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ОРИГІНАЛЬНІ ДОСЛІДЖЕННЯ
ORIGINAL RESEARCH

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APPLICATION OF THE BASIC BROWN FOR THE EXPERIMENTAL EVALUATION OF THE HYALIN CARTILAGE

Introduction. *Objective:* to analyze the possible regenerative effects of autologous platelet-rich plasma on the provoked cartilage defects of the distal intercondylar hip region in rabbits, to evaluate the microscopic picture at different intervals, using coloring of species by basic brown.
Materials and methods. Full-thickness defects were created in the intercondylar area of the distal hip section of both knee joints of 24 rabbits. In two groups, the defect was treated by abrasive chondroplasty, in two - the subchondral plate remained intact. In the postoperative period, platelet-rich plasma was intraarticularly infused into different groups of study with the next histological evaluation of the formed regenerate.
Results. Regeneration of cartilage tissue in the subjects without damage to the subchondral plate is limited and after 8 weeks almost was not observed, even when applying PRP. Regenerate in the main group has a fibro-cartilaginous structure with signs of differentiation of chondrocytes, regenerate in the control group has a fibrous structure with a large number of blood vessels. In the main study group under the influence of PRP in the area of newly formed hyalin cartilage, an intense coloration of the main substance with the basic brown color was recorded, indicating the restoration of the functional properties of chondrocytes.
Conclusions. The macroscopic and microscopic structure of the regenerate appears to be the best in the subgroup of animals, where was created a defect with the involvement of subchondral plate and next PRP - stimulation in the postoperative period. The specific affinity of the paint to the sulfated proteoglycans makes it possible to determine the content of the cartilaginous intercellular matrix in the samples, as well as to distinguish the presence of regenerative cartilage potential in the reconstituted tissue of the fibrous type.

Key words: platelet-rich plasma, cartilage defect, cartilage matrix, experiment.

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THE DYNAMICS OF MICROSCOPIC CHANGES OF STRUCTURAL COMPONENTS OF ILIAC LYMPH NODES UNDER A LONG-TERM OPIOID NALBUPHINE EFFECT

Introduction. Despite the presence of numerous antinociceptive drugs, the problem of pain is still relevant. The narcotic analgesics, in particular, opioids, which are widely used in medical practice, have a pronounced analgesic effect. The representative of this group is nalbufine – a semi-synthetic opioid, a derivative of phenanthrene.

Due to the high demand for opioids in medicine, it is important to study their negative effects on organs and body systems. The effects of opioids on the skin, kidneys, cerebellum, pancreas and other organs have already been studied. Also, the effect of nalbuphine on the primary lymphoid organ thymus has been investigated. But in the literature there is not enough data on the influence of opioids on secondary lymphoid organs, in particular on lymph nodes where antigen-dependent proliferation and differentiation of subpopulations of T– and B–lymphocytes occurs and a specific immune response is formed.

The aim of the study was to study the dynamics of microscopic changes in the structural components of the iliac lymph nodes of white rats-males of reproductive age with long-term effects on the body of the opioid nalbuphine.

Materials and methods. The experiment was performed on 52 non-breeding white male rats of reproductive age (1,5 months) with an initial weight of 140–150 g, since their lymph nodes are similar in structure and function to lymph nodes of a people. Animals daily, within 6 weeks, were administered opioid analgesic naluphene intramuscularly to the right buccal region. The weekly dose of the drug for injection was gradually increased in increasing order, according to the patent number 76564 U «Method for the simulation of physical opioid dependence in rats».

Experimental animals were divided into 8 groups: 1 group – 5 intact rats; 2 group – 5 individuals who received nalbuphine daily for 1 week at a dose of 8 mg/kg; 3 group – 5 rats, which increased the dose of nalbuphine during the second week to 15 mg/kg; 4 group – 5 individuals, which increased the dose of nalbuphine during the third week to 20 mg/kg; 5 group – 5 individuals, which increased the dose of nalbuphine during the fourth week to 25 mg/kg; 6 group – 5 individuals, which increased the dose of nalbuphine during the fifth week to 30 mg/kg; 7 group – 5 rats, which increased the dose of nalbuphine during the sixth week to 35 mg/kg; 8 group – 5 individuals who did not receive an opioid during the seventh week (discontinuation of the drug). For

control, 12 white male reproductive rats were selected, which, instead of nalbuphine, were injected 0,9% sodium chloride solution each day.

Iliac lymph nodes were fixed in 10% neutral formalin and filled in paraffin blocks. Histological preparations of 5–7 μm lymph nodes stained with hematoxylin and eosin were studied using MICROmed SEO SCAN light-optical microscope and photocoded with a Vision CCD Camera with a histologic image display system on a computer monitor.

Experiments on animals were conducted in accordance with the provisions of the «European Convention for the Protection of Vertebrate Animals Used for Experimental and Other Scientific Purposes» (Strasbourg, 1986), Council Directives 86/609 / EEC (1986), Law of Ukraine No. 3447-I «On protection of animals from cruel treatment», «General ethical principles of experiments on animals», adopted by the National Bioethics Congress of Ukraine (2001), as evidenced by the act of the bioethics commission of the Medical Faculty of Uzhhorod National University (Protocol № 4 from 18.12.2015).

Results. On the histological sections was studied the dynamics of microscopic changes in the structural components of the iliac lymph nodes of white rats-males of reproductive age with a six-week influence of opioid nalbuphine. The first structural changes in the lymph nodes were detected after one and two weeks influence of nalbuphine, which was manifested by an increase in the relative area of the cortical substance and a decrease in the relative area of the medullary substance, the appearance of new secondary lymphoid nodules, a slight expansion of the medullary intermediate lymph sinus. After 3-4 weeks of the experiment in the lymph node destructive changes are evolving: there appear single destructively altered lymphocytes and reticular cells, thickening of the capsule of the site. The structure of the vessels changes: the veins are deformed, full-blooded, densely filled with uniform blood elements; artery wall thickened; blood capillaries are expanded. With long-term effects of nalbuphine within 5-6 weeks, pathological changes in the structural components of the lymph node are deepened. The germinal centers of the lymphoid nodules are enlarged, both destructively altered cells and cells with signs of mitosis occur. The medullary cords are twisted, their intercellular spaces are expanded, vascular edema is noted. The veins and venules are dilated, full-blooded, the walls of arteries thickened, blood capillaries expanded. In some vessels, the wall is destroyed, which leads to hemorrhage in the parenchyma of the site. One week after the discontinuation of the drug, there are no reversible changes.

Conclusions. 1. After 1-2 weeks, the opioid action of nalbuphine in the structure of the iliac lymph nodes increases the relative area of the cortical substance, slightly thickens the lymph node capsule, some extends the medullary intermediate lymph sinus. 2. After three and four weeks of introduction of nalbuphine, microscopic changes in the lymph nodes grow: there are destructively altered lymphoid cells in the parenchyma of the lymph node. Some blood vessels are pathologically altered. 3. After 5 and 6 weeks of the experiment, deep destructive changes in the structural components of the iliac lymph nodes are increasing: the number of destructively altered lymphoid cells increases, intercellular spaces are expanding. Swelling is observed both in the vascular space and in the parenchyma of the node. The artery

wall is thickened, with signs of multiple sclerosis, blood capillaries are dilated, full-blooded, sometimes the wall of vessels is destroyed, which promotes hemorrhage in the parenchyma of the site. The veins are enlarged and deformed. 4. One week after the opioid was discontinued, inverse changes in the microstructure of the parenchyma of the lymph nodes were not detected, and deep destructive changes in its structural components persist.

Key words: lymph node, structural components, lymphoid cells, nalbuphine, effect.

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THE STRUCTURAL FEATURES OF THE VENOUS SINUSES TENTORIAL-FALX DEPARTMENT OF THE DURA MATER OF BRAIN

Introduction. The most complex structure of the venous system of the brain is the sinuses of the dura mater of the brain (DMB), which have their own characteristics of the external and internal structure. In this direction conduct studies of individual variability of venous collectors, forming the axillary drainage, namely: sigmoid sinus, upper and lower sagittal sinus, transverse sinuses and straight sinus.

Aim: to establish the peculiarities of the structure of the brain dura mater of the tentorial-falx division and the participation of the leaves of the tent of the cerebellum and falx cerebri in the formation of their walls.

Materials and methods. The research was conducted on 100 integral and fragmented preparations of the brain with membranes collected in the past years, as well as using the museum's wet and corrosive preparations of the DMB sinus.

To solve the problems were used: macro- and micropreparation, cranio- and morphometry, injection of veins and sinuses of DMB, manufacturing of corrosive spatial preparation, stereotropometry of DMB sinus, variational-statistical analysis of morphemetric data and graphic modeling.

Results. It was established that the cerebellum tent together with falx cerebri are important for the formation of the walls of the following venous collectors of DMB: drainage sinus (DS); straight sinus (SS); left and right transverse sinuses (LTS, RTS); left and right superior petrosal sinus (LSPS, LSPS). In addition, the falx cerebri - the largest DMB appendage, has relevant for the walls of the upper and lower sagittal sinuses (USS, LSS) and internal parts of the axillary drainage.

Due to expense of the leaves of falx cerebri, carried out the formation of the upper side parts of the DS and the left and right walls of the GSP on considerable distance. Along with this, the lower side departments are formed by the upper leaf of the cerebellum tent. The side walls of the SS are also built by splitting the leaves of the basis of the brain, and its lower wall - the lower leaf of the tent of the cerebellum.

The upper and lower walls of the transverse sinuses (LTS and RTS) are completely built by the leaves of the tent of the cerebellum throughout their continuation, and the rear wall - by a leaf of the convection part (CpDMB).
Along with this, the upper and lower walls of the upper petrosal sinuses (LSPS and RSPS) are derivatives of the tentorial leaves, their rear wall - due to the splitting of the leaves of the dura mater.
Conclusions. 1. Morphological and craniotopographic features of the structure of the walls of the sinuses of the tentorial-falx complex of the dura mater of the brain are established by macroscopic and microscopic preparation of native preparations Herewith, the important role of the dura mater leaves processes split, formed in the region of the base of the brain and the upper side parts of the tent of the cerebellum throughout the abovementioned venous reservoirs is established. 2. Obtained new data concerning the structure of the sinuses walls (RTS, LTS, DS, LSPS and LSPS) need for the modern analysis of the morphometric and histotopographic characteristics of the layered localization of the vascular nervous formations within the tentorial-falx division.
Key words: tentorial-falx complex, venous sinus dura mater of the brain.

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MORPHOLOGICAL CHANGES IN THE LARGE BOWEL AFTER ITS RESECTION UNDER STRESS CONDITIONS AND AFTER CORRECTION BY TIOTRIAZOLINI

Introduction. The key factor in the postoperative period is the development of operational stress and, as a consequence, violation of functions of organs and systems. That is why, a wide range of preparations is used to correct these pathological changes. The use of medication – tiotriazolini – is one of them. In medical practice, tiotriazolini is used as a metabolitotropic preparation with a polytropic spectrum of a therapeutic action. In case of chronic stress caused by chronic hypoxia, the cells accumulate free radicals due to the activation of oxygenases and separation of oxidative phosphorylation. Therefore, recently, the preparations, which prevent the disturbances in the cellular metabolism of ion homeostasis and the function of membranes, are used in medical practice.
That is why *the goal* of our research is to learn morphological changes in the large bowel of the experimental animals after large bowel resection under stress conditions and after correction by tiotriazolini.
Materials and methods. The experiment was performed on 32 white laboratory sexually mature nonlinear male rats with the weight of 200-250 g at the premises of the scientific and experimental clinic of Vinnytsia National Pirogov Memorial Medical University. Also later, the animals of both groups underwent large bowel

resection. A typical resection with the application of end-to-end intestinal anastomosis by a single-row intestinal sutures was performed. After the surgical intervention, all animals were exposed to chronic stress. Chronic stress in rats was reproduced by way of their everyday five-hour immobilization. For this purpose, the animals were kept in plastic pen cases 5 hours a day during 30 days. All animals received 2,5% solution of tiotriazolini ("Arterium", Ukraine) at a dose of 100 mg per kg of the animal's weight once per 2 days during 14 days, injected intraperitoneally. The animals of the both groups were withdrawn from the experiment on the 3, 14, 30 day of the experiment. The preparations were prepared using the standard method. The images were received and processed; morphometry and statistical processing were carried out.

Results. In rats, which underwent large bowel resection and were exposed to stress and intraperitoneal correction by tiotriazolini, polymorph cellular infiltration with a predominance of leukocytic elements was observed along the periphery of anastomosis on the 3rd day of the experiment. In the proper mucous plate of the large bowel, moderate inflammatory infiltration was observed, its character was diverse. In the muscular layer, the myositis of muscle fibers with their dissection by inflammatory elements was found. Also, in the serous membrane, perivascular swelling and vascular congestion were observed. Acute ulcers of anastomosis did not occur, superficial erosions were found in 80% of animals. The epithelialization began from the part of the mucous membrane in the zone of anastomosis and stitches. The activation of repair processes was occurred. On the 14th day of the examination, single superficial erosions were formed, characterized by the formation of the zone of fibrinoid necrosis of superficial epitheliocytes with lymphocytic and leukocytic infiltration along the periphery. On the longitudinal sections, this process was manifested in the concentration of cellular elements of the fibroblastic raw. Also, the animals of this group had less coarse connective tissue fibers. After 30 days of examination, erosions and ulcerous defects were not observed, though dystrophic changes in the surface epithelium of crypts, cystic gland extension were recorded. Tissue basophils, as a rule, were found in the submucous layer and muscular layer around the vessels and were well noticed. In the layer of muscle tissue, it disappeared despite the preservation of hypertrophy of the muscle fibers. When studying the dynamics of morphological changes in the wall of the large bowel, it was established that on the 30th day of the examination a pronounced decreased activity of the inflammatory response of the large bowel wall and the restoration of the epithelial layer of the mucous membrane were detected.

Conclusion. The use of tiotriazolini, injected intraperitoneally, during the large bowel resection creates the conditions for the normal course of the regenerative processes in the anastomosis zone under the conditions of chronic stress, providing anti-inflammatory and anti-edematous effects with activation of the macrophagal reaction and myofibroblasts that facilitate scarless healing and epithelialization of the mucous membrane of the large bowel in the majority of experimental animals. The established peculiarities of the course of reparative processes with the use of tiotriazolini indicate that this medication can be recommended in case of surgical interventions on the large bowel that will allow to reduce the frequency of

pyoinflammatory complications in the post-operative period and speed up the recreation of the mucous membrane.
Key words: large bowel, resection, stress, tiotriazolini.

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ULTRASTRUCTURAL CHANGES OF THE LUNG ALVEOLAR EPITHELIUM FOLLOWING MULTIPLE SKELETAL TRAUMA

Introduction. Nowdays the polytrauma plays the main role in life-threatening injuries. Many experimental and clinical researches have proved that multiple injuries lead to severe dysfunction of inner organs and systems, respiratory failure as well. There are lots of pathways of the acute lung injury due to exo- or endogenous origin, but the most relevant is morphological structure of the components of the of air-blood barrier.
In this study it has been proved that multiple skeletal trauma leads lung epithelial cells disorders, *our purpose* was to find out ultrastructural changes of the alveolar cells I type (A-I) and II type (A-II) due to multiple skeletal trauma in dynamics.
Materials and methods. 50 Vistar male rats (body weight 180-230g) were used. The model of multiple skeletal trauma: each animal had an osteotomy of the both femur bones in the middle part according to our technique. The sampling of lung tissue for electronic microscopic examination made after Tiopental narcosis in timeframes 6, 24, 72, 168 hours after trauma. Pieces of the lung tissue were fixed in 2,5% solution of the gluteraldehyde with following postfixation in solution of osmium tetroxide 1%. After dehydration the material was placed into epon-araldite. Sections received using ultratome “Tesla BS-490” and were studied under electronic microscope “PEM -125 K”.
Results. The ultrastructural analisis revealed that 6 hours after trauma in the A-I and A-II there are only reactive disorders occurs. In the peripheral part of the A-I was found out increase the number of the micropinocytosis vesicles. In the A-II cytoplasm the significant number of mitochondria of different size and shape was revealed. Components of rough and smooth endoplasm reticulum were enlarged. There were lots of lamellar bodies in the perinuclear and apical part of the A-II with irregular electronic-optical density. However, during this timeframe some A-I and A-II had diffuse lightening of the cytoplasm, mitochondria swelling, enlargement of rough and smooth endoplasm reticulum. The decrease of lamilar bodies in the A-II was noticed.
A-I and A-II were tended to alteration and cell swelling during 24 hours after trauma. Some A-I had sail-like prominence of plasmalemma inside the alveolar space.
Submicroscopic changes of the A-I and A-II during 72 hours are defined as hyperhydratation of cells: cytoplasm lightening, severe mitochondria swelling,

fragmentation of rough endoplasm reticulum. A-II had decreased number of lamellar bodies. Their apical surface was almost bare because of run out of microvesiculas.
The decreasing number of cells and severity of swelling of the alveolar epithelial cells was observed on the 168 hour in comparison with previous timeframes of the experiment. Thus, A-I and A-II have submicroscopic changes that lead to increase of their function activity.
Conclusions. 1. Study shows that multiple skeletal trauma case significant changes of the submicroscopic morphology of the alveolar cells I, II type. 2. Alveolar cells morphology dysfunction appears within the first 24 hour, after trauma.
Key words: alveolar cells I, II type, lungs, multiple skeletal trauma.

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STRUCTURAL CHANGES OF SKIN AT EXPERIMENTAL CONTACT NICKEL DERMATITIS

Introduction. Contact dermatitis (CD) is a complex disease, which is one of the important challenges for health care system and immunology. The prevalence of CD is rising worldwide. About 20% of world population suffers from allergy to at least one contact allergen. Metal nickel is one of the most common contact allergen. It is used in numerous industrial and consumer products, including stainless steel, magnets, metal plating, coinage, and special alloys, and is therefore almost impossible to completely avoid in daily life. Nickel contact dermatitis can represent an important morbidity, particularly among patients with chronic hand eczema. This can lead to inability to work, a decrease in quality of life and significant healthcare expenses. Therefore, its management is of great importance.
The *objective* of this research was to study the morphologic and ultramicroscopic changed of skin structure in experimental dermatitis caused by nickel sulfate.
Material and methods. Fifteenmale inbred rats were divided into 2 groups. The hair on the dorsal area of 3x3 cm was removed and cleaned skin area was exposed to 4 g of solid Lanolin containing 5% nickel sulfate for 12 days. The rats were euthanized and skin removed on day 20 for histological and electronic microscopy examination. A central strip of the back skin was fixed with formaldehyde and embedded in paraffin. Paraffin sections then were stained with hematoxylin and eosin. For electron microscopic studies small pieces of the skin were fixed in 2.5% glutaraldehyde solution, then fixed with 1% osmium tetroxide solution in phosphate buffer. Further processing was carried out according to routine methods. Ultrathin sections, made on ultra-microtome UMPT-7, were contrasted by uranyl acetate and lead citrate according to Reynolds method and studied in the electron microscope PEM-125K.
Results. Histological and electron microscope examinations of the rat skin in experimental contact allergic dermatitis showed signs of the most prominent

destructive changes at the center of lesion. The epidermis destruction and areas of necrosis were observed. Somewhere dermis damage also occurred. Hair roots and follicles, sebaceous glans were destructed. The edema of connective tissues was accompanied by lysis of fibers and fibroblasts demolition. Submicroscopic changes of connective tissue showed electron-dense, irregularly shaped nucleus and cytoplasm of fibroblast, damaged organelles and intercellular substance. Enlargement of capillary, damaged endothelial cell and basement membrane were observed.
Conclusion. Experimental contact dermatitis induced by 5% nickel sulfate causes pathological damage of all skin structures, especially at central areas. Microscopic and submicroscopic studies estimated deep epidermis and dermis destruction with focal ulcers and necrosis. Nuclei and cytoplasm, keratinocytes, fibroblasts and fibers of connective tissues are ruined and damaged.
Key words: structural changes, skin, dermatitis, nickel.

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STRUCTURAL ORGANIZATION OF CEREBELLUM OF HUMAN FETUSES OF 39-40 WEEKS OF INTRAUTERINE DEVELOPMENT

The aim of the study is to establish macrometric parameters of hemispheres and cerebellum worm, as well as cytoarchitectonics and morphometric parameters of cerebellum structures in human fetuses of 39-40 weeks of intrauterine development.
Materials and methods. We made natomical-histological, imunohistochemical and morphometric studies of cerebellum hemispheres and worm from 10 human fetuses of 39-40weeks gestation term (GT) which were received as a result of late abortion in the regional pathologist's bureau of Vinnytsia City. Congenital abnomalitieses of central nervous system were absent. Parietococcygeal length (PCL) was 374,5±15,2 mm, weight was 3287,5±134,2 g.
Results. During the study we obtained the following macrometric parameters of cerebellum hemisphere and worm. The transverse size of cerebellum is 53,0±2,1 mm. Left hemisphere: longitudinal dimension - 30,0±1,3 mm, height - 24,0±0,9 mm; transverse dimension - 20,0±0,8 mm; right hemisphere: longitudinal dimension - 30,0±1,2 mm; height - 24,0±1,0 mm; transverse dimension - 21,0±0,8 mm.
Transverse dimension of worm is 12,0±0,4 mm; longitudinal size of worm is 17,0±0,7 mm; height of worm is 16,0±0,7 mm; mass of cerebellum is 17,0±0,8 g. In the cerebellum upper and lower surfaces are distinguished, the boundary between which is the posterior margin of the cerebellum, where the deep horizontal cleft passes. On the underside there is a wide hole - cerebellum area. Upper and lower surfaces of hemispheres and worm have a large number of transverse clefts, which run parallel to each other, between which there are long and narrow leaves (gyrus) of cerebellum. Cerebellar gyrus goes without interruption through hemisphere and

through worm.
Conclusions. 1. At 39-40 weeks-term on upper and lower surfaces of cerebellum hemispheres and worm there are transverse fissures that pass through hemisphere and worm, forming leaves of cerebellum. Deep horizontal cleft is formed. 2. In cerebellum hemispheres two layers are clearly distinguished: white substance, cortex layer. The highest density of neural stem cells is observed in external granular layer – 272,0±12,5 cells per 0,01 mm^2. The lowest cell density was observed in molecular zone – 27,0±1,2 cells per 0,01 mm^2. The largest thickness had cerebellum white substance – 8762,4±420,6 μm, the smallest thickness had molecular layer – 35,6±1,5 μm. 3. The largest proliferation of cells is found in intrinsic granular layer of cerebellum, and the least intense in white substance. Expression of synaptofisin is found in all layers of cerebellum. 4. Fibers of radial glia are observed in all cerebellum layers. Relatively mild expression of vimentin in the fibers of the radial glia was observed in the white substance and relatively strong one in molecular layer and outer granular layer. The average length of the fibers of radial glia was: short - 173,7±8,4 microns, long - 340,7±13,9 microns.
Key words: cerebellar hemispheres, the worm of the cerebellum, morphometric parameters, fetal development, radial glia.

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MORPHOLOGICAL AND MORPHOMETRIC CHARACTERISTICS OF THE STRUCTURAL AND FUNCTIONAL STATE OF BONE AND CORTELAGE TISSUES CHANGES AT THE COMMON INTRODUCTION OF DYNAMIC VITAMIN D3 WITH PREDINISOLON

Introduction. According to the literature, glucocorticoids, in long-term use, cause a number of side effects that affect the entire body, including bone tissue.
The aim of study is to investigate changes in bone and cartilage tissues in the experiment with combined administration of vitamin D3 and prednisolone.
Materials and methods. The research was conducted on 51 rat of the Wistar line in three series of experiments. In the first series of experiments, animals were fed 0.5 ml of water into the stomach. In the second series, animals were given 0.5 mg of prednisolone, and in the third one was given 0.5 mg of prednisolone and 100 IU of vitamin D3. After 30 days, the animals were withdrawn from the test and a material was collected for morphological studies.
Results. The obtained data showed that the administration of vitamin D3 against the background of prednisolone administration did not significantly affect the weight of animals. In both groups of animals, which were given prednisolone, and prednisolone in combination with vitamin D3, there was a significant decrease ($p < 0.05$) in bone

mass. If in the control series of experiments, the mass of the tibia was 254.6 ± 4.0 mg, whereas in the series of experiments where prednisolone was administered to rats was 11% less. The weight of bone was significantly higher ($p < 0.05$) in group where was administered prednisolone with vitamin D3 than in animals receiving prednisolone and only 3% lower than in control group.

Morphological changes in cartilage and bone tissue showed that in group where was administerated prednisolone with vitamin D3, the structural and functional organization of the articular cartilage of the femoral head was closer to that of the animals in the control group. The main difference of its structure was the activation of processes of proliferation of chondrocytes in the surface zone. It was indication of an improvement in endochondrial osteosynthia, which was less intense than in the control group of experiments, and it was confirmed by its topography and the height of the formed primary spongiosis and the absence of these processes in the second animal group of experiments. The structure and condition of cartilage cells in animals with the introduction of vitamin D3 with prednisolone were approaching those in animals in the first series of experiments. In addition, moderate manifestations of degenerative-necrotic changes in the compact bone tissue and the increased number of central channels, especially from the periosteal layer, were observed, and there was a disturbance in the formation of the layer of general internal and external surrounding bone plates. The length of the femur in animals in this series of experiments was higher than that of animals in the second series of experiments, but was significantly lower ($p < 0.001$) than in control animals group.

The bone thickness also significantly ($p < 0.05$) did not differ from the series of experiments where the animals received prednisone and also was significantly ($p<0,001$) less than that of the animals in the control group. The number of central vascular channels in the middle third of the diaphysis of the femur was significantly ($p<0,05$) higher than that of the animals in the control group and was significantly lower ($p<0,001$) than in animals which was receiving prednisolone.

Conclusions. Vitamin D3 significantly reduced the negative effect of prednisolone on the articular and epiphyseal cartilages, structure compact and cancellous bone, which was shown by moderate signs of degenerative - necrotic changes in the compact bone, moderately increased number of central channels and datas of osteometryc research.

Key words: osteoporosis, prednisolone, vitamin D_3.

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STRUCTURAL CHANGES OF RAT'S RENAL CORTEX IN LATE PERIOD OF SKIN BURN INJURY UNDER THE CONDITIONS OF THE INFUSION BY ISOTONIC NATRIUM HLORIDUM SOLUTION

Introduction. Efficiency of using infusion solutions in the treatment of burn injury and its consequences has been proven in experimental studies and clinical practice. There is an urgent discussion about the advantages and disadvantages of using crystalloid and colloidal solutions.

The purpose of this study was to determine the peculiarities of structural changes in the cortical substance of rats, kidney 14, 21, 30 days after the experimental skin burn II-III stage in terms of use during the first 7 days daily intravenous infusion of isotonic sodium chloride solution.

Materials and methods. Experimental study was performed on 45 white male rats weighing 155-160 g. Experimental animals were divided into three groups: I - intact rats; II - rats without skin burn, which were injected isotonic sodium chloride solution; III - rats with skin burn, which were injected isotonic sodium chloride solution.

Skin burn (after the appropriate premedication) was caused by applying four copper plates (two plates on each side) to the lateral surfaces of the body of the animals, which were pre-held for six minutes in water at a constant temperature of 100°C. The overall area of burn in the rats of the indicated mass was 21-23% at an exposure of 10 seconds, which is sufficient for the formation of burns of the II-III degree and the development of a shock state of moderate severity.

The experimental thermal injury of the skin causes an endogenous intoxication typical for burn disease. We studied structural changes in kidney cortex after 14, 21 and 30 days after burn.

Isotonic sodium chloride solution was administered intravenously for 5-6 minutes. at a dose of 10 ml/kg body weight. Infusion was performed in the caudal hollow vein. The first injection of the solution was carried out 1 hour after the simulation of the pathological condition, and subsequent infusions were performed daily for 7 days.

The material for morphological studies was processed according to generally accepted methods. For histological examination, the tissue sections were stained with hematoxylin-eosin. Ultra-thin sections were prepared on ultramicrotome "LKB" and studied and photographed on an electron microscope PEM-125K. Semi-thin sections were painted with toluidine blue and methylene blue-azur II. Morphometry was carried out using programs VideoTest-5.0, KAARA Image Base and Microsoft Excel on a personal computer. Statistical processing of the obtained quantitative data was performed using the software "Excel" and "STATISTICA" 6.0 using parametric methods.

Results. Histologic and electron-microscopic examination of the kidney cortical substance showed that already after 14 days after experimental skin burn in animals, which had been infused with isotonic sodium chloride solution, manifestations of mosaic adaptive-compensatory and destructive changes of the vascular bed, stroma and parenchyma of the organ were recorded.

There are phenomena of interstitial edema and diapedesis of red blood cells. The site destruction of the vascular wall, the formation of perivasal edema and hemorrhage are registered. The renal bodies of rats with burns can be divided into "hypertrophied" and "atrophied". It was established that in 14 days after burn, the average area of hypertrophied bodies was 8453±203 μm^2 (in 1.4 times more than the same indicator

in intact animals). The average area of atrophied bodies is statistically significantly lower than the norm (5895±153 μm^2) and is 4687±128 μm^2 (which is in 1.8 times smaller than the average area of hypertrophied bodies).
There are destructive changes of podocyte. The cytoplasmic matrix of mesangiocytes is predominantly electron-to-dense, and individual mitochondria, lysosomes and fibrils are visualized there.
Histologic and electron microscopic examination showed that 21 days after the experimental skin burns near the sites of hemorrhage in the kidney's cortical substance formed quite large cell centers of lymphocytic infiltrates. Part of the lymphocytes in the infiltrate have fragmented nuclei with a condensed nucleoplasm, as well as a cytoplasmic matrix of a different (but significant) electron density, which contains mitochondria with an enlightened mitochondrial matrix.
The necrosis covered several tubules of the nephron, due to which centers of necrosis were formed. Outside of the zones of necrosis and hemorrhages in the epithelial cells of the nephron tubes, the mitochondria polymorphism was noticed. Mitochondria were varied in size and shape. They are placed between vacuoles of various sizes and shapes.
Diversity is a hallmark of structural changes in the tubes of the nephrons beyond the zones of necrosis and hemorrhages. 21 days after burning of skin under conditions of an isotonic solution of sodium chloride in the lumen of blood capillaries glomeruli, hemolyzed erythrocytes and almost homogenized cell detritus were detected. There is an increase in the size of the fenestra in the endothelium of the blood capillaries of the glomeruli.
In the study of kidney cortical substance 30 days after the burn of the skin, cells of lymphocytic infiltrates and hemorrhages have been established.
Conclusion. 1. Infusion of isotonic sodium chloride solution does not cause marked nephroprotective effects.
2. Infusion monotherapy of severe skin burns with isotonic sodium chloride solution has a positive effect on the body of burned rats. It is advisable to use combined infusion solutions that improve regenerative kidney function and have nephroprotective properties.
Key words: skin burn injury, infusion therapy, 0,9% NaCl solution, structural changes, renal cortex.

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PATHOMORPHOLOGICAL CHANGES IN THE RESPIRATORY PART OF THE LUNGS IN CASE OF EXPERIMENTAL ACUTE RENAL FAILURE

Introduction. Nowadays, the acute respiratory distress syndrome (ARDS), despite of considerable achievements in study of etiology, pathogenesis, prophylaxis and

treatment, remains actual medical problem. ARDS is one of threatening forms of respiratory failure that develops in case of critical conditions (acute renal failure, multiple traumas, inhalation of toxic substances, peritonitis, aspiration, acute hemorrhage). It has been established that pathology of the respiratory part of pulmonary components is an important element in the pathogenesis of present syndrome.

The aim of this work was to study micro- and ultrastructural changes of the respiratory part of the lungs in dynamics in case of experimental acute renal failure.

Materials and methods. The experiments were done on 72 Vistar line white male rats of 180-220 grams of weight. Acute renal failure was induced by intramuscular administration of 50% glycerol water solution in dose of 10ml per kg of body mass.

The sampling of lung tissue for electron microscopy study was carried out under ketamine anaesthesia in 12, 24, 72 hours after beginning of the experiment. Pieces of lung tissue were fixed in 2,5% solution of gluteraldehyde with further postfixation in 1% solution of osmium tetroxide. After dehydration, the material was poured over epon araldite. The cuts, obtained on ultramicrotome "Tesla BS-490", were studied using electron microscope "PEM-125K".

Results. The histological examination of the respiratory part of the lungs of animals in 12 hours after beginning of the experiment has demonstrated increase of the alveolar macrophages (AM) in the air cells. Interalveolar walls are thickened at the expense of blood capillary plethora.

Sub-microscopically, the nuclei of type I alveolocytes (A-I) and type II alveolocytes (A-II) have matrix of moderate electronic-optical density. The mitochondria are of different size and dimensions. The cisterns and ducts of Golgi apparatus (GA) and granular endoplasm grid (GEG) are somewhat dilated. In the peripheral segments of A-I was found a big quantity of micropinocytotic vesicles. In cytoplasm of A-II is observed a big quantity of the lamellar bodies (LB). At the same time, we have observed A-II with focal clarification of cytoplasm, edema of mitochondria, dilated and fragmented cisterns of GEG, deformed and vacuolated LB. In the interstitial tissue, we note the local edema of main substance of the alveolar wall connective tissue. Changes of the endothelial cells ultrastructural organization indicate the development of intracellular edema. In the lumen of blood capillaries is determined an increased quantity of neutrocytes, their adhesion and aggregation.

On the 24^{th} hour of light-optical study, in the alveolar lumen is determined a big quantity of AM, erythrocytes and leukocytes. Sub-microscopically, in the alveoli is observed heterogenicity of macrophage elements that differ in size, form and ultrastructural organization. Among not numerous "angry" alveolar macrophages is determined a big quantity of cells with dystrophic destructive changes. Sub-microscopic changes of the components of aero-hematic barrier (AHB) are characterized by the expressed hyperhydration phenomena.

On continuation of the experiment (72 hours), the phenomena of hyperhydration in AHB components continue. At the same time, in the AHB cells are determined changes aimed at increase of their functional activity.

Conclusions. 1. Acute renal failure leads to disorder of structural organization of the components of the respiratory part of the lungs. 2. The pattern and nature of changes

in type I and II alveolocytes, interstitial tissue, endothelial cells, blood capillaries, alveolar macrophages depend on duration of endogenic factor.
In perspective, further research should focus on correction of the respiratory part of the lungs structural changes in case of experimental acute renal failure.
Key words: lungs, respiratory part of the lungs, experimental acute renal failure.

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DYNAMICS OF ELECTRON MICROSCOPIC CHANGES IN SKIN OF RATS AFTER THERMAL TRAUMA BY THE CONDITIONS OF APPLICATION OF HAES-LX-5% SOLUTION

Introduction. Thermal burns of the skin occur in the home and in accidents at the enterprises, as well as in military conflicts. Therefore, despite significant advances in the study of the pathogenesis of burn injury, the application of new methods of diagnosis and treatment, the problem of thermal burns of the skin is extremely relevant. There is no data on the effect of HAES-LX-5% solution on skin regeneration during burn injuries of the skin. Therefore, such research is extremely relevant.
The purpose of the work is to study the microstructure of the skin of rats when correction of the consequences of burn injuries of the skin with the HAES-LX-5% solution.
Materials and methods. Experimental studies were performed on white non-linear male rats, which were divided into groups of 8 rats in each: I-animals without burn; II - rats with burn and catheterized femoral vein, which were given intravenous infusion with 0.9% NaCl solution for 5-6 minutes in a dose of 10 ml./kg.; III - rats with burn and catheterized femoral vein, which were given intravenous infusion with a solution of HAES-LX-5% for 5-6 minutes at a dose of 10 ml/kg/day in the lower vena cava.
Results. Carried out electron microscopic investigations early in the aftermath of a thermal trauma (1, 3 days) under the conditions of the corrective drug application showed that ultrastructural reorganization of dermis hemocapillaries indicates their reaction to the stressor thermal factor. An increase in their lumen and blood flow is noted. Reorganization of endothelial cells is manifested by edema of the cytoplasm, damage to organelles. There is an increase in the permeability of the blood microcirculation and damage histohematric barrier. Basal membrane of blood capillaries is uneven, fuzzy. Edema is observed, the amorphous component of the intercellular substance of the connective tissue of the dermis is clarified.
At 3 days after the injury, with using HAES-LX-5% solution in the peripheral regions is observed to have minor changes in the papillary layer of the dermis. Peripheral edema of the amorphous component of the intercellular substance, fragmentation and lysis of collagen fibers are marked. Part of the fibrous components is retained. In the

affected areas there are neutrophils, lymphocytes, as well as basophils and macrophages. Fibroblasts are destructively altered.

At the 7th and 14th day of the experiment, with the use of the corrective drug in the wound region, the number of epidermis is increased due to their mitotic division and they are the source of epithelization of the wound surface. In the basal layer there are small, clearly contoured cells. There are tonefilaments and well-defined desmosomal contacts.

In the central area and the edge zones of the affected skin, in these terms, a lesser degree of destruction of the dermis components is observed. Positive effect of HAES-LX-5% solution after thermal injury of animal skin is more pronounced in the border region of the wound.

Electron microscopic investigations in 21 and especially 30 days of experiment have established an increase in the positive effect of applying a corrective factor on the healing of a burn wound. In the central portion of the site, the resulting connective tissue includes many young and mature fibroblasts. Small-differentiated cells are small in size, long-form. A significant area of such fibroblasts is the nucleus, euchromatin and large nucleoli are present in the karyoplasm. In the cytoplasm, there are prolonged, unevenly thickened tubules of granular endoplasmic reticulum, Golgi complex cisternas, ribosomes, and small mitochondria. There is a formation of fibrous structures in the connective tissue of the dermis. Collagen fibrils form bundles of fibers in the mesh dermis.

The ultrastructure of neutrophils and basophils in the late stages of the experiment is significantly normalized, does not differ from such cells of the group of intact animals. In the cytoplasm of segmental neutrophils, there are primary and secondary granules, in the basophilic cytoplasm, large osmiofilic granules. The introduction of HAES-LX-5% promotes epithelization of the wound site.

Epidermocytes of the formed stratum spinosum, have small size, they are clearly contoured with plasmolomas. The structure of the structural components of the nucleus of epidermocytes characterizes their high functional activity.

In the later stages of the experiment in the marginal region of the burn wound, keratinocytes of the granular layer are detected. Few of them, the cells are long-lasting and include osmiofilic keratinomas. On the surface of the epidermal regenerate there is a non-wide layer of horny scales. In the border region, signs of the formation of papillae of loose connective tissue are also noted.

Conclusions. 1. Electron microscopic studies have found that in the early stages after a thermal trauma (after 1 and 3 days) under conditions of application of HAES-LX-5% solution submicroscopic changes of the structural components of the affected skin are similar to the group of experimental animals, which were injected after the burn injuries of skin 0,9% NaCl solution. However, in the region of the wound better preserved hemocapillaries and less swelling of the connective tissue of the dermis.

2. The positive effect of applying corrective factors was more pronounced in 7 and 14 days of the experiment. In the granulation tissue of the affected area there are active fibroblasts, neutrophils, lymphocytes, macrophages. In the peripheral areas, there are blood capillaries that provide trophic and contribute to border epithelization. 3. The submicroscopic state of the skin in the late stages after burn (21, 30 days of the

experiment) with the application of the solution HAES-LX-5% indicates a significant normalization of its structural components. Regenerative processes lead to epithelization of the wound area, the formation of connective tissue of the dermis.
Key words: thermal trauma, skin, electron microscopic studies, HAES-LX-5%.

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HISTOLOGICAL CHANGES IN THE SMALL INTESTINE IN THE LATE STAGES OF BURN DISEASE AFTER THE CORRECTION WITH INFUSION SOLUTIONS

Aim of our work – determine at the light-optical level morphological changes in the wall of the small intestine of rats in 14, 21 and 30 days after burn injury of the skin, which were injected with solutions of "lactoprotein with sorbitol" or HAES-LX-5% during the first seven days.

Materials and methods. Experimental study of morphological changes in the structure of the ileum gut in late terms (14, 21 and 30 days) after burn skin lesions were performed on laboratory white male rats weighing 150-160 g obtained from the vivarium of the SI "Institute of Pharmacology and Toxicology of the Academy of Medical Sciences of Ukraine". The animals were kept at the Scientific-Experimental Clinic of the Vinnytsia National Medical University n.a. Pirogov on a standard diet, with free access to water and food. The temperature in the room where the animals were kept was at the level of 24-25°C.

The rats were divided into 4 groups, which previously, in conditions of propofol anesthesia 60 mg/kg internally, catheterization of the femoral vein and depilation of the lateral surfaces of the trunk of the rats were performed. Group 1 – intact rats (only catheterization and shaving of the lateral surfaces of the body were performed). In groups 2, 3 and 4, rats were given once a day with the first 7 days infusion of 0.9% solution of NaCl, "lactobrein with sorbitol" or HAES-LX-5% at a dose of 10 ml per kg after skin burn. The burnout shock was caused by applying to the shaved lateral surfaces of the rats trunk four copper plates (two plates on each side) which were preheated for 6 minutes in water at a constant temperature of 100°C.

Euthanasia of rats was performed after propofol anesthesia (60 mg/kg i/v) by decapitation. Changes in the morphological structure of the ileum wall were studied after 14, 21, and 30 days from the beginning of the experiment.

For histological examination, the fragments of the ileum wall were fixed in 10% neutral formalin solution, washed in running water, dehydrated in the battery of alcoholic solutions of increasing concentration, and enclosed in a steam particle. Cutting thickness 3-5 microns were made on a rotary microtome, painted with hematoxylin eosin and with van Gieson's stain. Histological preparations were

investigated in a light microscope OLYMPUS BH-2 using lenses x10 and x40, an eyepiece x10.

Results. After 14, 21 and 30 days in laboratory rats, after skin burn which were injected with solutions of "lactoprotein with sorbitol" or HAES-LX-5% during the first seven days, the same type of necrobiotic and dystrophic changes in blood vessels of the circulatory microcirculation bed, enterocytes of the intestinal villi and crypts, and leukocyte infiltration are less pronounced in similar periods of observation than in rats that after skin burn in first seven days were injected 0.9% solution of NaCl.

It should be noted that even after 30 days after burn injury of skin in the wall of the ileum of rats injected with solutions "lactoproteins with sorbitol" or HAES-LX-5% there are no full compensation of pathological changes.

The use of infusion solutions "lactoproteins with sorbitol" or HAES-LX-5% has positive effect on existing damages in the small intestine after burn skin lesions, which determines their significant prospects in terms of possible future use in burn disease after clinical trials.

Key words: burn disease, infusion solutions, small intestine, histological changes, rats.

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STRUCTURAL CHANGES OF RATS' AGGREGATED LYMPHOID NODULES OF ILEUM IN AN EXPERIMENTAL SKIN BURN INJURY UNDER THE CONDITIONS OF INFUSION BY 0.9% NaCl SOLUTION

The purpose of the work is to determine the structural differences of damage and compensatory adaptive changes in aggregated lymphoid nodules of ileum at different periods after the experimental thermal burn injury under conditions of intravenous infusion of 0.9% NaCl solution.

Materials and methods. The investigation on establishing the structural differences of the injury and compensatory adaptive changes in aggregated lymphoid nodules (Peyer's patch) of ileum in rats at different periods after the experimental thermal burn injury (in 1, 3, 7, 14, 21, 30 days after the burn) under conditions of intravenous infusion of 0.9% NaCl solution was performed on 45 white male rats (weight 155-160 g).

The experimental thermal burn (severity level II-III, with 21–23% of total body surface area burned) was performed according to widespread among researchers basic model. The test animals were divided into 3 groups (each group of 15 animals): I – intact animals; II – rats without thermal injury intravenously infused by the 0.9% NaCl solution for the first 7 days at the dose of 10 ml/kg; III – animals with burn injury that were infused according to the same schedule with the separate administration of the investigated substance. Housing of rats, experimental setup and

other related procedures were performed according to the existing bioethical principles.

Results. With the help of light and electron microscopy it was determined that the general signs of structural changes in aggregated lymphoid nodules of ileum in rats with the experimental thermal skin injury are necrosis and apoptosis of functionally different cells which occur against the background of significant changes of haemo- and lymphatic microvasculature. Necrosis and apoptosis in the case of action of 0.9% NaCl solution are superfluous and lead not only to discordance to apoptotic clearance (the rate of purification of lymphoid nodules from apoptotically degraded lymphocytes) but also to the failure to get rid of cellular necrotic detritus which serves as an additional source and a factor in the spread of inflammatory process, as well as the development of typical for burn disease intracellular and intercellular edema. Macrophagocytes in the aggregated lymphoid nodules under these conditions are in a phagocytic strain state which often ends with necrotic death.

Under the conditions of burns the formation of cellular detritus is the result of necrosis of apoptotic unchanged and apoptotic changed lymphocytes, as well as apoptotic bodies in aggregated lymphoid nodules. Necrotic degradation comprises all components of lymphocytes and apoptotic bodies. Widespread are the local lysis of plasmolemma of lymphocytes and mosaic changes of their mitochondria in the form of: 1) the unevenness of the intermembranous space and the variability of the density of its contest; 2) illumination of mitochondria matrix and local (sometimes even complete) destruction of mitochondrial crista located therein; 3) loss of integrity of the internal mitochondrial membrane; 4) infraction of integrity of the external mitochondrial membrane. Marked changes in plasmolemma of lymphocytes and in mitochondria are not only a reflection of the dynamics of permeability of the membrane structures of the cell for transmembrane flows (directed with an interstitial edema, into the cell or out of the cell). It is evidence of the multifaceted involvement of mitochondria in the stress response of lymphocytes to burn which consists in the apoptotic elimination of damaged lymphocytes, in the energy provision of a regenerative proliferation program, and under worse conditions (failure of an adequate stress response) – in chaotic and asynchronous necrotic cell destruction.

Vascular disorders in the aggregated lymphoid nodules of the burnt rats under conditions of infusion of 0.9% of NaCl solution are: 1) narrowing of the arterial lumen; 2) infraction of the structural integrity of the vascular wall of the blood capillaries; 3) violation of the structural integrity of the vascular wall of the enlarged and filled with erythrocytes masses of venules; 4)violation of the structural integrity of the vascular wall and a sharp expansion of the lumen of the lymphatic capillaries. Infraction of the structural integrity of vascular wall of the blood capillaries of venules under the above mentioned conditions take place due to: the expansion of interendothelial slit; local destruction of the basal membrane; necrosis of certain endothelial cells. In the lumen of the blood vessels of the haemomicrocirculatory bed of the aggregated lymphoid nodules an erythrocytic sweating and haemolytic changes of red blood cells can be noted. These changes are followed by an expressive reaction of paravazal mast cells, their rapid degranulation, partial or total destruction of their

plasmalemma; leukocyte infiltration of the formed zones of edema, haemorrhages and necrosis.
Under the conditions of infusion of 0.9% NaCl solution of burnt rats, the walls of some of the lymphatic capillaries in the aggregated lymphoid nodules surrounding each lymphoid node (juxta nodules lymphatic capillaries) is partially destroyed, or it is so refined and transparent (due to the expansion of the interendothelial spaces) that the contact between the lymph in the lumen and the intercellular connective tissue is direct and unlimited. The indicated structural changes in the lymphatic capillaries are compensatory and adaptive, considering a clear effect of prevention the intercellular edema, but they certainly have negative consequences in the form of possible uncontrolled expansion of endotoxins, biologically active substances, immune complexes, etc.
Key words: skin burn injury, infusion therapy, 0.9% NaCl solution, structural changes, aggregated lymphoid nodules.

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MICROMORPHOMETRIC CHANGES IN RATS SPLEEN IN THE FIRST 7 DAYS AFTER SKIN BURNS AND UNDER APPLICATION OF INFUSION SOLUTIONS

Introduction. *Aim* of our work – determine at the optical-optical level stereological changes in the parenchyma of the spleen of rats in 1-7 days after skin burn and application of 0.9% solution of NaCl, lactoprotein with sorbitol and HAES-LX-5%.
Materials and methods. The research was carried out on laboratory white rats, males weighing 155-160 g, obtained from the vivarium of the SI "Pharmacology and Toxicology of the Academy of Medical Sciences of Ukraine".
The rats were divided into 6 groups in the experiment: 1, 2 and 3 groups - rats without thermal trauma who were infused with 0.9% NaCl solution, lactoprotein with sorbitol and HAES-LX-5% in a dose of 10 ml per kg. In the 4th, 5th and 6th groups, 0.9% NaCl solution, lactoprotein with sorbitol and HAES-LX-5% infusion were administered to the rats at a dose of 10 ml per kg after skin burn.
Burn skin damage was caused by applying to the pre-depilated lateral surfaces of the trunk of the rats for 10 seconds with four copper plates (two plates on each side, each with a surface area of 13.86 cm^2) which were preheated for 6 minutes in constant temperature of water - 100 C^o.
Shaving of the lateral surfaces of the trunk of the rat, catheterization of the veins, staining of skin burns and decapitation of the animals were carried out under conditions of intravenous propofol anesthesia (at the rate of 60 mg/kg of animal weight).

The stereological study of the spleen tissues was carried out on a Laborlox S (Leitz) microscope on a demonstration screen with an increase of 40/1.25x10 using the Weibull grid. The following formula was used to determine the volume density (relative volume, cm^3/cm^3) of the red and white pulp of the spleen: $V_{vi}= P_i / P_T$; where V_{vi} is the volume density of the corresponding parts of the spleen; P_i is the number of test points falling into the corresponding structures; P_T – aggregate number of test points. In each of the histological preparations (6 in each group of animals) in different zones of the spleen by random selection, 5 fields of vision were selected in which the stereological parameters were determined.

The statistical processing of the obtained results was carried out in the licensed package "Statistica 6.1" with the use of nonparametric methods for evaluating the results.

Results. The relative volume of white and red pulp in rats without skin burn, which during the first seven days of the experiment were administered infusion solutions practically did not change after 1, 3 and 7 days from the beginning of the experiment. Only 10-13% higher values of the relative volume of white pulp and only 7-11% lower values of the relative volume of red pulp in animals when administered with lactoprotein with sorbitol were established only when compared with administration of 0.9% NaCl solution or HAES-LX-5%.

The following dynamics of changes in the relative volume of white and red pulp in animals after the skin burn following the introduction of infusion solutions was established: reduction when administrating of solution lactoprotein with sorbitol by 4.1%, and when administered HAES-LX-5% by 7.8% relative volume of white pulp from 1 to 7 days of the experiment; higher (14.4 and 18.0% respectively) values of the relative volume of white pulp and smaller (7.1 and 9.1% respectively) of the relative volume of red pulp in rats after 3 days after burning of the skin at the administration of HAES-LX-5% or lactoprotein with sorbitol than in animals at a given time when administering 0.9% NaCl solution; larger by 19.4% values of relative volume of white pulp and 5.8% smaller by the value of the relative volume of red pulp in rats 7 days after skin burns when HAES-LX-5% solution is injected than in animals of present the term with administration of 0.9% NaCl solution; less by 7.9% values of the relative amount of red pulp in rats 7 days after skin burns when administering lactoprotein solution with sorbitol than in animals at this time administering with 0.9% NaCl solution.

Key words: micromorphometry, spleen, rats, 0.9% NaCl solution, lactoprotein with sorbitol, HAES-LX-5%.

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PECULIARITIES OF SEMINAL VESICLES MORPHOGENESIS IN 5-MONTH-OLD FETUSES

Introduction. Modern andrology requires more accurate and complete data concerning age structure patterns and topographic and anatomical comparison of organs and structures of the male reproductive system in human ontogenesis. First of all, it deals with such main characteristics as shape, size, location, etc. This, in turn, requires further investigations of age-related topographic and anatomical peculiarities of male reproductive organs. The peculiarities of morphogenesis of seminal vesicles in 5-month-old fetuses are investigated in the article.

The study *aimed at* finding out the peculiarities of the formation of the external and internal structure of seminal vesicles in 5-month-old human fetuses.

Materials and methods. A macroscopic study was conducted on 20 human fetuses with 136.0-185.0 mm of crown-rump length (CRL). Besides, 10 series of histological sections of the SV of fetuses with 136,0-155,0 mm of CRL and 8 plastic reconstruction models of right and left SV and related structures of fetuses with 140.0, 150.0, 160.0 and 170.0 mm of CRL were made and studied.

Results. During the 5^{th} month of intrauterine development the seminal vesicles (SV) are usually cone-shaped (25 cases) while fusiform (9 observations), cylindrical (5 cases) and S-shaped (1 case) ones are rarer. The right SV is 2.35±0.19 mm long, 1.23±0.11 mm wide and 0.91±0.05 mm thick. The dimensions of the left SV are: 2.55±0.24, 1.34±0.1 and 1.09±0.07 mm respectively.

Complications of the external and internal structure of SV were noted on the basis of studying the series of histological sections of SV in fetuses with 136.0-155.0 mm of CRL and plastic reconstructions made from them. At this stage of development the expansion of SV cavities is more expressed, the efferent duct is clearly identified.

In the fetus having 140.0 mm of CRL, the ducts of the right and left SV arise from the place of their connection with the ejaculatory ducts and are directed ventrolaterally. The diameter of the efferent duct of the right SV was equal to 100 μm, and the efferent duct of the left SV was 120 μm. At the same time there is an uneven expansion of the cavities of SV. As a rule, the most expanded part of the cavity of SV is located immediately behind the efferent duct.

Conclusions. 1. At this stage of development the SV, as a rule, has the main form of the structure, characterized by the presence of the main tube with minor branches and less clear bends of the organ cavity. Tree-shaped SV are less common in 5-month-old fetuses. 2. The microscopic investigation of histological sections of SV with 165.0-185.0 mm of CRL revealed an uneven expansion of their cavities. In some areas, the diameter of the latter several times exceeds the average dimensions.

Key words: seminal vesicle, morphogenesis, fetus, human being.

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RENGENOLOGICAL FEATURES OF MORPHOGENESIS OF REGENERATE IN RATS WITH OPEN FRACTURE OF LOWER JAW WITH OSTEOPOROSIS WHICH RECEPTED THE CALCIUM CITRATE WITH IMPROVEMENT OF CRYOPLACENTA

Introduction. *Aim of our work* – to establish the radiological features of the regenerate morphogenesis in rats with an open fracture of the mandible on the background of osteoporosis, which received the preparation of Ca^{2+} with the implantation of cryoplacenta.

Materials and methods. Experimental osteoporosis in rats was induced by administration of 2.5% hydrocortisone acetate solution over a period of 60 days in a dose of 5 mg/kg body weight. Subsequently, the drug was discontinued and traumatic damage to the lower jaw was restored: the rat was fixed on the back of the machine; under light hexanal (0.1 ml of 10% solution per 100 g of body weight) anesthesia in the right submandibular zone was performed damage on the skin parallel to the lower edge of the mandible in the medial direction of 10-12 mm in length; the muscles dissected and skeletoned the lower jaw; separating the external cortical plate with a separating disk, and then a full bone fracture with a bit on the line was applied, connecting the site of the fusion of the body and the branches of the jaw in the retro-molar region with a location 0.9 cm from the medial angle of the mandible. The surgical wound was connected with the oral cavity, the muscles and the skin were sutured with a catgut.

Animals that were in the same conditions of containment were distributed into the following groups: group 1 - control, animals with combined pathology: rats under the background of the simulated osteoporosis were performed traumatic damage to the mandible (fracture of the mandible); group 2 - study of the effect of cryoplacenta on the repair of bone tissue in animals that had a combined pathology: 24 hours after the manipulation, transplant of the placenta fragments was carried out. The implantation of the drug was performed surgically one day after the fracture of lower jaws. For this purpose, in rats on the back, in the area of the shoulder blade, underneath the local novocaine anesthesia, made a subcutaneous pocket in which a sterile fragment of the placenta weighing 200 mg per animal was fed. The incision was sewn and treated with antiseptics. Human placenta fragments weighing from 1500 to 1800 mg with observance the rules of asepsis and antiseptics were stored in sterile disposable containers of the company "Nunc" for low temperature preservation at a temperature of -196^0 C. Cryopreservation and storage of containers was carried out according to

the technology developed at the Institute for the problem of cryobiology and cryomedicine of the National Academy of Sciences of Ukraine; group 3 - study of the effect of cryoplacenta in combination with calcium (calcium citrate) in animals that had a combined pathology. The drug calcium citrate was administered to animals once a day in a therapeutic dose of 26 mg/kg, taking into account the coefficient of species sensitivity.
X-ray examination was performed using the X-ray and fluoroscopic system "Opera T90 cex" (Italy).
The research was carried out at 7, 14, 21, 30 and 45 days after fracture simulation.
Results. X-ray in the control group of rats (fracture of the mandible in the background of osteoporosis), the phenomena of the primary tissue reaction at 7 days after the fracture (osteoporosis in the extremities of the fractures and secondary inflammation) transcend at 14 and 21 days in the expressed inflammatory and destructive process (destruction, sequestration and pronounced periostitis), which decreases by 30 days (delimitation of the fields of destruction and sequester by the sites of progressive osteosclerosis) and is stopped only up to 45 days (decrease in the density of sequester by the expressed osteosclerosis).
In the second group (fracture of the mandible in the background of osteoporosis when the preparation of cryoplacenta was administered), the destructive-resorptive and inflammatory reaction was less pronounced than in the control, subsided to 21-30 days, and by the 45th day the processes of consolidation of the jaw fragments were already prevailing.
In the third group (fracture of the mandible in the background of osteoporosis with the co-administration of preparations of cryoplacenta and calcium), the primary tissue reaction was manifested by weakly inflamed inflammation only for 7 days, and by 14 days there were phenomena of consolidation, which, by increasing, led to the formation of a dense bony callus to 45 day.
Key words: X-ray features, fracture of the mandible, osteoporosis, cryoplacenta, calcium citrate, rats.

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PARTICIPATION OF HYDROGEN SULFIDE SYSTEM IN THE PATHOGENESIS OF EXPERIMENTAL KIDNEY FAILURE

Introduction. Acute and chronic kidney disease are global public health problems. Recent evidence suggests that hydrogen sulfide (H_2S), a novel gaseous signaling molecule similar to nitric oxide (NO) and carbon monoxide (CO), can exhibit renoprotective effects in cardio-vascular, cerebro- and others injures. To date, the role of hydrogen sulfide in the pathogenesis of renal lesions, in particular, renal

insufficiency, as well as the implementation of nephroprotective action of drugs has not been fully understood.

The aim of our study was to establish the role of deficiency and excess of hydrogen sulfide on the kidney function in experimental acute and chronic kidney failure.

Materials and methods. Eighty Wistar rats were randomly divided into eight groups consisting ten rats in each: Acute kidney injury (AKI) was modeling by intramuscularly injection of 50 glycerol solution. Chronic kidney disease (CKD) was induced by a two-step: total resection of left kidney with 5/6 nephrectomy of contralateral kidney. Deficit and excess of H_2S were created by intraperitoneal injection of propargylglycine (PPG, 10 mg/kg) and natrii hydrogensulfide (3 mg/kg) within 5 days before and all terms after kidney damage modeling. Renal health was estimated on the 3-rd day after AKI and on 41 day after CKI. Urinary excretion of protein, gamma-glutamiltranspeptidase (GGTP), serum creatinine (Cr) and glomerular filtration (GFR) were monitored after water load (5% of body mass). Hydrogen sulfide system was estimated in post-nuclear kidney homogenate by measure of H_2S level and cystationin-gamma-lyase (CSE) activity using spectrophotometric methods.

Results. It was found that both models of renal failure resulted in statistically significant violations of both the glomerular and tubular apparatus of kidney. Introduction of glycerol was accompanied with significant proteniuria and enzymuria (3-fold in comparison with control rats), a rise of nitrogen metabolism products in the blood (3.8-fold), as well as the development of filtration deficiency of the kidneys (GFR decreased by more than 3-fold).

Administration of H_2S donor in case of AKI caused greater damage of glomerular apparatus (GFR decreased by 3.5-fold, and GGTP excretion increased by 3.25-fold), while the introduction of inhibitor of H_2S synthesis reduced the severity of pathological changes. In case of CKD H_2S showed nephroprotective properties. Additional introduction of NaHS decreased protein and GTTP excretion, whereas PPG exacerbated the damage to both the glomerular and tubular apparatus of the excretory organs.

It was found that during AKI the preventive administration of sodium hydrogen sulfide increased the H_2S level and CSE activity in the kidneys (approximately in 1.5-fold), which was associated with the deepening of the glycerol-induced damage of the tubulo-glomerular kidney system. Instead, the pretreatment with PPG, an inhibitor of H_2S synthesis, significantly reduces the production of H_2S in kidneys, and the level of CSE, as well as the degree of renal damage. In case of CKD, the increasing of hydrogen sulfide content was accompanied with repression of nephrotoxicity, while an increasing of its level in the blood - worsened the course of experimental pathology.

During acute kidney damage H_2S demonstrate negative correlative linkage with glomerular and tubular functions and direct correlation with degree of kidney damage. In chronic kidney faulure - on the contrary, hydrogen sulfide was negatively correlated with the indicators of kidney damage and positively - with indicators of functional capacity of the excretory organs.

Conclusions. Hydrogen sulfide system involved in the pathogenesis of the both – acute and chronic kidney failure. This system may be one of the important targets for nephroprotective agents.
Key words: hydrogen sulfide, acute renal failure, chronic renal failure.

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ASSESSMENT OF THE MORPHOMETRIC STATE OF THE UB MUCOSA AND THE LEVEL OF URINAL EXCRETION OF THE MICROELEMENTS UNDER THE INTAKE OF HEAVY METALS SALTS MIXTURES

Introduction. Nowadays our environment is polluted by the exogenous pollutants that have negative impact on the ecosystem and causes health risks. Heavy metal salts (HMS) possess the leading place among all human-made xenobiotics. Extensive spreading of HMS leads to their ingestion into the body and increases their concentration in the urine that is a sensitive indicator for the imbalance of chemical elements.
Therefore, the *object* of our study is to determine the features of the urinal excretion of chemical elements and their relation to the changes of morphometric indicators in the mucous membrane of the urinary bladder (UB) in the period of HMS intake in increased concentrations and during the readaptation period.
Materials and Methods. Our research was carried out on the Wistar rats, which were divided into 3 groups, according to different experimental scenarios of HMS influence. Collected urine specimens were studied by using *atomic absorption spectrometry (AAS)*. Morphometric indicators of UB mucous membrane were studied by using standard histological techniques and software "ZEN 2 (blue edition)".
Results. It has been proved that the intake of HMS significantly increases its urinal excretion due to considerable morphometric changes in the components of the mucous membrane of the UB. It should be mentioned that if the intake of chemical pollutants is cancelled, their concentration in the urine is sharply reduced and the stabilization in the histomorphometric parameters is observed. The dependence between indicated parameters is confirmed by the presence of the correlation.
Conclusions. Heavy metals intake is accompanied by the changes in the morphometric indicators of the components of the mucous membrane of the urinary bladder due to the increased concentration in the urine, caused by their correlation.
Key words: urinary bladder, heavy metals, microelements, urine.

АНТРОПОЛОГІЧНІ ДОСЛІДЖЕННЯ
ANTHROPOLOGICAL RESEARCH

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FEATURES OF ULTRASOUND DIAGNOSTICS OF EARLY TERMINATION OF PREGNANCY IN WOMEN WITH RECURRENT MISSCARRIAGE

Introduction. Recently, the attention of doctors and researchers is drawn to the study of the features of the first trimester of pregnancy, as during this period there is a formation of the feto-placental system, the laying of fetal organs and tissues, extra embryonic structures and prenatal organs, which greatly affects the further course of pregnancy. Pathology of these processes, namely implantation and placentation, leads to early termination of pregnancy and the development of later pregnancy complications. Nowadays recurrent miscarriage is an urgent problem of obstetrics. The frequency of abortion in early stages remains stable and fairly high. According to various authors, it ranges from 2 to 55%. In turn, the risk of termination of subsequent pregnancies increases with the increase of the number of spontaneous abortions.

The absence of a decrease in the frequency of this pathology indicates the difficulties encountered in conducting of this category of women. According to J. Simpson (1997), in 25–57% of cases the etiology of abortion remains unclear. In this regard, in a significant number of women with recurrent miscarriage of pregnancy, the detection and treatment of violations occurs untimely, which has an adverse effect on the development of the fetus and the course of pregnancy.

The first trimester of pregnancy is often complicated by hemodynamic disorders, which leads to a violation of the processes of implantation of the fetal egg and the formation of placenta. The possibility of normal implantation of the fertilized egg and the development of pregnancy are largely depend on the functional state of the endometrium and the state of the circulatory system in the uterine arteries. We can determine pathology of the development of the placenta using Doppler examination of uterine arteries in the first trimester of pregnancy, which is characterized by abnormal blood flow and increased resistance in placental vessels.

In our time, despite the large number of works proving the high effectiveness of preconception training for women with recurrent miscarriage of pregnancy, most women in this category do not receive proper counseling, examination and prophylactic treatment before the next pregnancy. That is why the main question remains the search of reliable methods of diagnostics of the state of developing placenta in the first trimester of pregnancy and introduction into the practical activity of the obstetrician-gynecologist.

The goal of the study was to evaluate the blood flow in the uterine blood vessels in the first trimester of pregnancy in women with recurrent misscarriages and to predict the risk of interruption or complications of the next pregnancy.

Materials and methods. The study was conducted on the basis of gynecological department VMKPB №2. The study included 88 women with a diagnosis of "recurrent miscarriage" which met the criteria for inclusion and exclusion. The control group included 50 women with a physiological course of pregnancy. Ultrasound studies were performed on 67 women in the main group (19 women had termination of pregnancy before ultrasound study). An ultrasound diagnostic system "MyLab", manufactured "Esaote", was used. Women in the main group were divided into three subgroups, depending on the age (<25 years; 25–35 years; >35 years).

Results. In the main group, the age of pregnant women ranged from 23 to 41 years (mean = 30,6±2,2). Most of the patients were residents of the city. At the same time, 61% of them had an intellectual work (fig. 1).

We examined the blood flow in the right and left uterine arteries and spiral arteries using ultrasound diagnostics. The following rates were calculated: pulsation index (PI), index of resistance (IR) and systole-diastolic ratio (SDR).

The results of our study indicate that the resistance index in the study group was lower than in women of the control group. IR in the right uterine artery in women <25 years old was 0.86±0.24; in the group of women 25-35 years old – 0.86±0.23; in the group of women >35 years old – 1.00±0.3; in the control group - 1.25±0.4. IR in the left uterine artery in the group of women <25 years old was 0.9±0.2; in the group of women 25–35 years old – 0.9±0.22; in the group of women >35 years old – 1.1±0.15; in the control group - 1.16±0.2. The IR in the spiral arteries in the group of women <25 years was 0.53±0.2; in the group of women 25-35 years – 0.59±0.11; in the group of women >35 years – 0.62±0.2; in the control group - 1.0±0.15 (fig. 2). Blue rectangle – women <25 years; yellow one – 25–35 years; green rectangle >35 years, pink one – control group.

The pulsation index in women of the study group was significantly lower than in women of the control group. PI in the right uterine artery in the group of women <25 years was 2.05±0.23; in the group of women 25–35 years old – 2.09±0.16; in the group of women >35 years old – 2.05±0.2; in the control group - 2.47±0.17. PI in the left uterine artery in the group of women <25 years was 2.1±0.25; in the group of women 25–35 years old – 2.02±0.12; in the group of women >35 years old – 1.92±0.15; in the control group 2.17±0.18 (fig. 3).

Pulsation index in uterine arteries reflects the degree of trophoblast invasion in the spiral arteries. This index can be used as a sign of the prediction of the pathological course of pregnancy.

Systole-diastolic ratios in the right uterine artery were not significantly different among women in the study and control groups. SDR in the right uterine artery in the group of women <25 years old was 7.5 ± 0.13; in the group of women 25-35 years – 7.18 ± 0.3; in the group of women> 35 years old - 7.34 ± 0.25; in the control group - 7.22 ± 0.23 (Fig. 4). The SDR in the left uterine artery and the spiral arteries was also not significantly different among the women of the study group.

Conclusions. Thus, according to the results of our study, a significant decrease in

blood flow in the arteries of the uterus was found in women with a common miscarriage (in particular, the pulsation index and the index of resistance). Changes in pulsation indices in uterine and spiral arteries with the development of pregnancy reflect the degree of invasion of trophoblast and may serve as a prognostic sign for the development of primary placental dysfunction.

Key words: ultrasound examination, recurrent miscarriage, pulsation index, index of resistance, systole-diastolic ratio.

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CHARACTERISTICS OF BRONCHIAL ASTHMA COURSE IN CHILDREN DEPENDING ON AGE AND SEX

Introduction. Bronchial asthma (BA) – one of the most common chronic non-specific inflammatory diseases of the respiratory organs, due to which the disability of the children's population is mainly formed.

It should be noted that the onset of asthma in children is often noted at an early age, but a high level of disease occurs in preschool and school age, since sensibilization to inhaled allergens (allergens of domestic dust, mites, pollen, fungal and epidermal allergens) plays a leading role in its development. Such circumstances characterize BA as a global medical and social problem and induce the need for further comprehensive study.

Goal. To analyze the nature of the course of atopic bronchial asthma in children of the Podillya region of Ukraine, depending on the severity of the disease, age and sex.

Materials and methods. The results of treatment and monitoring of 316 children with asthma who were inpatient treatment at the pediatric clinic (Department of Pediatrics №2) of the Vinnitsa National Medical University named after M.I. Pirogov in the period from 2014 to 2017g. The control group comprised 128 practically healthy children.

Statistical processing of the obtained results was carried out using the methods of variation statistics using the standard application package of the multivariate variation statistical analysis "STATISTICA 6.0" (owned by TsNIIT of the Vinnytsia National Medical University named after M.I. Pirogov, license number AXXR910A374605FA) for Windows'XP (license number RKKFD-W8DDF-6PMC4-KX3WW-CR6TI), as well as the B. Woolfa method, the modification of which is an indicator of relative risk (RR) that characterizes the determination of the degree of disease risk. RR>2,0 are considered statistically significant.

Results. It should be noted that the largest number of patients with asthma was at the age of 8-12 years (n=158 – 50.01%: 113 boys – 35.76% and 45 girls – 14.25%) and 13 to 16 years (n = 96 – 30.36%: 77 boys – 24.36% and 19 girls – 6.0%), and the least in the clinic were patients in the age group of 17–18 years old (11 persons – 3.49% 9 boys – 2.85% and 2 girls – 0.64%) and children 4–7 years old, which was

6.14% (n=51: 37 for boys – 11.7% and 14 for girls – 4,44%), which is statistically significant (RR>2.0). That is, the gender distribution of patients, both in general and in separate age groups, statistically revealed a natural increase in the disease among boys compared to girls (RR>2.0).

The results of the analysis of the study materials also indicate that children with persistent asthma (253 children, 80.06%), and intermittent - 19.94% (63 patients, RR=16) were more likely to be inpatient treatment. A similar distribution of patients with asthma can be argued for the severity of the course of asthma, which required treatment in a hospital setting. With a high probability of persistent asthma, it was found in boys in the age groups of 8–12 and 13–16 years (101 – 31.96%; 49 – 15.51%; RR>2.0) and in girls of the same age groups (33 – 10.45%; 13 – 4.11%; RR>2.0).

Intermittent BA was statistically significantly more frequent in girls in the age group of 8 to 12 years and was 3.78% (12 patients). It should be noted that the overwhelming majority of children suffering from intermittent asthma were representatives of rural areas (37 children, 58.73%), residents of the city accounted for 41.27%; (26 people; RR=2.08).

In contrast, 141 patients (55.73%) in rural areas suffered from persistent asthma, and the diagnosis was established in 112 (44,27%) cases and was statistically unreliable (RR=0.62), that is, trigger factors were equally affected on the frequency of occurrence of persistent asthma as in the inhabitants of rural and urban areas.

It has been established that 155 children (61.26%) suffered from a slight degree of asthma, 94 (37.16%), and only 4 children (1.58%) were seriously ill. As in the general group, in the light and medium severity of the severity of persistent asthma, boys were predominantly ill in the age group of 8-12 years (101 boys - 39.92% and 33 girls 13.05%; RR=4.46;) and 13–16 years (49 boys – 19.37% and 13 girls – 5.14%; RR=4.46).

At an easy degree, asthma attacks were short-lived, emerged unexpectedly and were purchased using bronchodilators. In this group of children, none of the age groups had nightly manifestations of the disease, and physical activity was tolerated without clinical signs of asthma.

Instead, in middle aged persistent asthma attacks occurred 1–2 times a week, were regular night-time, always required the use of bronchodilators, especially in the age groups of 8 to 12 and 13 to 16 years, any physical exercise this group of patients suffered from severe manifestations of tachycardia and tachypnoe, remission needed a mandatory basic therapy.

The severity of persistent asthma in all 4 patients was characterized by attacks that were seen 5-7 times a week, and one - on a daily basis, and they were protracted and require constant bronchodilator reception - corticosteroids, night manifestations were repeated every night, there were no periods remission. In 316 patients, 459 cases of concomitant disease were diagnosed. Moreover, in 236 boys - 348 (75,82%) cases, among 80 girls, concomitant pathology was found in the amount of 111 (24,18%).

The study of the hereditary factor showed that in 67.8% of the patients, family history was burdened with allergic diseases and pathology of the respiratory organs, indicating a tendency to defeat the bronchopulmonary system in children with

asthma. Various allergic manifestations occurred in 253 patients with persistent asthma.

Allergic rhinitis and allergy are often found in boys as in persistent asthma (allergic rhinitis: 113 - 24.62% and 76 - 16.55%, respectively, allergies) and in intermittent asthma (allergic rhinitis: 31 - 6.75% and 19 - 4.14%, respectively, allergy).

Household allergens dominated among other non-infectious factors, accounted for 40.93% (149 cases, RR>2.0) and prevailed in boys (94-28.82%; RR>2.0) only in the group of 5–7 years and in 16.59% of cases (60): 47 (12.91%; RR>2.0) - boys and 3.58% (13 cases) - girls. We did not reveal any statistical gender differences in other age groups of patients (RR<2,0). In the group of 17–18 years of exacerbations of asthma, the etiological factor which could be household алеrени, did not exist at all. Epidermal (wool, hair, lavender), pollen (pollen of grasses, trees), food plant and animal origin (fruits, vegetables, meat, fish, eggs), medicinal allergens of exacerbations of persistent asthma with abdominal pain frequency was found in all age groups in both boys and girls and statistical differences were not detected (RR<2.0).

The results of the study of etiological factors that exacerbated intermittent asthma found that the prevalence of household allergens was statistically significant in the group of 8–12 patients (9 children – 16.98%) and 13–16 years old (11 children – 20.76%) (RR>2.0).

In the examined children, patients with asthma, the degree of exacerbation of the disease directly depended on the level of asthma control. The distribution of patients according to the level of control of the course of persistent asthma (controlled, partially controlled and uncontrolled), depending on age and gender, is given in Table 2. In the inpatient treatment in the clinic in the vast majority were children with uncontrolled asthma (141 – 55.73%), with The statistically significant prevalence of boys (RR>2,0) in the age groups from 5 to 16 years old, the most - (63 – 24,9%) at the age of 8–12 years. Partially controlled persistent asthma occurred in 68 children (26.87%): 49 – 19,36% of boys and 19 girls (7.51%). Regarding controlled asthma treatment, 44 patients (17.4%) received boys 33 (13.05%), girls – 11 (4.35%).

The asthma clinic in the intervening period had its own peculiarities that depended on the pathogenetic mechanisms and the child's age. Of the 253 patients with persistent asthma, exacerbation of asthma occurred in 197 (77.87%) patients and was more common in boys (149 – 58.89%) compared with girls (48 – 18.98%; RR>2.0). In the age group of 4–7 years old, 38 children (boys – 29 (11.47%, girls – 9 (3.56%, RR>2 <0), and children in the age of 8–12 were in the hospital for inpatient treatment (85 boys – 33.69% and 26 girls – 10.28%, 13–16 years old 41 patients (30 boys – 11.86% and 11 girls – 4.35%, 17–18 years – 7 children (5 of boys – 1.98% and 2 girls – 0.79%, attacks occurred in the form of repeated episodes of difficult breathing.Anapulmonal attacks in 82.3% (162 children) developed at night.After the attack, all patients had a cough with Sputum withdrawal. In the lungs on the background of an elongated exhalation vys washed out dry (65.6%), and 35.4% – wet wheezing.

Conclusions. 1. Among children with asthma who needed inpatient treatment, patients in the age group of 8-12 years old (n=158 – 50.01%: 113 boys – 35.76%, and

45 girls – 14.25%; RR>2.0) and 13 to 16 years old (n=96 – 30.36%: 77 boys – 24.36% and 19 girls – 6.0%; RR>2.0). 2. Persistent asthma was diagnosed in 253 children (80.06%), intermittent – 19.94% (63 patients RR=16), which occurred in boys 8–12 and 13–16 (101-31.96%; 49 – 15.51%, respectively) and in girls in the same age groups (33 – 10.45%, 13 – 4.11%, respectively). Intermittent asthma was more common in girls in the age group of 8 to 12 years – 3.78% (12 patients; RR>2.0). 3. Prevalence allergens dominated among other non-infectious factors, constituted 40.93% (149 cases, RR>2.0) and prevailed in boys (94-28.82%; RR>2.0) only in group 5–7 years Allergic rhinitis and allergy are equally common in boys as in persistent asthma (allergic rhinitis: 113 – 24.62% and 76 – 16.55%, respectively, allergies) and in intermittent asthma (allergic rhinitis: 31 – 6.75% and 19 – 4.14%, respectively, allergies). 4. The degree of acute exacerbation of AD was directly dependent on the level of disease control. On stationary treatment there were children with uncontrolled asthma (141 – 55,73%), with predominance of boys (RR>2,0) in age groups from 5 to 16 years, most (63 – 24,9%) at the age of 8–12 years. 5. Accordingly, male sex may be a risk factor for the development of asthma in children, especially in adolescence.
Key words: bronchial asthma, children, course, age, sex.

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CLINICAL AND X-RAY EVALUATION OF LONG-TERM RESULTS OF HIP REPLACEMENT AND METALLOOSTEOSYNTHESIS IN ELDERLY PATIENTS WITH PERTROCHANTERIC AND INTERTROCHANTERIC FEMORAL FRACTURES

Introduction. Treatment strategies of pertrochanteric and intertrochanteric fractures of the femur in elderly people is an urgent and debatable problem of modern traumatology. Despite a large selection of developed surgical methods, published research papers covering the subject, the number of unsatisfactory long-term outcomes and mortality rates among elderly patients remain rather high. At the heart of this problem are comorbid diseases and polymorbid conditions of the patients: systemic osteoporosis, dementia, vision and hearing loss, diminished tone of the skeletal muscles, orthostatic hypotension, chronic diseases of the cardiovascular and respiratory systems, endocrine disorders, osteoarthritis, reduction of adaptive-compensatory mechanisms. Injury dramatically changes the life stereotype of older people. This breakdown of adaptive mechanisms often leads to a rapid escalation of concomitant chronic diseases, and also adds hypostatic complications of bed regimen.

Current trends are reduced to the speedy surgical treatment of the patients with fractures in the proximal femoral part, due to more predictable outcomes for the health and life of patients and an earlier mobilization of patients with self-care capacity.

Objective: the aim was to assess the long-term outcomes of operative treatment among patients with previous pertrochanteric and intertrochanteric fractures of the hip.

Materials and methods. We evaluated patients with intertrochanteric fractures over a 5-year period. Inclusion required extraarticular intertrochanteric and pertrohanteric fractures of the hip. Patients who were lost during follow up or died due to cause not related to their skeletal injuries were excluded from the study. A total of 144 patients were included in study group. There were 42 (29.2%) males and 102 (70.8%) females. The mean age was 73.2±8.1 years (range, 61-94). The causes of injuries in most cases were low energy trauma 121 (84.0%), followed by road traffic accident 16 (11.1%) and industrial injuries 7 (4.9%). All patients were divided into two groups depending on the type of surgical intervention: the first group consisted of 93 (64.6%) patients who carried out using internal fixation fractures (IF-group), the second – 51 (35.4%), who performed the hip replacement (HR-group). Additionally, an intragroup analysis was performed taking into account the type of used orthopaedic implant. In IF-group the following implants were used for internal fixation: 30 (32.3%) patients had Dynamic Hip Screws (DHS), 30 (32.3%) had the Locking Compression Plates (LCP), Angled Blade Plates (ABP) was performed for 17 (18.2%) patients and Proximal Femoral Nails (PFN) – for 16 (17.2%). In HR-group total hip replacement (THR) was performed for 19 (37.3%) patients, bipolar hip replacement (BHR) for 19 (37.3%) and 13 (25.4%) patients had unipolar hip replacement (UHR). For the assessment of the results of hip surgery, we used Harris Hip Score. In addition, some X-ray criteria such as morphological cortical index, Singh's index were taken into account. The stage of osteoarthritis was evaluated according to the Kellgren-Lawrence classification. The type of fracture was determined by AO/OTA classification system. All patients had surgery in the same hospital and received typical inpatient rehabilitation.

Data were analyzed using Predictive Analytics SoftWare Statistics. Means and standard errors were calculated for continuous variables. The continuous variables were tested for normality with the Shapiro-Wilk test. For the normally distributed variables, ANOVA and t-test for independent samples was used. Because of small sample subgroups size and skewed distribution nonparametric methods were also used for statistic analysis. The Kruskal-Wallis H-test and Mann–Whitney U-test were used for respective analyses of nonnormally distributed variables. Correlation was analyzed with Spearman's test. $P<0.05$ was considered as statistically significant.

Results. Clinical outcomes were shown, that the results of treatment of patients underwent hip replacement better according to all criteria of the Harris Hip Scale (Table 1). Excellent and good results were set in half part of the study group 72 (50.0%). In the HR-group excellent results were recorded in 27 (53.0%) patients, good – in 12 (23.5%), fair in 9 (17.6%) and in 3 (5.9%) patients had poor results. In

the IF-group the vast majority of patients 45 (48.4%) had poor results, 15 (16.1%) – fair hip status, 20 (21.5%) patients showed good and 13 - (14.0%) excellent results.
The type of hip replacement also significantly influences the results of treatment. Thus, in patients who underwent THR the rates was significantly higher: excellent results were recorded in 16 (84.2%) patients, and good in the rest 3 (15.8%). In patients who performed BHR, the vast majority of patients had an excellent 11 (57.9%) and a good 3 (15.8%) results. Fair results were observed in 4 (21.0%) patients and in 1 (5.3%) cases the poor result was fixed. In the group of patients who had UHR, good results was founded in 6 (46.1%) patients, fair in 5 (38.5%) and in the remaining 2 (15.4%) the results was poor. The results of HR-group according to Harris Hip Score are shown in Table 2.
In addition, the strong negative relationship was obtained between age and overall treatment outcomes ($r = -0.79$, $p<0.05$) in HR-group. With a high degree of certainty, it can be argued that as age grows the Harris score decreases. There is a strong inverse relationship that indicated better functional results of treatment in patients with unburdened premorbid background ($r=-0.72$, $p<0.05$). The duration of pre-operative preparation also significantly affects the long-term results of treatment ($r=-0.43$, $p<0.05$). It should be noted, that patients with this group have not established reliable effect of the fracture type, the presence of osteoporosis and the structural and functional status of bone tissue on the long-term results of treatment.
Having analyzed the Harris scale's criteria in the IF-group, the best functional results were established in patients who had their fractures fixation using by PFN or DHS and assessed as fair. In the groups where the ABP and LCP was used, the treatment results were poor (Table 3).
Among the patients in the group where DHS was used to fix the fracture, the vast majority of patients 12 (40.0%) had the poor results, 5 (16.7%) – fair, 7 (23.3%) patients had good and 6 (20.0%) – excellent results. In half of the patients in the group where the fracture was recorded using LCP poor results were observed 15 (50.0%). In 6 (20.0%) patients in this group was found fair results and in the same number 6 (20.0%) – excellent, in the remaining 3 (10.0%) patients had good results. In the group where the ABP was used excellent results was not observed in any patient, the vast majority of patients 12 (70.6%) had poor results, the remaining 5 (29.4%) – good. In the group where PFN was used, excellent results were observed in only 1 (6.3%) patient, good in 5 (31.2%), and fair hip status were found in 4 (25.0%) patients, the highest proportion of patients in this group had poor results 6 (37.5%).
In the IF-group the strong negative correlation between the severity of osteoarthritis and the functional results of treatment ($r=-0.80$, $p<0.05$) was found, the higher level of results indicated in patients with less manifestations of osteoarthritis. An inverse mean relationship was found between Singh's index and total treatment results ($r=-0.51$, $p<0.05$): higher functional results of treatment was observed in individuals with a higher Singh's index – in individuals with less pronounced signs of osteoporosis. Between the indications of the morphological cortical index and the results of treatment, a positive mean correlation is determined, indicating the best functional results in patients with a higher morphological cortical index ($r=0.42$, $p<0.05$). In the IF-group an inverse correlation between age and the results of treatment ($r=-0.63$,

p<0.05) was found. Thus, it can be argued that the increase in age is associated with worse treatment outcomes, according to the Harris scale. Also, patients of this group have a weak negative correlation between the premorbid background and functional treatment outcomes (r=-0.21, p<0.05). The presence of concomitant pathology leads to worse functional results of treatment.

In addition to the type of used fixator, it was determined that the unmodified factors were absorbed into long-term treatment outcomes in older patients in whole group. It was established that the older patient (r=-0.37, p<0.05) (Fig. 1), the higher the degree of osteoporosis (r=-0.25, p<0.05) in the preoperative period, prolonged preoperative preparation (r=-0.31, p<0.05), as well as pronounced osteoarthritis changes in the hip joint (r=-0.62, p<0.05), the worse the distant results of the functional activity of patients. In addition, the inverse correlation relationship indicates that the difficulty of the fracture also significantly affects the long-term results of treatment (r=-0.20, p<0.05).

Hip replacement is a method of choice for the intertrochanteric and pertrochanteric hip fractures in older people. Since it provides early mobilization of patients and a rapid recovery of the motor stereotype. In a satisfactory state of the cavity, the bipolar hip replacement should be preferred, which, with a small traumatic effect, provides rapid functional recovery of the patients. In the presence of degenerative changes in the hip joint, a total hip replacement should be remains as a main method.

Conclusions. 1.The hip replacement in the course of femoral fractures in trochanteric segment is the method of choice for people of senior age group as it provides the early mobilization of patients and rapid recovery of locomotor stereotype. 2. In the course of satisfactory condition of femoral cathole the preference should be given to bipolar single-pole endoprosthesis replacement which provides the fastest functional recovery of patients and has low traumatic level. 3. In the course of degenerative changes of the hip joint, the total endoprosthesis replacement is the only method.

Key words: pertrochanteric and intertrochanteric fractures, treatment outcome, osteometallosynthesis, hip arthroplasty.

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MORPHOLOGICAL PATTERN OF FEMOROACETABULAR IMPINGEMENT (FAI) IN PATIENTS WITH INITIAL STAGES OF COXARTHRITIS

Introduction. In ukraine, as elsewhere in the world during the last decades there has been an increase in diseases of the hip joint. According to international statistics in the structure of diseases of the musculoskeletal system osteoarthritis already holds a leading position and affects 10-12% of the adult population of the globe. According to who, the frequency of hip joint pathology will continue to grow, is projected to increase rejuvenation and advanced forms at a young age. Today one of the main causes of pain in the hip joint and the development of early (age 25-40 years) coxarthrosis is considered to be femoroacetabular impingement.

Femoroacetabular impingement (earlier names: the syndrome of the articular lips, zerva-acetabular impingement) is paramekanti the process of chronic traumatization acetabulare the lip or edge of the acetabulum with the head or neck of the femur, which leads to breaks acetabulare lips, damage to the cartilage and ultimately to early development of osteoarthritis. Given the clinic and radiation semiotics there are three mechanism of impingement syndrome: 1) the mechanism itself ("the femur, or cam type"), which is based on the violation of the form of the neck and the femoral head with loss of sphericity; 2) resig mechanism ("acetabularia type"), which cause spowodowana is to increase coverage of the femoral head; 3) mixed mode of deformation. The last type femoroacetabular the impingement occurs most often (90%).

Research B.P. Burnett et al. (2006) showed that more than 33% of patients an incorrect or untimely diagnosis of impingement syndrome, resulting in the progression of pathological changes in the joint and the deterioration of the quality of life of patients. Today femoroacetabular impingement is diagnosed more often, so there is a growing need to develop a common conservative and surgical treatment of, which in turn requires a clear understanding not only patofiziologija mechanism of development of impingement syndrome, but the knowledge of its morphological pattern. The aim of this work is to study the morphological changes of the structures of the hip joint, which are detected in patients with early stages of coxarthrosis and femoroacetabular a relief.

Materials and methods. We were treated 105 (65 men, 40 women) patients with initial stages of coxarthrosis who underwent treatment for 2000-2015 on the basis of the traumatological Department of the Vinnytsia regional hospital named after M.I. Pirogov. The average age of the patients was 42,21±10.99 years (22 to 72 years), mean disease duration was 13.26±8.5 months.

Patients underwent arthroscopic osteochondroplasty of the femoral head and/or acetabular osteochondroplasty. Artroscopico the indications for surgical intervention (n=105) were pain in the groin and/or the acetabulum of the site and/or impaired function of the hip joint. Informed consent was obtained in all patients for participation in the study. The research served as part of the bony protrusions on the femoral neck at the base of her head with cam-type deformity and/or osteophytes at the pincer-type impingement, which were removed during arthroscopic osteochondroplasty of the femoral head and/or acetabular of osteochondroplasty in patients with coxarthrosis of stage I–II and femora-acetabular by impingement, as well as parts acetabulare lips, which were removed during arthroscopic partial resection of the latter.

Results. We studied the morphological changes that occurred in the bone tissue speech at the femoral neck with cam-deformation and acetabular lip with pincer-type impingement in patients with initial stages of coxarthrosis. Found that patients with self-type impingement femoroacetabular the histological structure of the bony protrusion (mean value of 9.4±0.3 mm) on the femoral neck at the base of her head was presented desorganizacao compact bone covered by fibrous tissue with diffuse lymphoid infiltration along the edge facing the joint cavity, full of blood vessels, focal hemorrhages, edema, Rosvodokanal, papillary outgrowths, and a single degenerative bone beams.

Patients with pincer-type impingement removed during arthroscopy, the osteophytes had the following histological structure: degenerative changes thickened disorganized compact bone was covered with decorated fibrous fibrous tissue, which established a very weak final cellular activity on the surface was absent as osteoblasts and osteoclasts. Mitraniketan space was filled with fibrous decorated fibrous tissue and fatty marrow in small quantities.

It was determined that in 70 (92,1%) of the 76 cases femoroacetabular impingement was escorted breaks acetabulare lips that treated us on the same principle as traditional gaps in the background of trauma or degenerative changes. According to the results of histological examination of traumatic injury acetabulare lips were of different severity: from the plots of pulping decorated fibrous tissue through significant edema to marked zones of destruction of collagen fibers with the presence of foci of homogenization of coarse fibrous tissue, hyalinosis, erythrotis with sugavanam, thrombosis in large vessels fibrous tissue.

Notes that all studied patients with femoroacetabular impingement occurred arthroscopic signs of early stages of osteoarthritis of the knee, and this means that the outcome of the disease delayed or inadequate treatment can be progression, and in the terminal stages requires total arthroplasty of the affected joint.

Conclusions. 1. It is found that the most frequent type femoroacetabular the impingement is the mixed type of conflict that was observed in 46 (60,5%) operated patients. 2. A survey of a homogeneous cohort of patients found that the vast majority of patients with impingement femoroacetabular the chronic trauma causes inflammatory proliferation of the periosteum at the junction of the neck to the femoral head, which is accompanied by increase in bone mass and leads to changes that can be detected in osteoarthritis. 3. It was determined that in 70 (92,1%) cases femoroacetabular impingement was escorted breaks acetabulare lips.

Key words: coxarthritis, hip joint, femoroacetabular impingement, acetabular labrum tears.

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CORRELATION OF LINEAR SIZES NECESSARY FOR CONSTRUCTION OF THE CORRECT FORM OF DENTAL ARCH WITH ODONTOMETRIC AND CEPHALOMETRIC PARAMETERS OF GIRLS WITH ORTHOGNATHIC BITE

Aim of our work – to analyze the correlations of computer-tomographic transversal dimensions of the upper and lower jaw and sagittal characteristics of the dental artery with odontometric and cephalometric characteristics of girls with orthognathic bite.

Materials and methods. Primary indices of teeth and heads of girls from Podillia with orthognathic bite (n=50) were obtained from the data bank of the Research center of the National Pirogov Memorial Medical University, Vinnytsya within the framework of the agreement on creative cooperation between National Pirogov Memorial Medical University, Vinnytsya and HSNIU "Ukrainian Medical Dentistry Academy" (Contract No. 1 dated 05.01.2015).

For this study, a dental cone-ray tomograph was used - Veraviewepocs 3D, Moret (Japan). The studies were carried out in accordance with the self-developed scheme. In the upper and lower incisors, the canines, small and first large angular teeth were measured: the length of the tooth; the length of the root in the vestibule-lingual and mesiodistal projections; mesiodistal crown size of the tooth; vestibule-lingual size; the width of the dentin-enamel border in the mesiodistal direction; the width of the dentin-enamel border in the vestibule-tongue direction. Since in previous studies, when comparing the computer-tomographic metric characteristics of the same tooth names on the right and left sides, there were no reliable or trend differences, we in subsequent studies used mean values of the corresponding teeth on the upper and lower jaws. Also, the transversal dimensions of the upper and lower jaw and sagittal characteristics of the dental arch and cephalometric dimensions were determined.

The analysis of correlations of the obtained results was carried out using the Spirman statistical method in the statistical package "Statistica 6.0".

Results. In the analysis of the peculiarities of reliable correlations of the transversal dimensions of the upper and lower jaw and sagittal characteristics of the dental arc with odontometric and cephalometric indices of girls with orthognathic bite, the following multiple connections were established: direct, predominantly average force (r from 0.30 to 0.51) connections of most transversal dimensions of the upper and lower jaw with most mesiodistal sizes of the crowns of the upper incisors and the dentine-enamel border width indices in the mesiodistal direction of the upper lateral incisors; direct, predominantly average strength (r from 0.33 to 0.44), connections of distances between the tops of the distal and medial roots of the upper first large angular teeth with the majority of vestibule-tongue sizes crowns of the upper teeth; direct, mostly of average strength (r from 0.33 to 0.39) connections of the distances between the tubercles of the canines of the mandible with all the vestibule-tongue dimensions of the crowns of the incisors; reverse average strength (r from -0.30 to -0.35) connections of distance between the apex of the palatal roots of the upper first large angular teeth with the length of the root in the vestibule-tongue projection of the upper incisors and most of the indices of the root length of the incisors and the canines in the mesiodistal projection; direct, mainly average strength (r from 0.32 to

0.43) connections the distance between the tops of the distal roots of the upper first large angular teeth with most elevations of individual parts of faces; reverse average force (r -0.30 to -0.36) connections of distance between the tops of the medial roots of the lower first large angular teeth with most elevations of individual parts of faces; direct, predominantly average strength (r from 0.30 to 0.59) connections of all parameters of the maxillary dental arch in the sagittal plane with the majority of mesiodistal sizes of crowns of teeth, the width of the dentin-enamel border in the mesiodistal and vestibule-tongue directions, half vestibule-tongue size of the crowns of the teeth (mainly on the upper jaw) and most of the indexes of the length of the upper incisors and the length of the root of the upper incisors in the vestibule-tongue projection; direct, predominantly average strength (r from 0.30 to 0.42) connections in the depth of the palate at the level of the first small and large angular teeth with most elevations of individual faces.

Key words: girls with orthognathic bite, correlations, computed tomography, transversal dimensions of the upper and lower jaw, sagittal characteristics of the dental arch, odontometric and cephalometric indices.

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THE EFFECT OF OPEN AND LAPAROSCOPIC DRAINAGE OF THE ABDOMINAL CAVITY ON THE LEVEL OF INTRAABDOMINAL PRESSURE FOR ACUTE PANCREATITIS

Introduction. Acute pancreatitis is one of the most serious diseases of the abdominal cavity. A high incidence of multiple organ failure is noted for severe forms of acute pancreatitis. Intraperitoneal hypertension is one of the reasons for the development of multiple organ failure in acute pancreatitis. Therefore, effective prevention and control of intra-abdominal hypertension can prevent multiple organ failure in acute pancreatitis.

The direct influence on the level of intraabdominal pressure is the evacuation of pathological content from abdominal cavity and retroperitoneal space (exudate in enzymatic peritonitis, pancreatic and parapancreatic fluid collections, pseudocysts). Minimal invasive interventional technologies are traditionally used for evacuate the peritoneal exudate in acute pancreatitis: videolaparoscopic drainage of the abdominal cavity or open drainage of the abdominal cavity with mini-access. But there is not

enough data on the effect of drainage of the abdominal cavity on the dynamics of intra-abdominal pressure in the early period of acute pancreatitis.

The aim of the study is to evaluate and compare the effects of videolaparoscopic drainage of the abdominal cavity and open drainage of the abdominal cavity with mini-access on the level of intra-abdominal pressure, as well as the possibility of their use for correction of intra-abdominal hypertension in acute pancreatitis.

Materials and methods. Research is cohort, prospective, non-randomized. The results of the examination and treatment of 26 patients with acute pancreatitis have been analyzed. The study included patients diagnosed with acute pancreatitis who were admitted to the hospital for the first 24-72 hours since the onset of the disease.

All patients were divided into 3 groups. In the first group (n = 10), patients received basic treatment in accordance with the Clinical protocol for the provision of medical care to patients with acute pancreatitis (infusion therapy, analgesics, antispasmodics, antisecretory therapy, antibiotics).

Patients in the second group (n=7) additionally performed correction of the detected intraperitoneal hypertension by means of videolaparoscopic drainage of the abdominal cavity under general endotracheal anesthesia in the first 24-48 hours from the moment of hospitalization. At the same time, depending on the amount and location of the exudate, one to four drainages were installed in the pelvic cavity, the hepatic space, the right and left side abdominal cavities. Drainages were kept for 1-4 days.

In the third group (n=9), the patient was additionally undergoing correction of detected intraperitoneal hypertension by means of open drainage of the abdominal cavity with mini-access in the right or left iliac region under local infiltration anesthesia with a 0.5% solution of novocaine in the first 24-48 hours from the moment of hospitalization. At the same time, two drainages were installed in the cavity of the small pelvis and held for 1-4 days.

Results. Intraperitoneal hypertension is often diagnosed with acute pancreatitis. In the study group intraperitoneal hypertension was noted in 15 patients (58%). The highest values of intraabdominal pressure are observed in the first 2-4 days of the course of the disease for the mild and moderate acute pancreatitis. High level of intra-abdominal pressure are maintained for 4-6 days and then gradually decrease in prognostically severe acute pancreatitis.

The use of both videolaparoscopic drainage of the abdominal cavity and open drainage of the abdominal cavity with mini-access reduces the level of intraabdominal pressure compared with the control group of patients. At the same time, the decrease is noted for mild, moderate and severe acute pancreatitis. Most intra-abdominal pressure decreases in the group of severe acute pancreatitis: from 15.1 mm Hg in the first group up to 14.2 mm Hg in the second group, and up to 13.4 mm Hg in the third group. In mild to moderate acute pancreatitis, intra-abdominal pressure decreases insignificantly. It was also found that the decrease in intraabdominal pressure was more pronounced in the open drainage of the abdominal cavity with mini-access compared with the videolaparoscopic drainage of the abdominal cavity. It was noted that with videolaparoscopic drainage of the abdominal cavity in part of patients (in 3 of 7) there is a slight increase in intra-abdominal

pressure in the first day after the operation, which is probably due to the presence of residual carboxyperitoneum.

Conclusions. 1. The highest values of intraperitoneal hypertension are observed in the first 2-4 days in patients with mild and moderate acute pancreatitis. High intraabdominal pressure is maintained 4-6 days and then gradually reduced in severe acute pancreatitis. 2. Videolaparoscopic drainage of the cervical cavity and open drainage of the abdominal cavity with mini-access reduces the level of intraabdominal pressure in acute pancreatitis. The decrease of intraabdominal pressure is more pronounced in open drainage of the abdominal cavity with a mini-access in comparison with videolaparoscopic drainage of the abdominal cavity. 3. Open drainage of the abdominal cavity from the mini-access and video-laparoscopic drainage of the abdominal cavity are not sufficiently effective in reducing intra-abdominal pressure in the development of intra-abdominal hypertension in patients with acute pancreatitis as an independent intervention.

Key words: acute pancreatitis, intra-abdominal pressure, intraperitoneal hypertension, correction, laparoscopic drainage of the abdominal cavity, open drainage of the abdominal cavity with mini-access.

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ASSESSMENT OF THE RISK OF SUBCLINICAL HYPOTHYROIDISM IN NON-ALCOHOLIC FATTY LIVER DISEASE PATIENTS WITH DIFFERENT LEVELS OF CARDIOVASCULAR RISK

Objective. To assess the risk of developing subclinical hypothyroidism (SH) in patients with non-alcoholic fatty liver disease (NAFLD) with a different risk of cardiovascular complications, and to identify the link between high risk of developing SH and major cardiovascular factors (CV).

Material and methods. A one-stage clinical trial included 298 people with NAFLD with the presence of one or more CV risk factors (arterial hypertension, smoking, hypercholesterolemia) and various levels of CV risk factors on the SCORE scale. All patients were questioned on a standard questionnaire and HRQ, a thyroid status study was conducted.

Results. Patients were divided into three groups according to the level of total CV risk for SCORE: 33.9% had low / moderate CV risk, 41.9% - high and 24.2% - very high CV risk. The majority of the subjects were in the age groups 50-59 and 60-69 years. In the age group 40-49 years, 22.2% of patients had high CV risk, 28% of men aged 50-59 years had moderate CV risk, while 49.7% of older patients showed very high CV risk. According to the results of a survey on the HRQ questionnaire, a low risk of developing hypertension was found in 34.9%, a moderate risk in 48.9%, and a high risk was found in 16.1% of patients. Persons with a very high CV risk on the

SCORE scale also have a high risk of developing the SH according to the HRQ questionnaire. Among patients with the presence of one or more of the above CV risk factors, early markers of thyroid status disorders should be identified and the risk of developing hypertension should be assessed. Such a tactic contributes to an adequate assessment of the risk of SH in patients with NAFLD and the development of methods for primary prevention.

Key words: subclinical hypothyreosis, non-alcoholic fatty liver disease, early thyroid status disorders, cardiovascular risk.

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IDENTIFICATION OF NORMATIVE CEPHALOMETRIC PARAMETERS BASED ON G. SCHMUTH METHOD FOR YOUNG MALE AND FEMALE UKRAINIANS

Introduction. The proposed research is a continuation of the range of the publications dedicated to the study of normologia and biometrics of the craniofacial complex taking into account age, ethnic, gender and anthropometric features of Ukrainians using the methods of computed tomography, teleroentgenography, photometry and odontometry. The paper also examines teleroentgenographic indicators based on the research scheme proposed by Gottfried Schmuth. This method allows evaluating the sagittal and vertical features, the position of incisors and the structure of soft tissues.

Aim of our work is to identify cephalometric parameters used in G. Schmuth's analysis for the young boys and girls of the Podilskyi region of Ukraine having orthognathic occlusion and to compare the results with the data provided as nominative.

Materials and methods. Using Veraviewepocs 3D, Morita (Japan), lateral teleroentgenograms of 38 young boys (aged from 17 to 21 years) and 55 young girls (aged from 16 to 20 years) with normal occlusion maximum close to the orthognathic one have been obtained. To make the cephalometric analysis, OnyxCeph³™ software (3DPro version) developed by Image Instruments GmbH (Germany) has been used.

The cephalometric points and measurements have been conducted according to the guidelines of Basavaraj Subhashchandra Phulari, S. I. Doroshenko, E. A. Kulginskiy and G. Schmuth.

The following indicators according to G. Schmuth have been defined in the sagittal plane – SNA angle, SNB angle, ANB angle, NSBA angle; in the vertical plane – NL NSL angle, ML NSL angle, ML_NL angle, N_Sp'_Sp'_Me coefficient, Ar-Go-Me angle; the position indicators of the upper and lower medial incisors – II angle, Max1_SpP angle, Max1_NA angle, Mand1_ML angle, Mand1_NB angle, 1u_NA distance, 1l_NB distance, Pog_NB distance, Holdaway ratio; the indicators defining

the profile of soft tissues – Gl'SnPog' angle, Gl_Sn-Sn_Me` index, CotgSnLs angle, Li_NsPog' distance, Ls_NsPog' distance.
The statistical processing of the findings has been conducted in the license package "Statistica 6,0" using nonparametric methods of evaluation of the obtained results. The reliability of the differences between independent quantitative values has been identified with the help of the Mann-Whitney U-test.
Results. When comparing the cephalometric parameters of young boys and girls of the Podilskyi region of Ukraine used in the analysis according to G. Schmuth, more valid ($p<0,05$) values of 1l_NB distance (identifies the anterior and posterior position of the tooth crown part of the lower medial incisor to N-B line) and Gl'SnPog' angle have been obtained (the indicator of the convexity of the soft-tissue profile); the young girls' results demonstrate more valid ($p<0,05$-$0,01$) values of ML NL angle (or base angle) identified in the vertical plane; Gl_Sn-Sn_Me` index (or facial vertical index) and Ls_NsPog' distance identifying the profile of soft tissues.
It should be noted that when comparing the cephalometric parameters used in the analysis of Steiner, the young boys and girls of the Podilskyi region having orthognathic occlusion, we have observed isolated cases of gender differences. Moreover, higher values have been observed mainly among the young boys.
When comparing the cephalometric parameters provided by G. Schmuth with those obtained when examining the young boys and girls of the Podilskyi region having orthognathic occlusion, significant differences for the Max1_SpP angle only formed by the lines of the tilt of the central axis of the upper medial incisor and palatine plane and Li_NsPog' and Ls_NsPog' distances formed from the corresponding points (Li or Ls) to Ns-Pog' line (the aesthetic line indicating the balance of the soft tissues).
Conclusions. Thus, the majority of the cephalometric parameters obtained while examining young boys and girls of the Podilskyi region of Ukraine having orthognathic occlusion do not have significant differences in comparison with the value of these parameters provided by G. Schmuth.
Key words: head lateral teleroentgenograms, cephalometry, young boys, young girls, G. Schmuth's analysis.

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PECULIARITIES OF LOCAL IMMUNITY IN WOMEN WITH SALPINGOOPHORITIS

Introduction. Specific and non-specific salpingiphorites are one of the first places in the structure of inflammatory diseases in gynecology and are the main cause of reproductive function impairment.
The purpose of the study was to detect local immunological disorders of cervical mucus in inflammatory diseases of the uterus appendages

Materials and methods. An immunological examination of 82 women aged 18 to 35 years old was conducted. The main group consisted of 62 women with verified salpingophoritis. The control group included 20 practically healthy women.
In the analysis of immunological parameters, increased concentrations of interferons in all women with problem pathology in comparison with the control group.
Results. The study of functional activity of neutrophils included the analysis of indicators of lysosomal activity, activity and intensity of phagocytosis, the level of oxygen metabolism, functional reserve of neutrophils. The analysis of indicators of functional activity of neutrophils of cervical mucus showed that in patients with salpingoophoritis the activity of lysosomes was increased ($p < 0.05$) in relation to similar parameters of the control group, we found statistically significant increase in the activity of lysosomal enzymes (146.5±21.6 against against 28.6±3.6).
The reason for imbalance of cervical mucus imunoglobulins in patients with salpingophoritis is excessive "functioning" of the immune system, which may be due to the presence of a focal point of the chronic process. Continuous stressful functioning over a long period of time leads to depletion of resources and, ultimately, can lead to morphological changes that will contribute to the formation of the false circle of pathological inflammation in the fallopian tubes and the ovary.
Conclusions. Thus, one of the key points determining the outcome of the inflammatory disease of the uterine application is the imbalance between the intercellular co-operation of local immunity factors. Violations of products of pro- and anti-inflammatory mediators at the local level, mediated by the components of pathogens and progressive growth of the focus of cytopathological changes, will be accompanied by ineffective activation of the adaptive immune response, which will inevitably lead to further conversion of the infection and the development of piosalpings and pelvioperitonitis.
The obtained results open the prospect of development of immunocorrection systems for the treatment of salpingoophorites, which will significantly improve the results of treatment and prevent recurrence of the disease.
Key words: salpingophoritis, local immunity, phagocytosis, cytokines.

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BODY TISSUE REACTION ON POLYPROPYLENE MESH IMPLANTS

Introduction. Operative treatment of the anterior abdominal hernia remains one of the most pressing problems of abdominal surgery in the world. The most commonly used method for surgical treatment of abdominal hernias is the use of tissue polypropylene mesh implants plastics. The widespread introduction of new materials in herniology has allowed reducing the number of relapses, but it has sharply increased the level of postoperative complications. Therefore, the study of the tissue

response to polypropylene mesh implants remains an urgent problem and needs to be studied in details.
The aim of the study: to conduct morphological evaluation of the tissue reaction to the implantation of the polypropylene mesh implant made from in the experiment.
Materials and methods. During the experimental study, the main international bioethical norms and laws of Ukraine were observed. The study was conducted on 30 sexually active laboratory rats with a body weight of 220-250 grams. After premedication under ketamine anesthesia animals into the tissues of the anterior abdominal wall were implanted polypropylene mesh. Animals were withdrawn from the experiment by decapitation after the previous anesthetizing after 3, 7, 14, 21, 30 and 90 days of the experiment, and the tissue was collected for morphological and morphometric studies. The removed fabrics of the anterior abdominal wall, together with the mesh implants, were fixed in 10% neutral formalin solution, dehydrated, poured into paraffin and prepared to sections on the microtome.
The histological slides stained hematoxylin-eosin and van Gizon, were studied under a light microscope, were studied and calculated the number and composition of cells in the placement of implants. Statistical processing of the obtained data was carried out with using of variation statistics methods with the definition of averages and compared for different terms of observation, and determined the validity of their differences.
Results. The performed studies allowed us to establish the efficacy of the abdominal hernias surgical treatment with mesh implants. Up to the third day of observation in tissues around implanted nets there is a marked inflammatory reaction and the presence of necrotic changes in tissues due to operational trauma and body reaction to the foreign body.
By the seventh day of observation, the inflammatory reaction in the tissues around the implanted nets decreases and the connective tissue capsule, which separates the implants from the surrounding tissues, begins to form. Its formation ends up to 90 days of observation. The severity of inflammatory changes in the first seven days after surgery, the presence of circulatory disorders and necrotic tissue with the addition of microorganisms can be the cause of complications in the early postoperative period.
Conclusions. The use of polypropylene mesh implants in surgical interventions for abdominal hernia, in the first seven days after surgery, is accompanied by a pronounced inflammatory reaction of tissues at the site of implants, which may be the cause of purulent-inflammatory complications in the early postoperative period.
Key words: polypropylene mesh implants, tissue reaction.

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MODELING OF INDIVIDUAL INDICATORS OF CEREBRAL BLOOD CIRCULATION IN DEPENDENCE FROM ANTHROPOS-SOMATOMETRIC PARAMETERS OF PRACTICALLY HEALTHY WOMEN OF THE MEDIUM INTERMEDIATE SOMATOTYPE

Aim of our work – to construct and analyze the regression models of individual indicators of cerebral blood circulation, depending on the anthropomatometric parameters of the body of practically healthy women of the middle intermediate somatotype.

Materials and methods. The results of anthropometric, somatic and rheoencephalography studies conducted on practically healthy urban female of Podilia taken from the bank of the materials Research center National Pirogov Memorial Medical University, Vinnytsya.

Rheoencephalography parameters determined by computer diagnostic complex. As a result, processing rheogram automatically determined characteristic points on the curve, determine key indicators and formed a justified opinion on the circulatory system of the investigated area. Determined the following parameters of rheoencephalography: *amplitude* - the base impedance, the amplitude of the systolic wave, amplitude of incision, amplitude of diastolic wave, amplitude of fast blood supply; *time* - the duration of the cardiac cycle, the duration of ascending part, duration of descending part, the duration of fast blood flow, duration phase of slow blood flow; *derivatives* - dicrotic index, diastolic index, average speed phase of rapid blood flow, average speed phase of slow blood flow, an indicator of the overall tone of the arteries, an indicator tone arteries of large caliber (artery of distribution), an indicator tone arteries of small and medium caliber (artery resistance), ratio tone different caliber arteries.

Anthropometric studies conducted by V. Bunak scheme. Cephalometry included a definition: the circumference of the head (glabella), sagittal curves, the greatest length and width of the head, the smallest width of the head, the width of the face and lower jaw. Somatotypes determined by the method of J. Carter and B. Heath, component composition and body weight - by the method of J. Matiegka and additional muscular component - by formula American Institute of Feeding.

Building regression models of individual parameters of cerebral blood flow, depending on the anthropo-somatometric parameters of body in healthy female with medium intermediate somatotype held a license statistical package "STATISTICA 6.0".

Results. As a result of the regression analysis, in practically healthy women of the middle intermediate somatotype, 17 out of 18 examined cerebral blood flow parameters with a determination coefficient R^2 of greater than 0.6 were constructed, including 5 amplitude models (R^2 from 0.783 to 0.868), 5 time (R^2 from 0.752 to 0.882) and 7 derivatives (R^2 from 0.639 to 0.888) of the reoencephalogram parameters. The built-up models of the amplitude indices of the reoencephalogram most often include the circumferential dimensions of the body (29.0%), the longitudinal dimensions of the body (22.6%), the thickness of skin and fat folds

(19.4%) and the diameters of the body (12.9%); to the models of the time reoencephalogram indices - the circumferential dimensions of the body (51.6%), body diameters (19.4%) and the width of distal epiphyses of the long tubular bones of the limbs (12.9%); to the models of derivative indices of the reoencephalogram - the circumferential dimensions of the body (27.9%), body diameters (18.6%), cephalometric indices, longitudinal body sizes, thickness of skin and fat folds and width of distal epiphyses of long limb bones (by 11.6%)

Key words: practically healthy female of medium intermediate somatotype, cerebral hemodynamics, anthropometric indices, regression models.

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ANTHROPOMETRIC VARIANTS OF THE VARIABILITY OF TOPOGRAPHY OF SPECIFIC VEGETATIVE NODES OF THE HEAD AND THEIR VALUE FOR THE SUBSTANTIATION OF CLINICAL SIGNS OF HANGLIONITIS

Introduction. In elderly people, inflammation of the vegetative nodes of the head (ganglionitis) is very common. But the treatment of this category of patients cannot be effective without a detailed study of the topography of the vegetative nodes of the head and the features of their connections with other vegetative nodes of the head.

The aim of the paper is to study the topography of the vegetative nodes of the human head (the ear, the submandibular, the sublingual) and variants of the variability of the connections between them in order to use these data in clinical practice when treating patients with ganglionitis.

Material and methods. Material and methods of research. In total, the topography of the vegetative nodes of the head was studied and vegetative nodes were divided into: the ear node – 31 medications, the submandibular node – 29 medications and the sublingual node – 30 medications.

The ear vegetative node relatively to the outer base of the skull and foramen oval can take high, low and middle position (O.B. Horbachenko, 2004). At a high position, this node is separated with a small layer of loose fibre, and at a low one it moves 4-7 mm down. In people with brachycephalic form of the skull and a chameprosopic form of the face this node occupied the posterosuperior position and in people with a dolichocephalic form of the skull and leptoprosthetic form of the face it occupied an anteroinferior one. The author has revealed: the size of the node (3,3-6,5 mm), its shape (spindle-shaped, triangular, oval, round and complex) and two types of this node (compact – 98%, reticular – 2%). With a compact type of structure, the node has a different shape: round (48.1%), spindle-shaped (31.4%), triangular (18.6%). The compact type of node is more common in people with brachycephalic form of the

skull, and dispersed – in people with dolichocephalic form of the skull and a leptoprosthetic form of the face. Permanent and non-permanent connections of this node with other nerves were found. Connection with auricular and temporomandibular nerves through a small stony nerve and connections of the ear vegetative node with the trigeminal nerve have been found. The connections of this node with the pterygopalatine vegetative node, the connecting branches between the ear vegetative node and other nerves (mandibular, auriculo-temporal, drum string, nerve of the tensor tympani muscle and branches with the nerve of the pterygopalatine canal) have been revealed for the first time among form domestic scientists.

Five positions (middle or typical, upper, lower, frontal and posterior) of the submandibular vegetative node*; the form of the node* which can be oval (52.11%), cylindrical (14.1%), triangular (12.63%) and of other forms (21.11%) and its *sizes* varying from 1.0*1,5*0,5 mm to 4*5*2 mm have been revealed in elderly people (V.H. Rozhnov, 1998). In the brachycephalic form of the skull and in the chameprosopic form of the face its posterior position is defined, people with dolichocephalic form of the skull and the leptoprozopic form of the face are characterized by the frontal position and people with the mesocephalic form of the skull – by the middle position. Two basic types of the structure of this node have been established: oval, which can be observed in persons with dolichocephalic form of the skull and leptoprozopiae (52,11%) and reticular – in individuals with brachycephalic form of the skull and chameprosopic form of the face (1.41%). The connections of this node (1-7 nerve trunks) go to the submandibular gland, to the tongue nerve (2-5 nerve trunks), to the sublingual vegetative node (nerve-nodal chain), to the sublingual nerve (1 nerve trunk) and to the palatine tonsils.

In elderly people, various forms of the sublingual vegetative node have been found: oval, cylindrical, round, stellate and double node (O. Yu. Polovik, 2005). The oval form is more common in people with mesoprosthetic and chameprosopic form of the face; the cylindrical form of the node is common in people with leptoprosthetic and mesoprosthetic form of the face; the round form of the node is common in people with mesoprosthetic form of the face; and the stellate is common in people with chameprosopic form of the face. The author has established: the distance relative to the internal surface of the body of the lower jaw to the node in individuals with dolichocephalic form of the skull (7-9 mm), and in brachycephalic (10-12 mm), in mesocephalic (8-11 mm); node length (3.3-6,5 mm) and width (1.0-2.5 mm). The revealed connections of this node are: with the sublingual nerve (up to 1-2 connecting branches approach the node), with the submandibular node (1-4 branches) of the nural-node chain and the sublingual salivary gland, the connecting branches spread from the facial nerve to the tongue nerve and the sublingual node.

Conclusion. Authors on the original topographic and anatomical medications of the vegetative nodes of the head studied the shape and size of these nodes and established the relationship between the shape and size of the examined vegetative nodes of the head, depending on the form of the skull (cranial and facial parts of the skull). In addition, connections have been established between the autonomic nodes of the head.

The authors believe that variants of the variability of the form and size of the vegetative nodes of the head and their connections are of definite importance for substantiating the clinical manifestations in patients with ganglionitis, especially when planning their treatment in a hospital.
Prospects for further research. The peculiarities of the variability of the topography and the size of the vegetative nodes of the head are of great practical importance, since the variability of the neural connections with other nerves and ganglia is due to the variety of the structure of the skull and will be further studied by us. It is also planned to study effectiveness of treatment of patients with ganglionitis, taking into account the connections of the vegetative nodes of the head and the type of structure of their skull.
Key words: anthropometric, ear vegetative node, submandibular vegetative node, sublingual vegetative node, connecting branches of vegetative nodes, neural-node chain.

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SLEEVE GASTRECTOMY IN THE TREATMENT OF TYPE II DIABETES ASSOCIATED WITH OBESITY

Introduction. The problem of obesity has become a real world pandemic and global health problem associated with concomitant diseases, one of which is type II diabetes. The ways of solving this issue determine the relevance of the problem.
The aim of the study was to evaluate the main parameters of carbohydrate metabolism in patients with type II diabetes after sleeve gastrectomy.
Materials and methods. The analysis of the results of clinical examination and surgical treatment of 105 patients with morbid obesity after open or laparoscopic sleeve gastrectomy was performed. The study and analysis of type II diabetes mellitus course in 26 patients after surgical procedure was conducted.
Results. In follow up 24 months after sleeve gastrectomy resolution of type 2 diabetes was recorded in 12 (60%) of the 20 patients. Indicators of partial remission of the disease were noted in 5 (25%) patients, improvement was observed in 3 (15%) patients.
In 36 months, out of 17 patients with diabetes, resolution was observed in 10 (58.8%) patients, partial remission and improvement of the disease in 5 (29.4%) and 2 (11.8%) patients respectively. After 48 months, resolution of type 2 diabetes was recorded in 5 (50%) patients, partial remission in 4 (40%) patients and improvement in the course of the disease – in 1 (10%) patients.
Conclusions. Sleeve gastrectomy in the remote postoperative period allows achieving rapid normalization or a significant improvement in carbohydrate

metabolism in obese patients with concomitant diabetes type II. The stability of the above-mentioned effect needs further investigation.
Key words: obesity, sleeve gastrectomy, type 2 diabetes.

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FEATURES LINEAR COMPUTED TOMOGRAPHY SIZES SMALL MOLAR TEETH AND THEIR ROOTS IN HEALTHY MEN OF UKRAINE CENTRAL REGION WITH DIFFERENT TYPES OF FACE

Aim of our work – define linear features computed tomographic sizes of small molar teeth and their roots in apparently healthy men from central region of Ukraine with different types of faces.
Materials and methods. On the basis of medical center "Vinintermed LTD" in 64 practically healthy men aged from 19 to 35 years from the central region (residents of Vinnytsia, Cherkasy, Kirovograd, Poltava and Dnipropetrovsk regions) was conducted cone-beam computed tomography using dental cone-beam tomography Veraviewepocs-3D (Morita, Japan). Volume of three-dimensional image - cylinder 8x8 cm, thickness 0,2/0,125 mm, 0,011-0,048 mSv dose of radiation, voltage and amperage 60-90kV/2-10mA. Investigation of three-dimensional models of teeth-jaw bone structures complex was carried out in the shell i-Dixel One Volume Viewer program (Ver.1.5.0, J Morita Mfg. Cor.)
In cone beam computer tomograms of small molar teeth of the upper and lower jaws conducted measurements: length of tooth; length of palate and buccal roots small molar teeth of the upper and lower jaw; height of the crown; vestibular-tongue dimensions of crown and neck of the tooth; Moesia-distal dimensions of and neck of the tooth crown.
Cephalometric studies were conducted taking into account the generally accepted recommendations and anatomical points. The value of the index sign (Garson morphological index) was obtained by the corresponding formula.
Statistical analysis of the results was performed using the statistical licensed software package "Statistica 6.1" using nonparametric methods. We determined the average values and their standard deviations. Reliability of difference values between independent quantitative values were determined using the U-Mann-Whitney criterion.
Results. On the upper jaw in men from the central region of Ukraine with different types of faces it is established: in men with average type, in most cases the height of the upper small angular teeth (with the exception of the left second tooth) is significantly greater or tends to be higher than that of the representatives with a wide (with the exception of the right first tooth, by 8.7 and 4.1%) and narrow (by 5.9-7.3%) face, the length of the palatal root is greater than that of the representatives

with wide (with the exception of the right first tooth, by 15.8 and 6.9%), narrow (5.2-8.3%) and very narrow (only the right second tooth and 7.9%) face, and the length of the upper buccal root of the first small molar teeth - than that with a wide (12.9 and 6.1%) and narrow (only the left first tooth 6.0%) face; in men with a very narrow face, the height of the upper right second and first small corner teeth tends to be higher than those of the representatives with a wide (5.3%) and narrow (only the first tooth by 6.1%) face types, and the mesio-distal size of the neck of the upper first small angular teeth is significantly lower, or tends to be lower than that of the narrow-faced (by 5.9 and 3.7%); in men with a broad type of face the height of the upper right first small angular tooth tends to be higher than that with the narrow faces (3.9%), the length of the palatal root of the upper right second small angular tooth tends to be lower than that in the representatives with a narrow (8.1%) and very narrow (8.6%) face, and the length of the cheek root of the upper left second small angular tooth - only that in those with a very narrow face (by 15.0%).

On the lower jaw in men from the central region of Ukraine with different types of faces it is established: for men of average type, the height of the lower left second small angular tooth is significantly greater or tends to be higher than that of the representatives with narrow (by 7.3%) and wide (by 6.2%) and the length of the root is significantly higher than that with the narrow type of face (10.7%); in men with a very narrow type of face, the height of the lower left first small corner tooth tends to be higher than that of those with a narrow face (by 5.7%), and the crown height is higher than that in the representatives with a broad (by 6.4%) and the average (by 7.6%) face.

Key words: small molars, computed tomography, practically healthy men, type face, the central region of Ukraine.

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MODELING APPROPRIATE INDICATORS PERIPHERAL HEMODYNAMICS DEPENDING ON THE PECULIARITIES OF BODY STRUCTURE FROM VOLLEYBALL PLAYERS WITH MESOMORPHIC SOMATOTYPE

Introduction. Modeling appropriate indicators peripheral hemodynamics depending on the peculiarities of body structure has irrefutable practical value and can be used for diagnostic purposes. Especially at an athlete engaged in acyclic sports, engaged in sports games, because they most often fix the symptoms of venous congestion without the expressed signs of organic pathology of the venous system. Therefore, the installation is exactly for them the proper rheovasographic parameters has a great practical value.

The purpose of our study was to investigate the influence of the complex of anthropometric and somatotypological indicators on the variability of hemodynamic parameters of the lower extremities and to construct regression models of appropriate rheovasographic parameters of the thigh and shin in volleyball players of the mesomorphic somatotype, depending on their constitutional features.

Material and methods. We examined 60 volleyball players from the first adult class to masters of sports at the age of 17-21. They conducted a rheovasographic study using a cardiological computer diagnostic complex, with the determination of the quantitative parameters of the reovasogram, including time and amplitude indicators and indicators derived from them, according to Ronkin and Ivanov's methodology. The anthropometric survey was carried out according to Bunak's technique. The installation of the body composition was carried out in accordance with the methodology of Matejko. The somatotypological study was performed according to the Heath-Carters method. After the division of volleyball players for somatotypes, it was discovered that the largest number of athletes (32 persons) had a mesomorphic type of constitution. Therefore, for volleyball players with a mesomorphic somatotype, we conducted a direct step-by-step regression analysis in the package "STATISTICA 5.5".

Results. We have found that in volleyball players with mesomorphic somatotype 8 hemodynamic parameters of the thigh depended on the anthropometric and somatotypological characteristics of the body by more than 50%, therefore mathematical models were constructed for them. We have established the significant influence of anthropo-somatotypological components on the variability of other rheovasographic indexes of the thigh, but the accuracy of the description of these characteristics was low (from 20.7% to 49%), therefore the creation of mathematical models for them is not appropriate. For the duration of the rheographic wave, the time of the ascending part of the rheovasogram, the amplitudes of the systolic wave and incision, dicrotic index, middle velocities of fast and slow blood flow to the thigh, tone of arteries of middle and shallow diameter of the thigh mathematical models were constructed, which make it possible to determine the proper rheographic parameters of the thigh, taking into account the individual constitutional features of the organism. These models included 68 dimensions of the external body structure, among which most often represented the circumferential body sizes included in each of the constructed models, the craniometric dimensions are included in 100% of the constructed models, transverse diameters of the body and thickness of skin-fat folds make up 75% of built models.

It was established that 11 parameters of the peripheral hemodynamic of the shin (time of the ascending part, fast and slow blood filling of the rheovasogram, amplitude of the systolic wave and fast blood filling, diastolic index, average speed of fast and slow blood filling, tone of arteries of large, medium and shallow diameter, index of tone ratio of arteries of the shin) depended on the somatic characteristics of the body, more than 50%, for them the equations for the determination of proper indicators were constructed. The variability of other rheographic indicators of the shin was not significantly (from 17.8%, to 48.2%) depended on the sum of somatic features. The built models included 65 sizes of the external structure of the body. Among them, the

most commonly enclosed body dimensions were included in all models (100%); Transverse diameters of the body are 90.9% of the models, in particular, up to 4 models (36.4%) include the width of the distal epiphyses of the shin; the thickness of skin and fat folds - up to 72.7% of the models, in particular, in 5 (45.5%) there is a thickness of the fold on the thigh; craniometric - up to 72.7% of models, in particular, sagittal arc of the head present in 5 models (45.5%); longitudinal body dimensions - up to 45.5% of models.

Conclusions. 1. In volleyball players of the mesomorphic somatotype, 8 models (R2 = 0,56-0,97) were constructed to determine the proper rheovasographic indexes of the thigh and 11 models for determining the proper rheovasographic indices of the shin (R2 = 0,53-0,89). 2. Compared with other rheovasographic indicators, the highest degree of determination with the parameters of the external structure of the body on the thigh (R2 = 0.97) and the shin (R2 = 0.89) had the amplitude of the systolic wave. 3. To the greatest extent, the variability of hemodynamic parameters of the thigh depended on the circumferential dimensions of the body (30.9% of all predictors), craniometric (25%), transverse body diameters (19.1%), thickness of skin-fat folds (16.2%) of all predictors, is included in 75% of models. 4. The models of proper reovasographic parameters of the shin often included the circumferential dimensions of the body (29.2% of all predictors), transverse diameters of the body (23.1%), thickness of skin-fat folds (16.9%), in particular the thickness of the fold on the thigh, longitudinal body dimensions (13.8%) and craniometric dimensions (13.8%), in particular, sagittal arc.

Key words: stepwise regression, mathematical modeling, rheovasography of the thigh and the shin, volleyball players, anthropometric dimensions, somatotype, mesomorphs.

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PREDICTING THE RISK FOR HYPOTHYROIDISM IN FEMALES WITH MENSTRUAL DISORDERS ON THE BACKGROUND OF HYPERPROLACTINEMIA

Introduction. Hyperprolactinemia is a condition that leads to disorders of the menstrual and reproductive functions. At the same time, 40-65% of young women in the post-pubertal and early reproductive period experience the changes in the menstrual cycle on the background of hypothyroidism. Sometimes these two states combine, leading to more profound disorders of the reproductive system.

Goal: to find out the frequency of hypothyroidism on the background of hyperprolactinemia in women of fertile age (age: 18-40) with disorders of the menstrual function, infertility, hirsutism.

Materials and methods: *hormonal study of* 42 women with menstrual disorders (infertility, hirsutism, opsomenorrhea, secondary amenorrhea, abnormal uterine bleeding) on the background of hyperprolactinemia in a volume of TSH and $T4_{(free)}$ has been carried out. The hormone level in blood plasma has been detected by means of a set of test systems of "Immunotech" (Czech Republic – France) using the radioimmune method. The calculation of results has been performed by methods of variation statistics with the use of application software package Statistica 6.0.
Results. the following has been found: the increased level of TSH in 29 (69%) of the patients; the isolated increase of TSH at normal $T4_{(free)}$ indicators - in 14 (33%) cases. In 3 (7,1%) cases the reduction of $T4_{(free)}$ level has been detected, that is, a manifest form of hypothyroidism was observed, in the absence of clinical symptoms. The highest PRL indicators have been observed in patients with opsomenorrhea and secondary amenorrhea. Higher TSH indicators, as well as synchronous reduction of $T4_{(free)}$, have been also observed in this group of patients.
Conclusion. the feasibility of examining the thyroid gland in a volume of TSH, $T4_{(free)}$ in patients with menstrual disorders on the background of hyperprolactinemia for early diagnostics of subclinical hyperthyroidism and prevention of the development of its clinical forms has been substantiated. This will allow to early diagnose subclinical hyperthyroidism and to prevent the development of clinical forms.
Key words: hyperprolactinemia, hyperthyroidism, disorders of the menstrual cycle.

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FEATURES LINEAR COMPUTED TOMOGRAPHY SIZES OF LARGE MOLAR TEETH AND THEIR ROOTS IN PRACTICALLY HEALTHY MEN FROM UKRAINE WITH DIFFERENT TYPES OF FACES

Aim of our work – to establish features of CT-sizes of large molar teeth in practically healthy men of Ukraine with different types of faces.
Materials and methods. On the basis of the medical center "Winintermed LTD", 200 somatologically healthy men aged 19 to 35 years from different administrative regions of the regions of Ukraine done a cone-ray computer tomography using the Veraviewepocs-3D dental cone beam tomograph (Morita, Japan). The volume of a three-dimensional image is a cylinder - 8x8 cm, a layer thickness - 0,2/0,125 mm, an irradiation dose - 0,011-0,048 mSv, a voltage and current strength - 60-90kV/2-10mA. The study of a three-dimensional model of bone structure of the tooth-jaw complex was carried out in the i-Dixel One Volume Viewer (Ver.1.5.0, J Morita Mfg. Cor.).

On the cone-beam computer tomograms of large corner teeth of the upper and lower jaws were measured: the height of the corresponding tooth; the length of the palatine, vestibular neighbor and distal roots of the large corner teeth of the upper jaw; the length of the neighbor and distal roots of the large corner teeth of the mandible; height of the crown of the corresponding tooth; vestibular-lingual dimensions of the crown and neck of the tooth; mesio-distal dimensions of the crown and neck of the corresponding tooth.

Cephalometric studies were conducted taking into account the generally accepted recommendations and anatomical points. The value of the face index (Garson morphological index) was obtained by the corresponding formula. At the meaning of the indicator by 78.9 men were grouped to very broad face; 79,0-83,9 - wide face; 84.0-87.9 - middle face; 88,0-92,9 - narrow face; 93.0 and more - very narrow face. The following distribution established: with a very wide face - 4; with a wide face - 17; with middle face - 36; with a narrow face - 53; with a very narrow face - 90.

Statistical processing of the obtained results was carried out using the statistical software package "Statistica 6.1" using nonparametric methods.

Results. In the upper jaw of men with average face type, in the majority of cases smaller values of the following sizes of large angular teeth are established: the mesio-distal size of the crown of the teeth, than in the representatives with wide (by 3,10-4,45 %, $p < 0,05$) and narrow (except for the right second by 2,74 and 1,28 %, $p < 0,05$, $p = 0,054$) face types, mesio-distal size of the neck of the right second tooth than those with wide (4,77 %, $p < 0,05$) face; the height of the crown of the right and left first teeth than the representatives with narrow (by 5,34 and 4,01 %, $p = 0,073$-$0,080$) and very narrow (only right 5,69 %, $p = 0,066$) face, length of palatine root of the right second tooth than that of the representatives with a broad (7,60%, $p = 0,073$) face type; and men with a very narrow face have lower values - mesio-distal size of the neck of the right and left second teeth than those with wide (4,69 and 4,37 %, $p < 0,05$) faces, mesio-distal dimensions crowns of the right second tooth than those with wide faces (3,21 %, $p = 0,058$) and the length of the vestibular distant root of the right second tooth than those with narrow (6,85 %, $p < 0,05$) and the average (by 6,28 %, $p = 0,052$) types of faces.

In the lower jaw in men with average face type, in the majority of cases smaller values of the following sizes of large corner teeth are set: the height of the right and left second teeth than those with very narrow (3,74 and 4,25 %, $p < 0,05$) and narrow (only left by 3,33 %, $p = 0,070$) face, the length of the distant root of the right and left second teeth than those with broad (5,45 and 5,04 %, $p < 0,05$, $p = 0,078$), very narrow (4,96 and 5,11 %, $p < 0,05$) and narrow (4,97 %, $p = 0,079$) facial types, the length of the neighbor root of the left second tooth than those of very narrow (by 4,04 %, $p = 0,052$) face, vestibular-lingual crown-size of right and left second teeth than that of a broad (by 4,43 and 5,23 %, $p = 0,067$-$0,078$) face type.

Key words: large molar teeth, linear computed tomography, practically healthy men, face type.

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FEATURES OF THE RELATIONSHIPS OF VARIABILITY OF HEART RHYTHM WITH ANTHROPOS-SOMATOTYPOLOGICAL PARAMETERS OF THE BODY OF PRACTICAL HEALTHY GIRLS WITH DIFFERENT TYPES OF HEMODYNAMICS

Aim of our work – to establish and carry out the analysis of correlations of indicators of cardiac rhythm variability with the features of anthropo-somatotypological indicators, age and indicators of force of brush squeeze of practically healthy girls with different types of hemodynamics.

Materials and methods. To determine the type of hemodynamics young men and women for 15 seconds was performed registration of tetrapolar chest rheogram sync with phonocardiogram and electrocardiogram. Type of circulation set by the value of cardiac index values. Practically healthy girls with hypokinetic (32), eukinetic (78) and hyperkinetic (19) types of hemodynamics recorded rhythmogram during recording electrocardiography in the second standard lead within 5 minutes followed by computer processing. In synchronization with electrocardiography using nasal thermistor recorded pneumogram. Data analysis of heart rate was performed using a computer program of certified cardiology diagnostic complex. As a result of the processing of the obtained results evaluated indicators of a variational pulsometry (mode - Mo; mode amplitude – AMo; the average value of R-R interval - NNM; minimum R-R interval - Min; maximum R-R interval - Max; variational sweep - VR), statistical (standard deviation length of normal RR intervals - SDNN; square root of the sum of squared difference of the quantities of successive pairs of normal RR intervals - RMSSD; percentage of pairs of successive normal RR intervals that differ more than 50 ms of the total number of consecutive pairs of intervals - PNN50) and spectral indicators of HRV (total power of recording in all ranges - FO; power in the range of very low frequency - VLF; power in the range of low frequency - LF; power in the range of high frequency - HF; related capacities in the range of low and high frequency - LF/HF) as recommended by the European and North American Heart Association (1996). Using the appropriate formulas calculated indicators of vegetative homeostasis by the method Baevsky, namely: vegetative balance index (IVR = AMo/VR); regulatory systems tension index (IN = AMo / (2 x VR x Mo)); vegetative index rate (VPR = 1 / (Mo x VR)).

Anthropometric examination of boys was conducted in accordance with the scheme V.V. Bunak (1940). Definition of somatotype by method of J. Carter and B. Heath (1990). Definition component composition of body weight carried by the method of J. Matiegka (1921). Force compression of the right and left hand performed using a carpal dynamometer.

The evaluation of the relationships of heart rate variability parameters with anthropo-somatotypological parameters of the body, age and brush compression force in girls

with different types of hemodynamics was performed in the licensed statistical package "STATISTICA 5.5" using nonparametric statistics of Spearman.

Results. In practically healthy girls, Podillia with the hypokinetic type of hemodynamics has the largest number, mostly reverse, of average strength reliable (r from -0.35 to -0.45) and false (r from -0.30 to -0.34) relationships established between the majority of parameters of variation pulsometry and transverse body size and thickness of skin and fat folds; and direct (r, respectively, from 0.36 to 0.46 and from 0.30 to 0.34) - between the modulus amplitude and the total body sizes and the components of the body mass index. In girls with eukinetic type hemodynamics, the largest number of predominantly direct, weak strengths of reliable (r from 0.22 to 0.29) bonds is established between most of the variance pulse rate and the force of brush compression and girths of chest in girths, as well as between the moderate and half of the indicators of the thickness of skin and fat folds; but also the reverse, also predominantly weak strength (r from -0.24 to -0.28) - between the indices of vegetative homeostasis and the force of brush compression and the height of the swivel anthropometric point, as well as between the amplitude of the mode and half the longitudinal dimensions of the body. In girls with a hyperkinetic type of hemodynamics, the largest number of almost uniformly direct and reversible, mostly average force false (r, respectively, from 0.31 to 0.45 and from -0.30 to -0.45), connections are established for direct correlations between the majority of parameters of variation pulsometry and sagittal size of the chest, between the percentage of the number of consecutive normal R-R intervals, differing more than 50 ms from the total number of successive pairs of intervals and most of the indicators of the thickness of skin and fat folds, all indicators of vegetative homeostasis and the height of the fingertip anthropometric point and the fat component of the body mass, as well as between the ratio of power ratios in the ranges of low and high frequencies and all longitudinal body sizes; for reverse correlations - between all statistical parameters of the heart rate variability and the height of the fingers anthropometric point, the bone component of the body mass and the force of the right brush, between the standard deviation of the length of normal R-R intervals and most indicators of the width of the distal limb epiphyses, between the total recording power in all ranges, power in the ranges of low and high frequencies and almost half of the width indices of distal epiphyses of the extremities, neck and bristle girths and bone component aces body.

Key words: practically healthy young women, heart rate variability, hemodynamics types, anthropometry, correlations.

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THE INCIDENCE OF SMOKING IN PEOPLE WITH NEWLY DIAGNOSED CHRONIC OBSTRUCTIVE PULMONARY DISEASE. ASSESSMENT OF

SMOKER INFLUENCING EFFECTIVENESS WITH A FOCUS ON GROUP PSYCHOCORRECTION ACTIVITIES

Introduction. The problem of diagnostics of chronic obstructive pulmonary disease (COPD) is one of the most pressing in the modern pulmonology. The European registry data show COPD prevalence at the level of 10% among people over 40 and significant increase in prevalence among patients over 70 up to 20%. The increase in morbidity and mortality of COPD patients is driven primarily by widespread proliferation of the risk factors, including smoking. For example, in 2015, the proportion of adult American smokers was 15-18%, while in Europe and Ukraine this figure came up to 28-30%.

COPD mortality rates among smokers are the highest; they most likely to develop airway obstruction and shortness of breath. The prevalence of COPD in the world among male and female smokers is 26.2% and 23.7%, accordingly, which is significantly higher than this in non-smoking individuals. However, it should be noted that this is one of the few COPD risk factors, which can be effectively influenced. It is smoking cessation and its active treatment are those factors that may be considered as an effective influence on the risk factors of chronic non-specific respiratory diseases, including COPD.

Study objective is to determine the value/index of smoking as a risk factor for COPD, to evaluate the effectiveness of different methods of influence on smokers.

Materials and methods. A total of 79 individuals with the average age of 52.2±1.1 with newly diagnosed COPD were examined. Male subjects prevailed among those diagnosed with COPD - 48 (60.8%), while female subjects accounted to 31 (39.2%), ($p = 0.02$). The analysis of the age structure among men and women with the newly diagnosed COPD allowed to reveal the following trend: the largest number of patients were aged 41-50 years. In this age group men accounted to 29 (59.6%), and women - 13 (43.8%) subjects, while no statistically important difference between men and women was established ($p = 0.38$)

In the age group consisting of 51-60 year-old individuals, male subjects prevailed over female ones: 15 (31.9%) and 7 (21.9%), ($p = 0.62$), respectively. We noted significant increase in the proportion of women with the newly diagnosed COPD in the age group 61-70 years. This age group consisted of 2 (4.3%) men and 9 (28.1%) women, ($p = 0.01$). Women also dominated among individuals over 70, yet not statistically important ($p = 0.92$).

By social status, most patients with diagnosed COPD were office employees - 44 (55.7%) and workers - 35 (44.3%). The share of individuals with average living standards ($p < 0.0001$) were significantly higher in the study, while individuals with extremely bad living standards constituted the smallest group ($p < 0.0001$).

Patients with the newly diagnosed COPD were attributed to the following clinical groups. 31 persons (39.2%) were attributed to Group A (low risk of adverse events in the future, a small number of symptoms), 19 (24.1%) persons were attributed to Group B (low risk of adverse events in the future, a large number of symptoms), 12 (15.2%) individuals were attributed to Group C (high risk of adverse events in the future, a small number of symptoms), and 17 people (21.5%) – to the Group D.

Male subjects statistically significantly dominated in Groups A and C, while Group D was more common for women.

Results. Among respondents with newly diagnosed COPD, 53 (67.1%) individuals were smokers, including 7 (8.9%) former smokers. So, according to our findings, smoking should be considered as one of the main factors of COPD among those who consider themselves healthy.

Apart from others, we evaluated the gender structure of smokers and revealed a significant difference between men and women. There were 34 male smokers (73.9%) and only 12 (26.1%) female smokers ($p = 0.0002$)

We analyzed the history of smoking in males and females. The analysis of smoking experience, depending on gender, presented the following finding: women more often had a history of smoking up to 5 years than men - 8.3%. The experience of smoking from 5 to 10 years was more common for men - 12 (35.3%) than for women - 5 (41.7%). The smoking experience from 11 to 20 years was reported by 20 (58.8%) and 6 (50.0%) male and female individuals, respectively. Men (2 (5.9%)) dominated among subjects with smoking experience over 21 year.

The average experience of smoking was 15.07 ± 0.95 years, 17.17 ± 075 and 12.2 ± 1.15 years among men and women, respectively. The smoking index - 13.5 packs/year - 14.6 packs/year and 12.4 pack/year in men and women, respectively.

We conducted comparative analysis between men and women according to the Fagerstrom scale and found that no one from the group of subjects with COPD received 0-3 points, that is a low nicotine addiction mark, while the average degree of nicotine dependence was found in 12 (26.1%) COPD patients, including 9 women (75.0%) and 3 men (8.8%). Most patients (34 patients, 73.9%) with the newly diagnosed COPD had a high level of nicotine dependence, including 3 women (25.0%) and 31 men (91.2%).

Also, we assessed the interest in smoking cessation among people with COPD and obtained the following findings: 27 individuals (58.7%) wanted stop smoking to some extent and significantly, while 4 people (9%) did not want to quit smoking at all. Consequently, we established that despite the high level of nicotine addiction, first diagnosed individuals statistically significantly expressed more desire to quit smoking.

We interviewed all smoking patients and those with newly diagnosed COPD about the necessity of smoking cessation, the harmfulness of this habit, and proposed them to choose one of two methods of antismoking therapy, which, according to literature, had proven its efficacy. We proposed to choose using nicotine-replacing preparations in the form of chewing gum containing nicotine 2 mg (Nicorette 2 mg), 5-6 sticks per day; or participation in psychocorrective activities, the purpose of which was formation of incentives in participants to smoking cessation. According to the results of the survey, only 4 individuals gave their consent for using nicotine-replacing therapy - 8.7%, while 42 study subjects expressed their desire to take part in psychocorrective training.

The first session was attended by 38 people, including 11 women (28.9%) and 27 men (73.6%)

There were 2 male (7.4%) and 3 female (27.3%) smokers in the age of 40. In the age from 40 to 49, there were 12 men (44.5%) and 6 women (54.5%); from 50 to 59 years - 10 men (37.0%) and 2 women (18.2%); and over 60-year-old - 3 men (11.1%)

At the time of introduction of participants and discussion of expectations, most subjects were rather skeptical about their smoking cessation opportunities and revealed some disappointment that the coaches did not assume full responsibility for all of them necessarily quitting the habit. In the discussion, the participants mentioned some causes of smoking:

- they had fantasies that others enjoy smoking, mentioned by 17 (44.8%) participants of the training (6 women and 11 men);
- smoking distinguished them among the others (regarding the time of starting smoking in age context); this was indicated by 20 (52.6%) individuals (5 women and 15 men).
- the pressure of the social environment (were forced to start smoking in the army), indicated by 1 (2.6%) study subject.

In addition, we noted that none of the participants had a vision of his/her future without smoking. Most of the participants - 24 individuals (63.1%) - subjectively assessed their level of addiction as psychological, however half of them had previously reported more manifestations of physical dependence. Therefore, we assumed that they were ready to realistically assess their condition. Consequently, this gave grounds to assume rather low level of initial motivation for the participants to stop tobacco smoking.

The second session dedicated to personal needs, opportunities and limitations was attended by 24 (63.2%) individuals from the initially formed group, including 10 women and 14 men. They were provided with the lecture material on the foundations of the psychoanalytic theory of formation of personal addiction and the levels of addiction by O.V. Emelianova.

The third session was attended by 18 (47.4%) individuals from the initial group (8 women and 10 men).

The trainers provided participants with the information on the model of behavioristic changes by James Prochasca and Carlo Diclemente [6], according to which the process of change is divided into several stages, and any changes are considered as a process, rather than a casual one-time event.

One month after the main stage of psychocorrective activities aimed at forming the motivation to stop smoking, we returned with the interview of the participants. We found that 11 individuals (28.9%) of the training participants reported of complete smoking cessation (including 8 women and 3 men). Three participants (7.9%) abstained from smoking for one month, and four more participants (10.5%) abstained from smoking for 2 weeks. That is, 47.3% of the training participants managed to abstain from smoking for two weeks or more. 11 people (28.9%) (including 1 female and 10 men) failed to quit smoking after training.

When answering the question about the level of interest to quit smoking, the participants divided as follows: no one expressed no interest at all, somewhat interested in quitting smoking - 3 participants (7.9%), to some extent - 6 participants

(15.8%), significant interest - 17 people (44.7%), and 12 participants (31,6%) expressed very strong desire to abandon this habit.
We also asked our patients, if they were sure they would be able to quit smoking. Responses were distributed as follows: "a little bit" - 6 study subjects (15.9%), "to some extent" - 17 individuals (44.7%), "quite sure that they would succeed" - 6 participants (15.8%), and 9 individuals (23.7%) marked their confidence as "very strong".
Consequently, if we take into account the fact that the psychocorrective activities were reduced due to the lack of adequate number of participants, the overall results of the effectiveness of the work performed could be assessed rather high. Our hypothesis that raising the meaningful motivation to quit tobacco smoking would contribute to complete or partial smoking cessation has proven to be true.
Conclusion. 1. 53 (67.1%) individuals were smokers among respondents newly diagnosed COPD, including 7 (8.9%) former smokers. Comparing the incidence of smoking among women and men diagnosed COPD, male smoker incidence statistically significantly prevailed. 2. Smokers with newly diagnosed COPD had a high degree of nicotine addiction (74%), and the level of nicotine addiction in men was higher than that in women. Among smokers with newly diagnosed COPD, 57.8% subjects were interested to quit smoking to a large and some extent. 3. After conducting three sessions of psychocorrective activities on formation of motivation for smoking cessation, 11 (28.9%) participants of the training reported the complete smoking cessation (including 8 women and 3 men). The majority of the training participants (35 subjects (92.1%)) expressed the desire to keep making attempts to abandon this habit.
Therefore, raising awareness of motivation for smoking cessation that contributes to complete or partial smoking cessation has proven to be true.
Key words: chronic obstructive pulmonary disease, COPD risk factors, smoking, antismoking programs, psychocorrection courses.

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PSYCHOPHYSIOLOGICAL ASPECTS OF THE DEVELOPMENT OF ANXIOUS, ASTHENIC AND DEPRESSIVE MANIFESTATIONS OF THE PERSONALITY OF MEDICAL STUDENTS IN THE DYNAMICS OF EDUCATIONAL PROCESS

Introduction. In numerous studies conducted in recent years, the significant influence of a number of personality manifestations of psychophysiological adaptation on the peculiarities of gaining students 'and students' learning knowledge and skills has been established. They, in fact, provide a high level of work capacity and stress resistance.

According to the data of modern scientific literature, medical students have a relatively high level of depression, anxiety, asthenia and demonstrate the initial signs of emotional burnout. Such manifestations are an essential prerequisite for worsening academic success, reducing motivatedness in the development of professional skills.

The aim of the study is the evaluation of psychophysiological aspects of the development of anxiety, asthenic and depressive manifestations of the personality of medical students in the dynamics of the educational process.

Materials and methods. The research was conducted among the students of the 2nd year of the medical faculty of the Vinnitsa National Medical University. at the beginning and end of the academic year. As leading psycho-physiological correlates of the functional state of the organism and personality traits, based on both the strategy of conducting observations and taking into account the existing stress reactions, indicators of situational and personality anxiety, as well as asthenic and depressive states were used.

In order to assess the peculiarities of situational and personal anxiety, Spielberger's personality questionnaire was used in the modification of Hanin, an assessment of the degree of expression of the asthenic state - a personal questionnaire of Malkova, adapted by Chernov, to determine the level of expression of a depressive state - Zung's psychometric scale for self-esteem of depression.

The statistical analysis of the results was carried out using the application package of multidimensional statistical analysis “Statistica 6.1 for Windows” (license №AXX910A374605FA).

Results. Data obtained during the psychophysiological assessment of situational anxiety indicators showed a significant increase in anxiety during the academic year. Significantly more stable were indicators of personal anxiety, which level in the dynamics of the studied period grew, however, did not acquire a reliable character. Statistically significant gender differences were not at the beginning or at the end of the observation time.

The results of the psycho-physiological analysis showed a fairly high level of expression of the asthenic state, and also noted its gradual and steady growth during the school year. The presence of such tendencies was confirmed by the data of the structural distribution of indicators to be studied.

During the evaluation of the indicators of depression, there was a lack of a growth trend. Moreover, if girls have the most significant values at the end of the school year, then the boys have that at the beginning of the year.

Conclusions. During the conducted researches psychophysiological aspects of the development of anxiety, asthenic and depressive manifestations of the personality of medical students in the dynamics of the educational process were studied, the main trends of their changes were determined during the academic year, the perspective directions of further researches have been determined, it is necessary to note the implementation of the in-depth study of the peculiarities of the processes of the development of psychophysiological functions and personality peculiarities.

Key words: students, situational anxiety, trait anxiety, asthenic condition, depression, dynamics of the educational process.

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APPLICATION OF "BETARGIN" IN COMPLEX TREATMENT OF CHRONIC HEPATITIS B IN CHILDREN WITH ACUTE LYMPHOBLASTIC LEUKEMIA

Background and aim: The aim of the study is to evaluate the effectiveness of the "Betargin" in the complex treatment of chronic hepatitis B (CHB) in children with cancer.
Materials and methods. We examined 39 children with chronic hepatitis B in the context of acute lymphoblastic leukemia (ALL) in the remission stage. During the study, the children were divided into two representative groups. Children of control group (17 patients) received base therapy with dietary nutrition, sorbents, enzyme. Patients in the main group (22 children) received the drug "Betargin" in addition to the base therapy. Clinical and laboratory parameters (total bilirubin count, ALT, AST, alkaline phosphatase - AP, GGT, lipid profiles: LDL, HDL, LDL, triglycerides, and cholesterol) were evaluated, and the viral load was determined.
Results. In the course of scientific research, it was found that at the time of the examination and at the beginning of treatment, the characteristic biochemical changes in the blood of children with chronic hepatitis B and ALL were elevated liver cell enzymes (ALT, AST, AP) with normal values of total bilirubin count and its fractions. All patients without exception were in the stage of viral replication. The viral load ranged from 10^2 to 10^8 IU/ml. The treatment with "Betargin" improved liver cell enzymes and decrease AP. The use of "Betargin" in the treatment of chronic hepatitis B in children with ALL has improved detoxification function of the liver and normalized lipid metabolism.
Conclusions. In the chronic viral hepatitis patients with cancer and without any possibility of antiviral therapy, it is recommended to use the “Betargin” (PharmUnion) to improve the clinical symptoms of the disease and restore the basic functions of the liver. The prospects of our study are that the drug "Betargin" can be recommended to reduce the side effects of polychemotherapy in patients with cancer.
Key words: chronic hepatitis B, acute lymphoblastic leukemia, children, "Betargin".

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C-REACTIVE PROTEIN AS AN EARLY PREDICTOR OF INFECTIOUS COMPLICATIONS AMONG VICTIMS WITH A TRAUMATIC TRAUMA IN AN ACCIDENT

Introduction. At the present stage, many diagnostic markers of the septic process are used in clinical practice, but around the C-reactive protein (CRB) there are constant discussions not only in Ukraine but also in the world. Among the main areas of controversy, the possibility of using C-reactive protein is not only in the period of unstable adaptation of traumatic illness, but also from the first hours of the victim's stay in a hospital, that is during a shock period.

Taking into account the above, we investigated the action of the marker of inflammation of the C-reactive protein in the victims of a polytrauma as a result of an accident in different periods of traumatic illness, which will allow him to take into account his reaction in the scheme of complex clinical and pathogenetic treatment of infectious complications in the victims of a traumatic trauma as a result of an accident.

The purpose of our work was to study the level of inflammation marker C-reactive protein in different periods of traumatic illness among those suffering from infectious complications as a result of road traffic accidents.

Materials and methods. For the purpose of our study, which characterizes the influence of the level of the marker of inflammation C-reactive protein on the development of infectious complications of the traumatic process in the victims of a traumatic trauma as a result of the traffic accident, a prospective group was formed that included 116 people with polysystemic and multi-organ damage.

Results. The level of CRB refers to early diagnostic criteria for acute phase of inflammation, as already 6-8 hours there is a sharp increase in its indicators. It is believed that normal values of CRB are its blood contents up to 6 mg / l. in the first day of treatment in patients with severe polytrauma, CRP ranged from 10-30 mg / ml. Such casualties were 89.09%. We slightly explained the high level of CRS by bacterial inflammation, but by the systemic response to an injury. High and critical levels of CRP in the first group were not detected in the first day. A similar picture was also found in the second group, where 45.9% of the victims found a level close to normal CRP. In the period of unstable adaptation, on the 5th day of observation, when an infectious complication was diagnosed in the affected population, we analyzed the level of CRP in the experimental groups. in the first group, in all 100% affected, the CRP level was elevated, and only in 11% of the victims it was at subnormal levels. It is necessary to indicate the relationship between the severity of the state and the level of CRP. Among the 8 patients with CRP≥100 mg/ml, all of them had a generalized infection of the sepsis and severe sepsis. In the second group, where the state of the victims was somewhat easier, lower levels of CRP were noted. In half of the patients it did not exceed 20-30 mg / ml, with the highest CRP of 36 mg/ml observed in the affected with nosocomial pneumonia and purulent bronchitis. Thus, after processing the above data, it can be argued about the high efficiency of measuring the level of CRB in the victims of a polytrauma as a result of an accident with a suspicion of an infectious complication. The use of these methods

in patients with polysystem trauma to monitor and predict the occurrence of infectious complications should become routine.

Conclusions. 1. In the periods of traumatic disease, the indicators of the level of C-reactive protein are prognostically significant in the aspect of development of purulent-septic complications in the victims of a polytrauma as a result of an accident; 2. Inclusion in the complex of examination of victims of trauma due to an accident, determination of indicators of functional activity of C-reactive protein will allow to justify treatment tactics, optimal method and terms of conducting surgical interventions, reduce and predict the development of postoperative purulent complications.

In the future it is planned to investigate the reaction of immunological markers on the development of infectious complications among the victims of a traumatic trauma as a result of an accident.

Key words: polytrauma, road accident, injured, infectious complications, C-reactive protein.

НАУКОВІ ОГЛЯДИ
SCIENTIFIC REVIEW

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THE VALUE OF PRIMARY CILIA IN THE PATHOGENESIS OF POLYCYSTIC KIDNEY DISEASE

For the first time, the structure and functions of cilia began to be studied at the end of the 17th century. In 1675, Anthony van Leeuwenhoek described mobile cilia that was structurally and functionally considered to be similar to the flagella of eukaryotic cells. In 1876 and 1898 (Langerhans, 1876; Zimmerman, 1898), another class of cilia was described. There were nonmotile (monocylia) cilia, which in 1968 (Sorokin, 1968) were renamed into primary cilia. Primary cilia have been studied for many years, however, despite the anatomical presence of them in eukaryotic cells, until recently, little was known about their specific function. During the last decade, particular attention has been paid to the study of their structure and functions, especially after linking the emergence of various forms of polycystic kidney disease (PKD) and the mutation of proteins that are part of primary cilia.

PKD is a group of genetic disorders characterized by the emergence and increase in the number of cysts in the kidneys. The most common type of PKD is the Autosomal Dominant Polycystic Kidney Disease (ADPKD), affecting about 12 million people worldwide. Mutations in PKD1 and PKD2 genes, that encode the polycystin-1 and polycystin-2, respectively, were identified as the cause of ADPKD. Autosomal-Recessive Polycystic Kidney Disease (ARPKD) is a severe form of PKD, typical for childhood, due to the mutation of the PKHD-1, which encodes the fibrocystin protein. Almost all forms of PKD2 are connected with a disruption of the structure and functions of the primary kidney cilia, however, despite numerous studies, it is not yet fully understood how abnormal ciliogenesis contributes to the development of this disease.

The purpose of the study is to summarize the latest achievements in the study of the structure and functions of primary cilia and to investigate the interaction between the occurrence of PKD and the mutation of primary cilia proteins.

More and more works were published in recent decades, where it was noted, that the violation of the ciliary structure can be the cause of the development of many diseases, in which the emphasis is placed on the state of primary cilia. They are very common in the human body: in olfactory cells, rods and cones, cells of the renal tubular epithelium, mesenchymal cells, neurons. The process of formation of cilia (ciliogenesis) is controlled by the genes, therefore, mutations in them lead to structural anomalies of cilia and, as a consequence, to the development of ciliopathies. Ciliopathy is a group of diseases characterized by a violation of the

normal work of cilia on the surface of a number of cells, which provides reception of signals from the extracellular environment. The most studied ciliopathic genes are the genes that control the process of intrafagellary transport and the genes encoding the functional proteins of primary cilia. For a better understanding of the peculiarities of the pathogenesis of PKD, it should be noted that in addition to the components of the cytoskeleton, the primary cilia include polycystins, fibrocystin, somatostatin receptors, serotonin, angiopoietin, platelet factor-α, vanilloid-4.

Mutations of genes attach importance to cystic kidney transformation. ADPKD is due to mutations in the genes PKD1 (chromosome 16p13.3) and PCD2 (chromosome 4q 21). These genes encode PC-1 and PC-2 proteins. PKD1 mutations are found in 85-90% of ADPKD cases, and PKD2 mutations are found in 10-15% of cases. ARPKD is due to mutation of the gene of PKHD1 (chromosome 6p21) and occurs in 25% of newborns.

PC-1 and PC-2 are integral membrane proteins of primary cilia that play an important role in intercellular and cellular membrane interactions. PC-1 acts as a mechanoreceptor and is involved with intercellular contacts. PC-2 is a non-selective cationic channel for the transportation of Ca^{2+} ions. Both proteins form a functional complex that regulates cell proliferation, adhesion, morphogenesis, and transepithelial fluid secretion.

In the kidneys, the primary cilia return to the lumen of the tubules and are present in most cells of the nephron (on each cell on a single line, with the exception of intermediate cells of the tubes). They perform the functions of mechanoreceptors and react to the flow of fluid. Polycystins as part of the primary kidney cilia provide four physiological membrane effects: activation of polycystin-1 polycystin-2 and release of Ca^{2+} from the endoplasmic reticulum into the cytoplasm; receipt of Ca^{2+} ions inside the cell; the effect on the G-protein with the activation of adenylate cyclase, MAP kinase, which affects on the fluid secretion, cell proliferation and differentiation, as well as inhibition of the cell cycle by activating JAK-STAT. The mutation of the PKD genes leads to the disturbance of the mechanosensory function of the cilia. This in turn leads to a decrease in the intracellular level of Ca^{2+}, the activation of adenylate cyclase, and an increase in the level of cAMP. The last activates proliferative processes of the epithelium of the renal tubules, which causes cystogenesis.

Another possibility of the influence of primary cilia and polycystins on the formation of cysts is the ability of the PC-1 to regulate the activity of mTOR (target of rapamycin), a protein involved in translational, cellular growth and proliferation. Violation of the structure of cilia or PC-1 causes a defect of the complex PC-1/mTOR, increasing the proliferation of the epithelium and promoting the formation of cysts.

The tail domain of PC-1 also reacts with tuberine, a product of the TSC2 gene, which mutation leads to the development of tuberous sclerosis, which is accompanied by the formation of cysts in the kidneys. In physiological conditions, tuberine inactivates Ser/Thr mTOR kinase, that depends on the rate of cell growth, apoptosis. In patients with ADPKD in cysts, that lick the cyst, mTOR activity is significantly increased and may become part of the PC-1 / tuberine complex. Thus, PC-1 normally suppresses

mTOR activity via tuberine, and mutation of PC-1, eliminating this suppression, leads to increased growth, proliferation and differentiation of tubular epithelium cells, contributing to cystogenesis.

Cysts with ADPKD are usually formed from the main cells of the collecting tubules and are primarily related to the maternal cell, but later this connection breaks out and the increase in cysts in capacity occurs by proliferation of cells that lining the cyst and secretion of fluid in it. Normally, the reabsorption process Na^+ and CL^- occurs in the main cells of the collecting tubules. This process is provided through the activity of NaK-ATPase, which pumps Na^+ out of the cell, forms a gradient between the extra-and intracellular Na^+ concentration. NaK-ATPase is a heterodimer and consists of α1- and β1-subunits. At ADPKD, there is persistent expression of fetal proteins, and if no transcription of the fetal subunit β2 occurs, the NaK-ATPase consists of β2- and α1-subunits. The C-terminal fragment of PC-1, changes its transport characteristics, interacting with such a structure of NaK-ATPase. It stops pumping Na^+ out of the cell, but begins to secrete Na^+ and water accordingly, which leads to the formation of cysts. The epithelium of cysts releases more ATP than the normal cells in the culture fluid, and the C-terminal fragment of PC-1 provides the ATP-dependent flux of CL- into the cyst. Liquid supplying in the cyst also provide aquaporines expressed on the epithelium of the cysts.

Along with the secretion of electrolytes and fluid into the cyst cavity, another prerequisite for their increase is the proliferation of the cells that covers them. Normally, the proliferation of the tubular epithelium ceases after birth, but the epithelium of the proximal tubules retains the ability to recover in the case of damage. Growth factor (EGF), which is produced in the thick ascending lap of the Henle loop, stimulates the proliferation. Since EGF receptors are located on the basolateral membrane of cells, they remain inaccessible for the EGF and in normal conditions, the cells do not reproduce. During ADPKD, EGF are localized on the apical membrane, which induces proliferation of the epithelium. Stimulation of proliferation is carried out by the interaction of EGF with receptors tyrosine kinase, mitogen activating kinase and protein kinase. The consequence of such interaction is the increasing of cell division and the transformation of the main cells of the collecting tubules from non-proliferating and capable of reabsorption in the proliferating secretory.

The main role in increasing of cyst size, have apoptosis, changes in the polarity of cystic cells, and intercellular interactions. Apoptosis with ADPKD is observed in unchanged kidney tissue and is believed to be responsible for reducing the number of active nephrons. The inducer of apoptosis is tumor necrosis factor α. The polarity improvement of the tubular epithelium in ADPKD patients relates not only to the above-mentioned major ion transporters, but also to other molecules. Thus, together with NaK-ATPase on the apical membrane, expression of calpastine, ankyrin, fodrin, laminin, gelatinase A, cathepsin B, FAK (focal adhesive kinase), which are normally presented in the basolateral membrane, are expressed. Part of the membrane proteins is placed in the cytoplasm. Such a violation of polarity is inherent in fetal tubular epithelium and indicates a violation of maturing processes. Normally, the polarity of the cell is determined by PC-1 and PC-2.

Defects of intercellular interactions during ADPKD are presented by the replacement of E-cadherin with fetal N-cadherin, which makes the ability of the reaction of B-catenin with other binding proteins of actin worse. All of the above mentioned changes in the renal tubules are accompanied by an increase in extracellular matrix and the development of interstitial fibrosis, which in its turn leads to the emergence and progression of chronic mink deficiency.

During the ARPKD the protein fibrocystin mutates. It is known that fibrocystine is connected with the N-terminus of PC2 and is believed to be involved in the basic functions of the PC1/PC2 complex located in primary cilia. Obviously, fibrocystin is largely involved in the key development, differentiation, regulation of cell proliferation in the kidney tubules and bile ducts of the liver, so the manifestation of the disease affects both organs. In the formation and growth of cysts, the violation of planar polarity of cells plays a major role, unlike with ADPKD. At ARPKD, cysts in the kidneys are not separated from the lumen of the collecting tubes because of the fact, that the epithelial proliferation is the main factor in the growth of cysts. Cystic degeneration takes place in the cortical and medular layers of the kidney.

Considering the main pathogenetic mechanisms of the occurrence and progress of this pathology, it becomes obvious that PKD is a serious and dangerous disease for human life, therefore it is very important to detect it early with subsequent treatment.

Diagnostics of PKD should include the collection of data on the presence of cystic changes in the kidneys of blood relatives and chronic renal failure of unknown etiology. The presence of family sickness cases is the basis for sonographic research perfoming.

U.S. Ravine's criteria have been developed for the examination of patients with PCD, which include: ≥2 cysts in both kidneys at the age of less than 30 years; ≥2 cysts in each kidney at the age of 30–59 years; ≥4 cysts in each kidney over the age of 60 years. The presence of these sonographic criteria with a positive family anamnesis indicates the presence of PKD. US-parameters of cysts in PKD have characteristic features: round or oval form, smooth and thin walls, lack of calcifications and thickening, amplification of acoustic density is proportional to the size of cysts.

Other methods of visualization as a MRI, CT are used when the date of sonographic examination is doubtful. The MRI criterion for PKDs includes: the presence of 5 or more cysts in both kidneys less than 30 years of age; 6 or more cysts in both kidneys at the age of 30–44 years; more than 6 cysts in both kidneys at the age of 45–59 for women and more than 9 cysts in both kidneys at the age of 45-59 for men.

For prenatal screening, ARPKD does researches of the kidney fetus. A genetic study should be considered appropriative in the case of negative or questionable data of the imaging research methods. It should be assigned to all members of the family, which allows to identify preclinical cases. Conducting of population genetic screening is not feasible. The essence of the genetic researching is to identify markers (nucleotide sequences) on the 16th chromosome.

Also, patients with PKD should conduct a screening study for the diagnosis of major extragranular manifestations of the disease, including cysts in other organs and vascular aneurysms.

Conclusions. 1. The main reason for the development of PKD is the mutation of genes encoding the integral proteins of primary cilia. Changing the structure of cilia leads to loss of their functional capabilities and, as a consequence, to the formation and development of cysts. 2. In the case of ADPKD, the integral proteins of primary cilia PC-1 and PC-2 are mutating. The main pathogenetic mechanisms of the formation and development of cysts with ADPKD include: activation of proliferative processes of the tubular epithelium, changes in the structure and functional capabilities of NaK-ATPase of the renal tubules, apoptosis activation, change of the planar polarity of cells, defects in intercellular interactions, and exasperation of aquaphorins, calpastine, ankyrin, laminate expression. 3. Fibrocystin protein also mutates during the ARPKD. The main role in the formation and development of cysts is the violation of planar polarity of cells, in contrast to ADPKD. This type of PKD affects not only the kidneys, but also the liver.
Key words: polycystic kidney disease, primary cilia, cystogenesis, polycystins.

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TRANSFORMING GROWTH FACTOR B AS A FACTOR IN MYOPIA DEVELOPMENT

Transforming growth factor (TGF) β1 is profibrotic cytokine included in TGF-β family (TGF-β1, TGF-β2, TGF-β3). It controls the synthesis and composition of extracellular matrix (ECM), inhibits collagen degradation, regulates the growth of scleral chondrocytes and scleral fibroblasts. In myopia, it is involved in the changes of ESM exchange, and is critical in sclera remodeling processes affecting its biomechanics. The result is an increased anterior-posterior eyeball size, characteristic of progressive, the so-called “malignant” myopia, which is manifested at an early age and is often associated with such severe complications as vitreous body destruction, retinal dystrophy and detachment, subretinal hemorrhages, complicated cataract.
Objective: To carry out retrospective analysis of scientific literature, studying the role of TGFβ in connective tissue formation, the mechanisms of synthesis and effect realization, as well as its role in myopia development.
Conclusions. TGFβ modules the production of extracellular matrix. ECM exchange is the major mechanism in the changes of eyeball axial length.
1. In myopia, transforming growth factor β is of great value in remodeling processes. Its composition and quality can be considerably changed in retinal pigment epithelium, vascular tunic and sclera, affecting the course of the disease and the development of complications.
2. Myopia is a common complicated disease; a great number of complicated signal pathways is involved in its pathogenesis, mediated by various genetic profiles.

Consequently, study of TGFβ as a factor greatly influencing myopia development, is an important task both in ophthalmology and in medicine as a whole.
Key words: TGFβ, myopia, connective tissue, sclera, extracellular matrix.

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LEPTIN'S EFFECT ON INFLAMMATION, METABOLISM AND PATHOGENESIS OF OSTEOARTHRITIS

Before discovery of leptin in 1994, white fatty tissue was considered only as a tissue, the main function of which was energy saving. Over the past decades, its role has been revaluated, and now white fat is considered a metabolically active source of bioactive peptides, commonly called adipokines. Apart from adipose tissue, these compounds have been isolated from the placenta trophoblasts, amniotic cells, cartilage and bone tissue, and now they are actively studied for their role in inflammation development and in the immunity.
The objective of our work was to analyze and summarize modern scientific information about the role of adipokines, namely, leptin, in the development of autoimmune processes in general, and in osteoarthritis (OA), in particular.
Today, leptin is considered a key link between neuroendocrine and immune systems. Apart from its role as a metabolically active substance, leptin is currently considered a crucial soluble factor involved in the pathogenesis of rheumatic diseases.
It was found that leptin concentration in synovial fluid in patients with osteoarthrosis was significantly higher compared to the control group, which might be a result of increased vascular permeability in a joint changed due to inflammation. The study of leptin concentration in different types of tissues made it possible to find out that it was different in such tissues of the affected joint as cartilage, osteophytes, synovial membrane, and the very osteophyte tissues presented the highest concentration of leptin, which allowed us to state that these same tissues were the source of leptin production and a trigger in the cascade of inflammatory reactions. Moreover, leptin was significantly expressed in the fibrous mesenchymal tissue of the upper osteophyte zone, where the sequential process of pluripotent cell differentiation might lead to formation of new cartilage processes that would eventually undergo ossification. Despite of the above convincing data on the pro-inflammatory nature of leptin, its promising protective role is currently widely debated, since administration of endogenous leptin to experimental rat models increased the production of insulin-like growth factor-1 (IGF-1), a transforming growth factor-ß (TGF-ß) by chondrocytes of the knee joint, thus demonstrating that leptin in high concentrations might provide protection to cartilage.
The stimulatory effect of leptin on cartilaginous anabolism was also confirmed by recent studies that showed that leptin contributed to bone mass growth, influencing

directly on osteoblasts, thus giving rise to studying its role as a new hormonal regulator of the bone growth.

Conclusion. Twenty years of research since the discovery of leptin have proven the leading role of adipose tissue in regulating metabolic and immune functions. It has been found that adipokines, and leptin, in particular, influence on the inflammatory and immune response in a number of diseases, including osteoarthrosis.

Further studies are required to clarify the mechanisms by which leptin exhibits immunomodulatory effect on all cells of the immune system. Further understanding of the role of leptin in the immunity regulation mechanisms, its involvement with the pathogenesis of inflammatory diseases, will have a positive effect on creation of new medicines and achievement of the desired treatment success.

Key words: leptin, osteoarthritis, *LEP* gene, *LEPR* receptor.

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MODERN VIEWS ON THE FACTORS OF DEVELOPMENT OF CHRONIC COLOSTASIS IN CHILDREN AND THEIR COMPLICATIONS

The purpose of the presented work is to determine the perspective directions of the scientific search for solving the problem of violations of coliform transit in children on the basis of analysis of modern data on this problem. Chronic infringements of colonic transit is a clinical complex of pathological changes in the functions of the colon of polyetiological and heterogeneous origin. They are characterized by a slowed and complicated defecation, an increase of the intervals between acts of defecation in comparison with the individual norm, systematic or temporary incomplete evacuation of fecal mass which requires additional effort, with allocation of an insignificant amount (less than 35 g per day) of fragmented stool of a solid consistency more than during 3 months. Most of the surgical pathology of childhood is congenital malformations, caused by embryonic or fetal developmental disorders, which include a large group of diseases and produce violations of colonic transit in children. In children with chronic constipation, there are significant disorders in the immune defense and hemostasis system, distortion of the acid-base state. Violation of colonic transit in children has its complications, which affect the health status at the local and general levels.

Conclusions. 1. Violation of large-colored transit in children is a difficult and multifaceted problem of the child's personality, which leads to initially significant discomfort, and in the further formation of irreversible disorders in the physical, psychological and social status of the child. 2. Violation of the function of the large intestine is not an isolated monoproblem - it is a consequence of the common pathological changes in the immune status, microcirculation and biochemical parameters of the child's body. 3. Efforts aimed at solving the problem of disturbance

of colon transit in children should concentrate not only on the treatment of pathology, but first of all on the search for new effective methods of diagnosis of this disease.
Key words: chronic constipation, colonic transit, colostasis.

ХРОНІКА
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