57 and 1,64 times.

The duration indicant of drain duration of postoperative wounds after clean operations in the first group was1,04±0,04 days, in the second group – 1,76±0,08 days, in the third group – 1,50±0,05 days, and in the fourth group – 3,71±0,17 days. After clean-contamined surgical interferences the duration indicant of drain duration of postoperative wounds in the first group was 0,92±0,02 days, in the second and the third groups – 3,19±0,14 days and 3,18±0,14 days, and in the fourth group – 4,20±0,20 days. After contamined surgical interferences the indicants did not differ from the others. In comparison with the control group the general indicants increased in 1,86; 1,93 and 2,78 times.

The average time-limits of suture removal after the clean operations in the first group were 7,31±0,18 days, in the second group – 8,24±0,29 days, in the third group – 8,75±0,43 days, and in the fourth group – 9,43±0,46 діб. After clean-contamined the average time-limits of suture removal in the first group were 7,73±0,15 days, in the second group – на 9,11±0,30 days, in the third group – через 9,00±0,32 days, and in the fourth group – через 9,20±0,41 доби. After contamined operations the average time-limits of suture removal in the first group were 8,44±0,36 days, in the second group – 9,46±0,47 days, in the third and in the fourth groups were 12,00±0,60 and 12,64±0,63 days. In general, the indicants of the second, third and the fourth groups were higher in 1,15; 1,21 and 1,32 times in comparison with the first group.

After clean operations the amount of hospital care days in the first group was 8,73±0,39, in the second group – 9,31±0,45, in the third group – 10,08±0,50, and in the fourth group – up to 11,86±0,58. After clean-contamined interferences the amount of hospital days in the first group was 8,35±0,33, in the second group - 11,31±0,52, in the third group – up to 10,53±0,50 and in the fourth group – up to 11,52±0,55. After contamined operations the amount of hospital days in the first group was 10,78±0,53, in the second group – 11,92±0,59; in the third group – 16,00±0,77, and in the fourth group – 14,82±0,73. In general, the amount of hospital days increased up to 1,20, in the third group – up to 1,28 and in the fourth group – in 1,42 times.

The dynamics of the indicants of the leukocytal intoxication index and pulsus-leukocytal-thermal intoxication did not depend on BMI.
Pyoinflammatory sequelae in the postoperational wounds after clean operations were observed in 3 out of 77 patients (3,89%), after clean-contamined operations – in 12 out of 133 patients (9,02%), after contamined operations – in 18 out of 50 patients (36,0%).
Conclusion: 1. The duration of the surgery, duration of drain duration of postoperative wounds, time-limits of suture removal and the amount of hospital days depend on the body weight. 2. The quantity of pyoinflammatory sequelae in the postoperational wounds increased from 3,26% in the patients with standard weight to 35,0% in the patients with obesity (in 10,7 times). 3. The dynamics of the indicants of the leukocytal intoxication index and pulsus- leukocytal-thermal intoxication did not depend on BMI.
Keywords: wound, obesity

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EXPERIENCE IN THE PREVENTION AND TREATMENT OF NAUSEA AND VOMITING IN POSTOPERATIVE PATIENTS

Introduction. Regardless of how the use of anesthesia during surgical interventions - total, of regional or local – of postoperative vomiting syndrome (POVS) is one of the most common and extremely undesirable consequences operation. Risk factors of postoperative vomiting syndrome (POVS) are: female gender, losing weight, use of narcotic analgesics anesthetics during surgery and after surgery, long-term operational period.
Today the global standard in the prevention and treatment of postoperative vomiting syndrome drugs are antagonists of serotonin. Popularity drugs of this group due to the lack of interaction with the dopaminergic receptors, and therefore the ability to avoid drowsiness, dysphoria, extrapyramidal disorders.
The aim – to improve the outcomes of patients after anesthesia complications in the postoperative period by assigning blockers 5-HT3-receptor (ondansetron).
Material and methods. We analyzed the treatment results of 560 patients in terms of the effectiveness of prevention of postoperative nausea and vomiting with Ondansetron (Osetron) using a dose of 4-8 mg after intravenous anesthesia.
All patients were operated in the surgical department of the Vinnytsia Regional Clinical Oncology Center of benign and malignant disorders of the soft tissues, skin,

breast, lymph nodes. The age of patients ranged from 50 to 87 years. Duration of the intervention ranged from 10 to 120 minutes.
Patients who are receiving chemotherapy or radiation therapy, to study not included.
Results. Analyzing the data antyemetychnyy satisfactory effect of the prophylactic treatment was observed in 508 (90,7%) operated patients. These patients did not show complaints of nausea and vomiting. In the early postoperative period they were active, could eat alone. This allowed in 207 (37%) patients continue further treatment on an outpatient basis at the residence the next day.
In 29 (5,2%) were observed nausea, which bought Repeated dose ondansetron. In 23 (4,1%) patients, along with nausea vomiting occurred. Such patients require repeated administration of Ondansetron infusion and detoxification therapy. This category of patients were at high risk of postoperative prognostic emetychnoho syndrome.
Conclusions. Taking into account all risk factors for postoperative emetychnoho syndrome, the best means of prevention and purchase the gag reflex in the postoperative period is the use of 5-HT3-antagonists.
In 90,7 % of patients we prevent postoperative vomiting syndrome completely, that shall improve subjective and an objective conditions of patients and reduce the length of stay in a hospital.
Key words: postoperative vomiting syndrome, intravenous anesthesia, surgery.

METHODICAL ARTICLES

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IDENTIFICATION OF FALLOPIAN TUBES USING THE NEW NON-CONTRAST ULTRASONIC TECHNIQUE “THE MOBILE HYDRO ACOUSTIC WINDOW”

Introduction. TVS is the first-line test became one of the cornerstones laying in the foundation of the development of Reproductive Medicine – Chizen D.R., Pierson R.A. (2010). Nevertheless, the abilities of TVS are limited due to the insufficient wave transmission of ultrasonic signal by the transducers with the high frequently and resolution. The main properties of the signal depend on its reflection by the tissues at the interface of solid and liquid media. So strengthening the effect can improve the image quality of the scanned object. The use of the effect of full bladder during abdominal ultrasound was an excellent solution, which opened the broad prospects for the development of the method. Rare works reported the cases of non-

systematic visualization of the unaltered fallopian tubes during TVS. Timor-Tritsch JE, Rottem S, 1987, Asim Kurjak, Frank A Chervenak, 2003, pointed on the possibility of identifying fimbriae of fallopian tubes visualized in free fluid surrounding the ovary following ovulation or HSG. Nevertheless, we did not encounter any reference to the evidence base and methodology of non-contrast ultrasonic identification of fallopian tubes with the normal anatomy, as well as about the possibilities for description the details of the ultrasound structure of the unaltered fallopian tubes. The correct assessment of the functional state of the Fallopian tube will be useful in management of infertile couple. It is important not only for the natural conception optimization, but also for the correct choice of treatment methods, such as intrauterine insemination or laparoscopy. Moreover, information about unaltered Fallopian tubes can be very valuable for prognostic purposes. The visual assessment of oviducts is useful if we need obtain the information of the spatial fimbrio-ovarian relationship.

Objective: To design the new non-contrast ultrasound technique of "mobile hydroacoustic window" (MHAW) to improve possibilities of routine transvaginal ultrasound and to evaluate its sensitivity.

Materials and methods. The MHAW – technique: The sufficient amount of fluid to create the "mobile hydroacoustic window" can be detected at different periods of the menstrual cycle.

VU (vesicouterine) fluid level; SU – ligament uterosacral; RU (rectouterine) pouch; RUP fluid level – fluid level in the rectouterine pouch; RV (rectovaginal) pouch; Fossa ovary fluid level.

Initially, the sonographer performs a routine TVS, determining the position, structure, dimensions of a uterus, ovaries and other pelvic organs. The next task is to create MHAW. You can use the fluid any origin that was accumulated in low spaces of pelvis. Usually we use the pelvic fluid which appeared following ovulation. The careful palpation through the abdominal wall with physician's free hand can help to "push out" the omentum or bowel loops from the area of "MHAW" to increase the size and improve visualization through the window. Once the researcher sees the object fragment e.g. fimbriae he should try to gently move transducer along the object and make the next attempt to increase the MHAW size. If you fix the scanning head of transducer in the depth of the pelvis after recently occurred ovulation, the fluid may accumulate around the probe and the MHAW could increase. Sometimes, for increasing the MHAW is not necessary to move a transducer into the depth, just pull slightly the transducer while rotating. The volume of fluid, which we can use to create the effective MHAW for searching the separate fimbria, is starting from 0,5 cm^3. However, with the increase of the MHAW fluid volume we can identify not only small details but one or two adjacent parts of the fallopian tube. If the funnel with fimbriae is located far away from the MHAW - it might be problematic to identify the object irrespective of the fluid volume used to create the MHAW. Also it may be a problem for this Fallopian tube functionality. Ultimately, visualization quality of an object depends largely on its topography and ultrasound properties of pelvic tissues, rather than only from the size of MHAW.

The examination with the MHAW-technique is beginning within the recto-vaginal space.

Scanning the fallopian tubes in the MHAW-technique should be started with the cervix uteri sagittal sections to use it as a suitable topographical landmark and first place where the fluid will appear. Rectovaginal space is the lowest place in the pelvis where the fluid is concentrated. It is expedient to scan the external uterine contour area moving along the posterior wall. If the uterus is anteverted and sufficient amount of fluid is available, some fimbriae of oviduct may be visualized in the anterior Douglas' pouch. Frequently the separate fimbriae can identify close the loops of bowel in such cases. During the examination it is important that the head of the scanning transducer's will be placed within the MHAW. One of the main anatomical and ultrasound landmarks of the fallopian tubes is ligament uterosacral. You can identify most elements of the distal end of the fallopian tube such as funnel or fimbriae closely from this ligament.

The ovarian fossa filled with the fluid is shown in the above picture. For this reason, ligament uterosacral free fluid surrounds is often visualized as a bright line or a curve. The ligamentum uterosacral could be considered as kind of «balcony railing», which separate the fossa ovary and Douglas' pouch. On these echograms the ovarian fossa is completely covered with fluid. In such cases, we can only see this ligamentum, but we cannot identify the surface of ovarian fossa. If the ovarian fossa covered with fluid only partially the sonographer could visualize its surface as shown on the next picture.

On the sonogram provided above (on the left) the ligamentum uterosacral smoothly comes into the ovarian fossa. The best conditions for the identification of the infundibulum fimbriae occur in close proximity to the ovarium of the anteverted uterus. The ovary is a principal landmark of distal tube parts. In the vicinity of the ovaries we can often identify an ampule of the fallopian tube, the funnel and fimbriae. The tube angle (uterine cornuae) of uterine body is a suitable region for visualization of its intramural (interstitial) portion. Scanning should be carried out from the oviduct proximal towards the utero-tubal junction and the distal end. The fimbriae can only be definitively distinctly identified when free fluid surrounds the funnel. The oviduct and fimbriae are easily visualized within a fluid pocket following ovulation. It may be difficult, or impossible, to visualize the Fallopian tube when loops of bowel distended with gas or intestinal contents are located between the ultrasound probe and tube.

It is often more difficult to visualize the left adnexa, especially if a woman has a high BMI, as fat lining bowel impairs ultrasound wave transmission. We notice, the imaging of left side is impaired when the uterus is acutely rotated clockwise. However, a systematic scan of the Fallopian tubes proximally from the uterine cornuae, parallel to mesosalpingeal vessels, and distally around the ovaries will ensure visualization the entire tube length.

If paratubal cysts (PTCs) are identified it is suggested to specify their type, location and vessels. The most common PTCs are the remnants of embryonic ducts: Koblet's cyst, Morgagni (hydatid) cyst, Müllerian cyst, etc. The paratubal cysts are specific

indicators of the distal end of the Fallopian tube. They are frequently related with the infundibulum and fimbria by adhesions.
The presence of PTCs, adhesions, extension or constrictions of isthmus, rigid fimbriae etc. could have a negative effect to the fallopian tubes ovum pick-up. In opposite: The wide funnels, isthmus normal shape and outer diameter, the presence of significant amounts of well differentiated flexible fimbriae, located near the ovary apex, were seen as a positive functional assessment for ovum pick-up. While usually asymptomatic, has been noted that Morgagni's cysts tend to be more common in women with unexplained infertility (52,1% versus 25,6% in controls). Rasheed S.M., Abdelmonem A.M. (2011); Cebesoy F.B. et al. (2010) suggested that they can play a role in infertility. It has been proposed that these cysts interfere with tubal functionality and egg pick-up. Timely detection and removing of this pathology provides a chance for recovery of female fertility.
The study was carried out between November 2014 and February 2015 with the aim of anatomical and functional assessment of the fallopian tubes in infertile women. The fallopian tubes were examined by the two ultrasound techniques. The TVS procedure was performed in the MHAW-technique amongst 87 women with infertility were includes at main group. In the control group of 60 infertile women there were undergoing TVS in its routine version in order to monitor ovulation. The average duration of infertility in the main group was 2,4±0,4 years and 2,5±0,5 years - in the comparison group. In groups there were no significant differences in age and BMI. The average number of ultrasound examinations was the same in both groups– 2,0. It was determined the sensitivity of the new method for the anatomical and functional assessment of the tubal landmarks. The width of the funnel, extension or constrictions of the isthmus, flexibility of fimbriae, their quantity and differentiation, adherent PTCs were considered as ultrasound landmarks for the anatomical and functional assessment of the Fallopian tubes. All examinations were carried out by the same physician with the standard micro convex vaginal probe 4-9 MHz.
Results. The comparison of two versions of the transvaginal ultrasound showed the following.
The application of MHAW-technique has significantly increased the frequency of detection of Fallopian tubes in women of main group, in comparison with the standard TVS. The Fallopian tubes have been identified with TVS + MHAW procedure in 28 women (32,2%) of the main group. The oviducts were visualized in 6,7% of subjects in comparison group (TVS).
Thus, sensitivity of new method was 0,76 versus 0,14 for routine TVS. The next ultrasound findings related with oviducts were identified.
The application of MHAW-technique during a routine TVS significantly increased frequency of identification of various parts of the fallopian. Significantly more in the study group one or both fallopian tubes were identified simultaneously. Moreover, the isthmus, ampoule, fimbriae, the adhesions related with fimbriae and PTCs have visualized more frequently. Also, the distal parts, which play an important functional role in the mechanism of oocyte pickup and fimbrio-ovarian relationship, were observed significantly more than proximal. However were no significant differences

in the frequency of detection of dilated and pathologically altered tubes in both groups?

With the increase of size of MHAW not only small details but one or two adjacent parts of the fallopian tube were identified. Yet, when the funnel with fimbriae was located far away from the MHAW - was a problematic to identify the object irrespective of the fluid volume used to create the MHAW. We can assume if the zone of interest" of Fallopian tube is controlled with the "dry" oviducts - the oocyte capture function of this uterine tube is not optimized. In such cases the tubal pick-up option with the "dry" oviduct in fact is preserved only at the moment of the extrusion of the follicle contents. If could not find the fluid in pelvic sacs following ovulation, it means the distal ends of oviducts are in the "dry" zone. Apparently, this is not the best option for conception, but to understand how much this is can be important for ability to conceive, it is necessary to undertake further epidemiological research based on the proposed MHAW- ultrasound technique

Conclusion. 1.The use of MHAW-technique during the TVS is advised in the management of unexplained infertility for assessment of the anatomical and functional properties of the Fallopian tubes. This is important to obtain the information for the purpose of selecting the optimal algorithm for the infertile couple management. 2. Also, the use of ultrasound MHAW-technique during TVS represents a good opportunity for the topographic evaluation and respectively for the functional assessment of the fimbriae-ovarian relationship. This work is one more attempt to find an explanation of reasons for the decline of tubal competence.

The further studies could be associated with the functional and epidemiological assessment of fimbrio-ovarian relationship and search for the best ways to solve the problem of the decline of fallopian tubes functionality

Declaration: The author report no financial or commercial conflicts of interest.

Key words: transvaginal ultrasound, TVS, TVUS, MHAW, mobile hydroacoustic window, Female infertility, unexplained infertility, Fallopian tubes, Fimbria, paratubal cyst, PTCs, oocyte capture, ovum pick-up, fimbrio-ovarian relationship, tubal functionality.

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FEATURES VATS REMOVAL OF TUMORS MEDIASTINAL ON THE EXAMPLE OF CLINICAL CASE

Introduction. Mediastinal tumors are one of the most difficult sections in thoracic surgery and oncology, as they originate from different types of tissues and uniting them in this group is based only on the basis commonality of anatomical boundaries. In the treatment of mediastinal used standard methods of surgical interventions through sternotomy or thoracotomy access and mini-invasive surgery method of

VATS. *Purpose* of work – demonstrate the possibility of using videothoracoscopy in thoracic surgery and oncology at mediastinal tumors.

Materials and methods. Let's examine a clinical case. Patient A., born in 1966, hospitalized to NIST named after O.O. Shalimov with complaints of discomfort behind the sternum, feeling lack of air. From history we know that in 2014 the patient complained of pain in the thoracic and cervical spine, so it was done MRI of chest and cervical spine, during which it was diagnosed neoplasm of mediastinum. At the clinic the patient examined:

Complete blood count: red blood cells – 4,98x1012/L, HB – 135 g/L, color index – 0,8 leukocytes – 4,5x109/L, platelets – 139 g/L, erythrocyte sedimentation rate - 6 mm/h. *Biochemistry blood test*: whole protein – 78,7 g/L, total bilirubin – 8,1 mmol/L, direct bilirubin – 2,1 mmol/L, ALT – 19 mU/L, AST – 23 mU/L, α-amylase – 49 mU/L, urea – 4,0 mmol/L, creatinine – 68,6 mmol/L, glucose – 6,7 mmol/L. *Coagulogram*: prothrombin time – 11,0 sec., prothrombin index – 95%, INR – 1,0; fibrinogen – 4,4 g / l. *MRI*: retrosternal at the level anterior-upper mediastinum visualized formation volume, heterogeneous structure that nonuniform accumulating gadolinium agent and has in its structure include hyper-intense signal on MR T1WI (calcium?), size 37,7 x 31,6 x 36,4 mm. Formation is left of the trachea, dis-locates it, and adjacent to the aortic arch. It was decided to perform VATS removing the tumor of anterior-upper mediastinum.

Results. *The course of operation*. Done tracheal intubation with tracheal lumen with two tubes 35F. Started one-lung ventilation. In the left chest put 4 trocars: in VIII intercostal space – 15 mm, in VII intercostal space – 10 mm, in V intercostal space – 5 mm, in IV intercostal space – 5 mm. When revision obvious organic pathology in the left half of the chest not found. After opening mediastinal pleura below the level of phrenic nerve, above the aortic arch revealed dense-elastic tumor formation up to 4 cm in diameter in a capsule, located on the aortic arch vessels (left subclavian and left common carotid arteries). By blunt way and by using ultrasonic scalpel Harmonic formation mobilized and removed as a single unit with the capsule. Haemostasis in the course of the operation – dry. The tumor removed from the chest cavity in container. Thoracostomy on left. Lung cracked down. By layer sutures of wounds. Aseptic dressing. Immediately after surgery the formation examined macroscopically. Histopathological conclusion: ectopia of thyroid tissues with signs of macro and micro follicular colloid goiter. The postoperative period proceeded in accordance with the volume of surgical intervention. On the 4th day after surgery the patient was discharged in satisfactory condition.

So VATS removal of formation allowed to provide less traumatic surgery, led to more short staying of the patient in hospital and increased patient compliance to the proposed treatment. The above clinical case confirms the variability of mediastinal tumors and their embrio – and histogenetic diversity, as evidenced by the outcome of obtained by us histopathological conclusions, which allowed conclude ectopic thyroid tissue in the anterior upper mediastinum.

Conclusions. VATS removing of mediastinal tumors is a safe and effective treatment for this group of patients, which makes it possible to reduce the patient's stay in hospital and reduce the number of postoperative complications after thoracic surgery.

Key words: minimally invasive surgery, thoracoscopy of mediastinal, clinical case.

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MORPHOLOGICAL CHANGES IN THE MUCOUS MEMBRANE OF THE PHARYNX IN PATIENTS WITH LARYNGEAL CANCER AFTER TOTAL LARYNGECTOMY WITH T-SHAPED CLOSURE OF NEOPHARYNX AND ACCORDING TO OWN METHOD WITH A PREDOMINANCE OF CROSS STITCH IN MEN OF ECTOMORPHIC OR ENDOMORPHIC SOMATOTYPES

Introduction. The analysis and comparative characteristic of the morphological changes that occur in the wall of the pharynx in patients after Total Laryngectomy are conducted in the article. The advantages of the own methodology with a predominance of the cross stitch in comparison with the standard method of surgical intervention with a T-shaped suturing of neopharynx are shown in men of ectomorphic or endomorphic somatotypes.
Materials and methods. The study was conducted in 2 groups of men of ectomorphic and endomorphic somatotypes by Hit - Carter in age mature II and elderly. Total Laryngectomy was included into combined treatment. 19 men (11 ectomorphic and 8 endomorphic) were included to the first group. The Total Laryngectomy was conducted by the conventional method using nodal T-shaped suturing in two rows, with the prevalence of the vertical part. 17 men with cancer of the larynx(10 ectomorphic and 7 endomorphic) were included to the second group. The suturing of neopharinx was conducted on our own method using nodal T- shaped seam with the predominance of the transversal (horizontal) part.
Results. Degenerative changes of stratified squamous nonkeratinizing epithelium were found on histological analysis of mucosal resection edges obtained during surgery in all laryngeal cancer patients before treatment regardless of somatotype. Picnosis of nucleus and cytoplasm vacuolization were found in some cells of the epidermis.
One of the most characteristic features of the vascular bed of patients who underwent Total Laryngectomy by a standard method regardless of somatotype and age are sclerotic changes, sometimes deformed arteries, veins and venules, along with sclerotic modified vessels and twisted nerve trunks due to proliferation of others connective tissue fibers
No signs of inflammation and dyscirculatory disorders in the area of the scar and surrounding tissues were found in the group of patients who underwent Total Laryngectomy with wound suturing by our own method. The scar tissue were composed mainly of thin collagen fibers and fibrocites. Collagen fibers contained mainly multidirectional bundles. Number of fibroblasts towards to ones in collagen

matrix were reduced. Symptoms of chronic inflammation of the pharynx submucosa were recorded in 30% of patients in this group.
The elastic fibers appeared less exposed to degradation than collagen ones in the submucosa of patients operated by our own methodology, regardless of somatotype.
Thus, after 12 weeks of observation coarse, connective tissue fibers, painted by Van ghison were revealed more rare in the islands of granulation tissue of patients operated by our own methodology than in the group using standard methods. Young connective tissue had a large number of granulation, as was relatively poor of vessels and fibroblasts. It was characterized by a rapid epithelialization and so much more quickly passed into fibrous, but the feature was to preserve 1/3 of muscle layer. Islands of granulation were found in the connective tissue of submucosal layer in 30% of patients operated by our own methodology
Conclusions. The reparative processes of the pharingeal mucous membrane in patients operated by our own method was characterized by less reactive inflammatory changes, stabilization of intracellular secretion of acid mucin basic substance, small degree of atrophy and fibrosis of the mucosa. It shows that this method of reconstructive surgery is better compared with the standard and can be recommended for using in the larynx cancer surgery. Further studies of structural adjustment of pharyngeal wall with usage of the latest molecular markers are promising for better understanding of the pathogenetic links of the sclerosis progression in patients after Total Laryngectomy during the postoperative period.
Key words: laryngectomy, morphological changes, the mucous membrane of the pharynx, neopharynx.

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COMPUTER SIMULATION OF STRESSES ON THE VARIOUS METAL FIXTURES WHEN PERFORMING OSTEOSYNTHESIS ABOUT CERESVILLE FRACTURES OF TYPE A2

Introduction. Fractures of the proximal femur (PPSC) and their consequences every year cause enormous damage to the economy of any state. Thus, according to the world health organization, in 1990 about 1.3 million cases PWSC registered throughout the world. According to experts, this figure will increase and in 2025 may grow in two times, and in 2050 – three times.
The choice of treatment of fractures of the proximal femur is one of the most important, because it affects not only the time of fracture Union, and restoration of limb function and rehabilitation of the victim. Today, in the developed world in the treatment of fractures of the proximal femur have been widely introduced invasive,

less traumatic application technology of the proximal femoral rod (Trochanteric gamma nail 3 G – STRYKER, PFN A – SYNTHES, ChFN – ChM). This technique of operative treatment of fractures of long bones is used in 60-70% of patients. A well-known classification of ceresville fractures of the femur is the classification of OA, where the authors identify verticalinstabile but stable in the horizontal plane fracture of type A1, unstable in the vertical and horizontal planes, the fracture of type A2 and unstable in the horizontal plane and the vertical plane stable fracture of type A3. However, we did not found literature data on stresses on the locked intramedullary rod depending on the type of fracture in the OA and options for distal locking. Such attempts to justify the suitability of mechanical osteomeatal on the basis of information on the biomechanics of human systems. In this case, often the calculation of the approximate patterns that reflect some aspects of the behavior of the system "bone – implant" by using computer implementations of numerical methods, e.g. finite element method (FEM). The advantages of this approach are obvious: on the basis of the calculation results to draw conclusions about the work osteoimplants and its effect on bone and, thereby, to refuse further consideration of the apparently futile constructions; there is a possibility to adjust or change the shape of the components of the implant to improve its functionality; there is no need to conduct numerical experiments on animals; significantly reduced cost and development time of the design of the implant; based on the distribution of the deforming stress possible accurate prediction of remote results.

Interesting in scientific terms, is to conduct computer simulations of stresses on the various metal fixtures when performing osteosynthesis about ceresville fractures of type A2.

Materials and methods. Computer simulation was carried out in the laboratory of biomechanics of the SI "Institute of traumatology and orthopedics of NAMS of Ukraine". We applied computer simulation and FEM methods for solving problems of continuum mechanics in application to biological objects with the use of software and computer systems. For comparative analysis of reliability of fixation of bone fragments in ceresville the femur fractures of type A2 used the layout of the femur, in which is implanted the clamping elements. For fixation of fragments used 2 options fixers - DHS plate (1) and the proximal femoral rod (2), which provides optimal biomechanical and biological conditions for healing fractures. Based on axial scans computed tomography models of the femur with different versions of fixation obtained for CT scanner Toshiba Asteion Super 4 (Japan) using the software package Mimics in automatic and semi-automatic modes reproduced the spatial geometry of the proximal femur. Models in polla imported in Solid Works environment, where with the help of appropriate simulation tools created 3-D models of the proximal femur with ceresville fractures of type A2 and their fixation with a DHS plate and terminal PFN. The VAT calculation method FEM was performed for the intact model with both clips, and then clips under ceresville fractures of type A2 and distal locking (without lock, 1 screw, 2 screws).

Results. Determined that the minimum voltage on metal fixtures in their proximal was determined by use of plate DHS and PFN web in option with 2 screws for distal locking. These data are statistically significantly ($p \leq 0,05$) differed from data in the

application of PFN stem without distal locking. On the distal metal clips the voltage was minimum when the web application PFN with the use of 1 and 2 screws for distal locking (16,03 and of 17, 77 MPa), in contrast, stresses in the use of DHS plates is dramatically increased to maximum performance and made 54,22 MPa.
Determined that minimally but adequate for this type of vertical and rotational unstable fracture chronoclast was observed when using model terminal PFN in using 2 screws for distal locking. These micro movements will contribute to the improvement of reparative osteogenesis of ceratostigma fractures of type A2 patients. Too much chronoclast when using plate models without and with application 1 locking screw for the distal locking of PFN rod (and of 2,21 to 2,28 mm) can lead to the violation of reparative osteogenesis in the application of this method metalofixation.
Conclusions: 1. To determine the optimal type of osteosynthesis in the surgical treatment of ceresville fractures of type A2 computer simulations of the stresses on the metal fixtures (plate DHS and PFN rod). 2. Biomechanically justified under ceresville fractures of type A2 is the use of models PFN web in option with 2 screws for distal locking as evidenced by the minimum voltage on the metal clip and the existence of optimal micromotion between the bone atomtime. 3. The study will determine a differentiated approach in the treatment of patients with ceresville femoral neck fractures, will improve the efficiency of medical care for this severe category of patients.
Key words: computer simulation, ceresville fractures of type A3, voltage, metal clips.

SOCIAL ARTICLES

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CAUSES AND SEVERITY OF DISABILITY OF THE PARTICIPANTS OF ANTI-TERRORIST OPERATION

Introduction. Anti-terrorist operation (ATO) has led to serious social consequences, including disability of large number of people of working age.
The aim of our study was to investigate the total contingent of disabled participants of ATO, which was formed in 2015, its structure, severity of disability.
Materials and methods. According to the 20 regions of Ukraine we analyzed the contingent of disabilities (3041 persons) in primary and repeated declarations on

medical-social expert commissions in 2015. A meta-analysis of expert medical documents, statistical, analytical.

Results. We found that a larger proportion of participants ATO that appealed to the medical social expert comission in 2015, were recognized as disabled by another percentage disability. The causes of disability were largely the consequences of injury, concussion, injury. In most cases, a third group of disability was defined, at least in the united severe trauma, severe consequences of the disease were established and group II or group I. Among the contingent of disabled persons made up the vast majority of young working age. In middle-aged disabled along with the effects of combat injuries largely have been persistent effects of diseases obtained during the fighting.

Conclusions: An objective assessment of statistical indicators of disability among participants ATO enables formulated especially in carrying out this rehabilitation of patients to reduce the limitations of their life, psychological, social, occupational and labor adaptation.

Keywords: anti-terrorist operation, disability, Disability.

REVIEV ARTICLES

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CONTEMPORARY VIEWS AT THE PROBLEMS OF HEART REGENERATION

Acute myocardial infarction causing ischemic heart disease is not only one of the most devastating diseases, but also the main cause of death in the whole world.

Myocardial infarction, as a rule is accompanied by cell death and a great loss of cardiomyocytes. Stem cells are capable of preventing heavy outcomes of acute and chronic affections in various experimental models and clinical tests on people. Strategies including the use of stem cells appeared among prospective approaches to sustaining and improving intracardial regeneration through the protection of own cardiomyocytes or myocardial regeneration increase. Mesenchymal stem cells (MSC) received from the marrow bone improve cardiac function, reduce the area of infarction and enhance the myocard regeneration in post infarction period.

The aim of our work is to show real place of the mesenchymal stem cells, microRNA, genome editing and numerous chemical methods in heart differentiation and cardiomyocytes proliferation.

Apoptosis of cardiomyocytes is the main process in pathogenesis of a number of heart diseases, including ischemic heart disease and heart failure. Ensuring the

survival of heart cells through blocking apoptosis is an important strategy of improving heart functioning. An important factor protecting MSC from apoptosis is CTRP3 (C1q – protein 3 related tumor necrotic factor related protein-3). CTRP3 is the leading component in adipokine family and has wide functions not only regarding adipokine secretion and metabolism, but also in inflammation, cell proliferation, differentiating, heart protection. The increase of CTRP3 level protects cardiomyocytes from apoptosis during myocardial infarction due to its ablity to influence cell survival, and can remarkably enhance the survival of MSC through increase of Bcl-2/Bax ration and the potential of mitochondrial membrane, as well as by means of inhibiting the release of cytochrome C and activation of caspase 3.

Apoptosis in the heart is a necessary mechanism for normal remodeling and morphogenesis. It also plays an important role in the onset of heart failure during trauma caused by ischemia/reperfusion and myocardial infarction. Apoptosis is observed in heart cells exposed to various harmful agents both in laboratory conditions and intact heart in normal conditions. Thus, apoptosis of myocytes is both induced in response to ischemia and during human tissues reperfusion.

Mitochondrial signal pathway of apoptosis is realized as a result of release of apoptogenic proteins from mitochondria intermembrane space into the cell cytoplasm. The release of apoptogenic proteins is realized in two ways: due to the rupture of mitochondrial membrane or through opening of highly permeable canals on the outer membrane of mitochondria.

The key event of the mitochondrial apoptosis pathway is the increase of mitochondrial outer membrane permeabilization (MOMP). Apoptotic proteins Bcl-2 Bax and Bak play an essential role in MOMP increase. They fit into the mitochondrial outer membrane and get oligomerizated. At that the entity of the mitochondrial outer membrane is disturbed. When MOMP rises, soluble proteins, involved in apoptosis, release from the mitochondrial intramembrane space into cytosol: cytochorm c – protein with molecular mass 15 kDa; procaspases − 2, − 3 and −9; protein AIF (apoptosis inducing factor) − flavoprotein with molecular mass 57 kDa.

The rupture of mitochondrial outer membrane is explained by the increase of mitochondrial matrix volume. This process is often referred to the mitochondrial membrane pores opening, which leads to the decline in membrane potential and high-amplitude swelling of mitochondria following the osmotic misbalance. The pores with diameter of 2,6-2,9 nm are able to permeate low-molecular substances with the mass up to 1,5 kDa. Pores opening triggers the following factors: non-organic phosphate; caspases; SH-reagents; cells devastation by regenerated glutathione; formation of active oxygen forms; disintegration of oxidative phosphorylation with protonophore compositions; increase of Ca^{2+}content in cytoplasm; action of ceramide; depletion of mitochondrial pool AIF and others.

Cytochrome c in cell cytoplasm is involved in apoptosome formation alongside with protein APAF-1 (Apoptosis Protease Activating Factor-1). Prior to this, APAF-1 undergoes conformation changes following the reaction with AIF energy consumption. It is supposed, that transformed APAF-1 acquires the ability to bind cytochrome *c,* and CARD-domain gets access to APAF-1 for procaspase 9. It results

in oligomerization 7 of subunits of the transformed protein APAF-1 with involvement of cytochrome *c* and procaspase-9. It leads to the formation of apoptosome, that activates caspase – 9. Mature caspase-9 binds and activates procaspase -3 followed by the formation of effector caspase-3. Flavoprotein AIF released from the mitochondrial intramembrane space is an apoptosis effector, acting independent of caspases.

Caspases are formed due to the procaspase activation (molecular mass 32-56 kDa), in the content of there are three domains: regulatory N-final domain (pro-domain), bigger (17-21 kDaa) and smaller (10-13 kDa) subunits. Activation takes places through proteolytic processing: all three domains disintegrate, releasing prodomain, while the left bigger and smaller subunits associate forming heterodimer. Two heterodimers further form tetramer which is complete caspase with two catalytic areas.

Caspase activation can be regulated directly or indirectly by the proteins family Bcl-2. Proteins family Bcl-2 are the main regulators of mitochondrial apoptosis pathway. They have the decisive role in changing the mitochondrial outer membrane permeabilization (MOMP). In the family Bcl-2 we differentiate between proapoptotic and anti-apoptotic proteins. On the basis of structural and functional differences they differentiate three subgroups of proteins family Bcl-2:

- Antiapoptotic Bcl-2 proteins, containing 4 BH-domains(BH1-4): Bcl-2, Bcl-xL, Bcl-W, Mcl-1, A1, Boo/Diva;
- Proapoptotic Bcl-2 proteins, containing 3 BH-domains (BH123): Bax, Bak, Bok/Mtd;
- Bcl-2 proteins, containing only BH3-domain, which can act as boosters or repressors of apoptosis: Bid, Bad, Bim, Bmf, Bik, Hrk, Blk, Nip3, BNip3/Nix,Puma, Noxa.

Apoptotic proteins Bcl-2 — Bax and Bak also play an essential role in enhancing MOMP. They fit into the mitochondria outer membrane and oligomerize, disturbing the entity of the mitochondria outer membrane [30]. Bax and Bak-proteins functioning depends on their prior boost by proteins Bid and Bim, for instance, which are referred to the subgroup BH3 proteins. On the other hand, Bax and Bak boosting and functioning can be blocked by anti-apoptotic proteins of family Bcl-2: Bcl-2, Bcl-xL, Mcl-1 and others. In their turn, anti-apoptotic proteins may also be blocked by depressing proteins (for.ex., Bad), belonging to subgroup of BH3 proteins. Finally, the combined regulation of MOMP as well as of apoptosis is achieved, through the interaction of apoptotic, anti-apoptotic and BH3 boosting and depressing proteins. Regulation of function of BH3 proteins is realized on the level of transcription, molecule stability, while interacting with other proteins and other modification.

It is also stated, that Bid proteins is a connective link between receptor-dependent and mitochondrial pathways of apoptosis. Initiating caspase-8 boosted through the receptors of cell death is able to boost Bid-protein, which further participates boosting proteins Bax and Bak, which in their turn trigger mitochondrial pathway of apoptosis .

As far as protein p53 is concerned, in normal cells it generally exists in non-active latent form. Its activation occurs in response to DNA damage by ultraviolet or

gamma-radiation, oncogenes hyperexpression, viral infection, oxidative stress, hypo- or hyperthermia and others. Activated protein p53 coordinates the process of DNA reparation and regulates the transcription of a number of apoptosis boosting genes in case of irreversible DNA damages or cell cycle regulation failures. Besides, there is evidence that p53 participates in triggering apoptosis by stimulating death receptors, through interaction with apoptosis promoter Bax, by boosting p53-dependent apoptosis modulator PUMA (p53-upregulated modulator of apoptosis), which blocks the action of Bcl-2. The increase of p53 level in response to DNA damage causes apoptosis.

Suffice it to mention, that H9c2 ventricular myoblasts undergo apoptosis at ischemia which is prevented by phorbol-12-myristate-13-acetate (PMA). PMA protective effect is related to the decrease of proapoptotic protein Bax and increase of anti-apoptotic protein Bcl-XL. PMA inhibits apoptosis by sustaining all levels of IAP-proteins expression. Besides, exosomes, containing cardiac predecessor cells (CPC) protect H9C2 from oxidative stress by inhibiting caspase 3/7, activated in vitro. In natural conditions CPC-exosomes at acute myocardial ischemia/reperfusion block cardiomyocytes apoptosis approximately by 53% in comparison with PBS ($p<0,05$).

Morphologic changes occurring in the endocardial tissue after the damage initially influence the majority of cells of endocardium ventricle, but remain localized at damage area during regeneration and sustain distinct morphology and profile of genes expression.

There is evidence in favour of the hypothesis, that the molecular mechanism with which help epicardium and endocardium cells initiate heart regeneration and promote cardiomyocytes proliferation is the RA (retinoic acid) production in the damages heart tissue. RA thanks to retinal dehydrogenase (RALDHs) and two-stage metabolic pathwas, moves through changes in a more polar cytochrome P450 enzymes metabolite and transforms the signals by forming heterodimers with retinoid X-receptors, formed between nuclear hormonal receptors.

Suffice it to mention the essential role of micro RNA in realizing cardiac regeneration. MicroRNA are tiny (about 21-23 nucleotides long) endogenic non-coordinating RNK areas functioning as repressors of translation gene. MicroRNA is encoded in genome both in exon and intron gene areas. Irrespective of their genome location, microRNA transcription is initiated by RNA polymerase II, which results in Pri-micro RNA generation. Pri-micro RNA are processed into pre-micro RNA with the help of RNA processing complex, received Drosha and DGCR8 and exported from the nucleus Exportine 5. In cytosol. Pre-micro RNA undergo the second stage of processing by cytoplasmic endonuclease Dicer, which forms mature microRNA duplexes. Further, one duplex micro RNA thread enters the RISC (RNA-induced silencing complex -RISC), which uses micro RNA to identify and inhibit/silence its target-genes.

The impacts of microRNA on cardiomyogenesis are remarkable, since the single microRNA can be directed at several signaling pathways simultaneously (multiple microRNA targets). Thus, for instance, microRNA-1 and microRNA-133 (loci in genome on chromosomes 18 and 20) are regulated by myogenic transcription factors, including OCP, MEF2C and Nkx2-5, and are key regulator of myocytes

differentiation. Their loss leads to cardiac failure, defective morphogenesis, electric conductivity failure and cardiomyocytes proliferation. Micro RNA-133 enhances the effect of micro RNA-1 by depressing specific genes of myogenic predecessors, inhibits signaling pathway of Apaf and caspase-3,-9, reduces fibrosis, thus simplifying cardiomyocytes maturation.

Conclusions. 1. The combination of rapid genome editing into hiPSCs using CRISPRs and highly effective chemical methods of heart cells differentiation enables to define the effectors of various stages of heart proliferation. Besides, the possibility to generate billions of hiPSC-CMs quickly and effectively using suspension according the valid protocols contributes to the solution of the unsolved issues related to engraftment of hiPSC-CMs in the heart. Among them are direct reprogramming in natural conditions; effectiveness increase of this therapy; possibility to apply these methods to human heart regeneration. Finally, it is also necessary to achieve understanding the mechanism of mature CPCs' contribution to regeneration function. 2. Clinical research with the use of MSC has shown documented evidence in favour of safety and eligibility of patients with acute myocardial infarction and chronic ischemic heart disease. Apart from it, the implanted MSC participate in the regeneration process of myocardial tissues by differentiating into cardiomyocytes and endothelial cells, or through releasing biologically proangiogenic and cardioprotective factors. 3. MicroRNAs analogically can induce reprogramming of fibroblasts into cardiomyocytes and can be delivered to cardiac tissue without integrating viruses, thus promoting security in a clinical context. The issue which still requires study is how to transport these microRNA safely and effectively to the damage area and the cell choice for performing corresponding functions.

Key words: cardiomyocytes, apoptosis, regeneration.

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PRENATAL AND POSTNATAL CADMIUM EXPOSURE (LITERATURE REVIEW)

The aim. The data on the effect of cadmium (Cd) in the prenatal period and on the development of children after birth are presented. Transfer of Cd from mother's blood to baby during pregnancy is modulated by placenta, however, metal can reach fetus, which is dangerous because numerous embryotoxic and teratogenic effects are linked with it.

Cd levels in placenta vary from 1,2 ng/g to 53 ng/g of dry weight of tissue, being higher than in the maternal blood and by 100 times higher than in umbilical cord blood. The content of Cd in placenta may be used in biomonitoring, which includes prenatal assessment. There is a direct relationship between the levels of Cd in the

mother’s and baby's blood. Entry of Cd from mother to fetus is the main source of its early impact on children, its content in erythrocytes the most fully reflects transplacental transfer from mother to fetus. Cd adversely affects anthropometric data of newborns, herewith a number of mechanisms is involved, which reflects polytropic nature of their effects, in particular on energy metabolism in mitochondria, increased expression of mRNA of KISS1gene, destruction of estrogens and growth hormone in the placental tissue. Effect of Cd during pregnancy is also associated with the risk of development of variety of congenital heart defects in offspring and epigenetic consequences, caused by violation of DNA methylation in embryonic genes, that encode transcription processes, apoptosis. Environmentally significant levels of Cd in placenta cause persistent immunomodulatory effect on the development and function of immunocompetent cells in the offspring of mice.

Cd effect is enhanced in combined lead exposure. Cd transfer from maternal blood postnatally in breast milk also presents a potential danger to development of a child after birth. Cd is in the content of tobacco smoke, which causes the most negative consequences in prenatal fetal development, therewith smoking during pregnancy is clearly associated with a high content of Cd in the tissues of mother and in the placenta, being the main source of its income into the organism of mother and child.

It is shown a protective role of selenium (Se) from impact of Cd on the prenatal development of fetus. Increase of Se consumption during pregnancy leads to reduce of Cd concentration in the umbilical blood and promotes growth of the fetus, being under negative impact of Cd, therefore Se in the umbilical blood is defined as a new factor, which positively correlates with body mass of a baby at birth. Negative impact of oxidative processes induced by Cd is mitigated by Se, possibly at the expense of decrease of malon dialdehyde level.

Conclusions. The above review of the data published in recent years testifies to the fact that prenatal influence of Cd has long-term consequences for the health of a baby and is the cause of many diseases in the adult organism. Cd is a part of smoke, so smoking during pregnancy should be avoided. The control over Cd presence in the maternal blood during pregnancy and in breast feeding, as well as adequate intake of vitamin supplements during pregnancy, containing, in particular, such trace elements as Fe, Se is obligatory; this helps to maintain health in offspring.

Key words: cadmium, prenatal impact on baby.

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THE STATE OF THE STUDY OF THE MORFOGENESIS, HISTOGENESIS AND TOPOGRAPHY OF CEREBELLAR STRUCTURES IN THE PRENATAL PERIOD OF HUMAN ONTOGENESIS AND IN FAILURES OF DEVELOPMENT

Central nervous system (CNS) congenital malformations are one of the most topical and actual medical and sociological problems of nowadays and take the leading place in the structure of children's mortality, morbidity and primary children's disability.

The aim. Of the research is the analysis of scientific and theoretical data on the matters of morphogenesis, histogenesis and embryotopography of human cerebellum structures and determination of further research perspectives.

Fix J. (1995) described that the cerebellum develops from pterygoid plate (rhomboid labrum) in postcranium fossa and is situated between temporal and occipital lobes and brainstem and fulfills three main functions: support of posture and equilibrium, support of muscle tonus and voluntary movement activity coordination.

Gray H. (1918) described that the cerebellum develops from the tegmentum in front part of posterior brain. Pterygoid plates of this area thicken to form two lateral plates which soon will make laminas in the middle line where cavities are situated in the superior part – vesicles – brain predecessors; this is cerebellum germ whose external surface is first smooth and convex. Cerebellum fissures appear first in the worm during first three months of embryogenesis; fissures on the hemispheres appear during the fifth month.

Ernst L.M. (2011) described that neuroepithelial cells of superior labrum of rhomboid area is the source of cerebellum neurons.

Goel P. (2010) considered cerebellum transversal diameter (CTD) as a marker for gestational age estimation. In normal fetus development cerebellum transversal diameter grows ahead to gestational age. CTD shows good correlation with gestational age. So CTD is a pronounced marker for gestational age estimation and can be used in case when the last menstruation term is unknown.

Stepanenko A.Y. and Marienko N.I. (2014) studied the structure and individual anatomic variability of human cerebellum worm. Studying of variant anatomy of lobes 6-7 enabled to determine the regularities of human cerebellum organization. Lobes 6-7 are made of common branch of whiter body of cerebellum.

Conclusions. The absence of systemic integral data about the whole process of human cerebellum structures' morphogenesis during prenatal period of ontogenesis, such as differentiation and migration of neurons and grey substance glia cells and white substance topography, enables further scientific research. New immunohistochemical methods are not standardized enough that is why the results of their applying are ambiguous that points in its turn to the necessity of further improvement of certain neurospecific proteins detection methods and search of new markers for neuronal and glial differentiation. New surgical methods aimed to elimination of malformations on the early stages of human ontogenesis require precise and reliable data about characteristics of cerebellum age topography.

Key words: cerebellum, morphogenesis, histogenesis, prenatal period.

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THEORIES OF SCHIZOPHRENIA DEVELOPMENT: PRESENT OPINION ON THE PROBLEM

The article argues multifactoriality of schizophrenia, the importance of improving and optimization of its diagnostics and treatment. The concept of biological origin of schizophrenia is given, methods of its researching on biological, psychological and social levels are reviewed.

The aim. Currently, provisions of multidisciplinary approach to the treatment of schizophrenic spectrum are more rooted. The concept of multidisciplinary model includes individual approach to each patient, taking into account his neurophysiological and personal characteristics.

The result of maladaptive stress factors in schizophrenia is the destruction of associative connections, functional architecture of the brain. Study model of schizophrenia development takes on a particular set of factors, including genetic predisposition and environmental factors as triggers of the pathogenic mechanisms. The result of this process is a certain set of pathophysiological changes in brain function as clinical syndromes.

The main impact psychopharmatherapy links are neurochemical processes of the brain. Spectrum of neurochemical disorders is extremely broad in schizophrenia. However, clinical and diagnostic evaluation of pathophysiological imbalance of each neurotransmitter system in schizophrenia is extremely important to optimize the structure of the treatment and rehabilitation of patients with schizophrenia.

According to dopamine hypothesis, there is a dysfunction of dopaminergic system - dopaminergic hypoactivity of mesocortex projections, which leads to negative symptoms in schizophrenia, loss of mesolimbic dopaminergic inhibition activity control processes and as a result - to the further development of productive symptoms.

Decrease of glutamate activity in frontal regions of brain is marked in schizophrenia, which is associated with negative symptoms of frontal origin. This can be explained with a broad representation of glutamatergic neurons and interdependent glutamate and dopamine relations: reduced dopaminergic transmission or blockade of dopamine receptors leads to increased release of glutamate, and vice versa - reducing the release of glutamate or its receptors blocking leads to increased release of dopamine. We also know glutamatergic neurons to perform general regulatory role in influencing the activity of dopamine and serotonin systems.

Quantitative and functional violations of glial cells were found. These cells are one of the main parts of glutamate metabolism and synaptic plasticity regulators. Blockade of NMDA receptors and dysfunction of glial cells results in increased levels of free glutamate in the synaptic cleft. This, in its turn, causes violation of other neurotransmitter systems mediators release and, by increasing of excitate activity and intracellular calcium levels, leads to the excitotoxicity phenomenon and premature death of neurons.

Conclusions. Technological advances of recent decades allows schizophrenia

studying at different levels: biological (genetic, neurochemical, neurophysiological, neuroanatomical, neuroimmunological), psychological (neuropsychological, pathopsychological, the study of personality structure, psychological defense mechanisms) and social. These studies will optimize the results of the diagnosis of schizophrenia and provide treatment efficiency achievements.
Key-words: neurotransmitters, genetic predisposition, cognitive functions, schizophrenia.