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MORPHOFUNCTIONAL CHARACTERISTICS OF DERMIS AFTER ADMINISTRATION OF SILVER NANOPARTICLES

Introduction. Development of methods for obtaining stable metal nanoparticles opens up broad prospects of their application in industry and medicine. The most relevant and practical importance is the study of the effect of silver nanoparticles on the body [Chekman et al., 2010]. Silver nanoparticles have an antimicrobial effect [Martínez-Gutierrez et al., 2012]. Skin function is performed first line of the barrier between the external environment and the internal organs of the human body. Consequently, topically applied nanoparticles can penetrate the skin and provide local and systemic action, getting into the bloodstream. Research describing the morphological changes that occur in the tissues of the skin is not enough. The effect is strongly dependent on nanoparticle size and surface charge characteristics of the coating and the surface topography. Available literature data are conflicting reports. On one hand, under the influence of the Ag nanoparticle enhanced cell proliferation and angiogenesis, which leads to an increase in the functional activity of fibroblasts and neocollagenogenesis [Tian et al., 2007; Kwan et al., 2011; Gunasekaran et al., 2012], and on the other hand there is the data about the toxic effect on fibroblasts in vitro [Samberg et al., 2010; Martínez-Gutierrez et al., 2012].

The purpose of our work: to study morphological changes of the dermis of the skin of rats at introduction of silver nanoparticles 30nm.

Materials and methods. Experiments were carried out on 140 intact Wistar rats of both sexes weighing 0,18-0,24kg. The animals were kept under standard vivarium conditions Odessa National Medical University, according to the scientific and practical recommendations on the content of laboratory animals and working with them. The animals were divided into 4 groups: intact group; Animals injected with 30 nm Ag NP; group of animals treated with 2% colloidal silver rr; and the group of animals receiving saline. After subcutaneous administration of 0.01 ml solution of silver nanoparticles effect were assessed on 1st, 3rd, 7th, 14th, 21st, 30th, 45th days. The standard histological techniques were used.

Results. Investigation of the influence of silver nanoparticles on the skin is relevant and practically significant. The goal of the work was to investigate the morphological changes of the dermis of the skin that occur when intradermal administration of silver

nanoparticles. Spherical silver nanoparticles 30 nm were used. It is shown that the introduction of silver nanoparticles in the skin, leads to a change in the ratio of the cellular elements of the dermis and the ratio of the different degree of maturity of fibroblasts. The most labile populations are macrophages and fibroblasts. The maximum rise of geteromorfa is observed on the 14th day. Long-lived cells is preferably carried out bearing (mechanical) function. In addition, fibroblasts express different CD-markers: CD34 and CD49 [Alekseeva et al., 2012], confirming the heterogeneity of the population and perhaps development of various sources. Given the above, possible mechanism of action of LF Ag 30 nm is the stimulation of fibroblast proliferation short-lived.

Conclusion. 1. In the intradermal injection of silver nanoparticles of 30 nm, a change in the ratio of the cellular elements of the dermis and the ratio of different, the degree of maturity, fibroblastic cells differon. 2. Most of the population are labile macrophages and fibroblasts. The maximum increase mezhdifferentonny and vnutidifferentonny geteromorfii observed on the 14th day.

Key words: silver nanoparticles, the dermis of the skin, morphometry.

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CELLULAR COMPOSITION OF SMALL INTESTINE LYMPHOID NODULES IN SURGICAL TREATMENT AND ENTERODETOXIFICATION OF HIGH ACUTE OBTURATIVE SMALL INTESTINE OBSTRUCTION

Introduction. Bacteria and their toxins, which penetrate the intestinal barrier interact with immunocompetent cells of lymphoid tissue, associated with intestine. In the barrier - protective function of gastrointestinal tract mucous membrane the leading element is lymphoid tissue. Lymphoid apparatus of small intestine is different from the systemic immune apparatus for cellular composition, effector functions and regulation specific features. Enterosorbition due to its simplicity and effectiveness is the most promising for correction of homeostasis in a body, removing of toxic metabolites of endogenous and exogenous nature in natural way. This method is pathogenetically grounded as providing immunocorrective action, makes possible to eliminate hormonal imbalance, reduces the activity of lipid peroxidation.

Purpose of the study. To set morphological features of small intestine lymphoid nodules in surgical treatment and enterodetoxification of high acute obturative small intestine obstruction.

Materials and methods. The experimental study was conducted on 41 mongrel dogs with primary weigh from 8 to 12 kg, aged 2-6 years. Animals were on a two-week quarantine in vivarium conditions, given a normal diet. To all mongrel dogs a model of high obstructive acute intestinal obstruction was created. Operations were done under general tyopental anesthesia. After dissection of the anterior abdominal wall,

ligation of the small intestine was performed, receding 30 cm from its beginning. Dogs were divided into three experimental groups. To the animals of first experimental group (14 mongrel dogs) a model of high obstructive acute intestinal obstruction (AIO) was created. After creating a model of high obstructive AIO no interventions were performed. To the second experimental group of animals (12 mongrel dogs) in 3 days after a model of high obstructive AIO was created we restored patency of small intestine by resection of ligation location and applying "side to side" anastomosis. The length of intestine resected area was 15 cm. To the third experimental group (15 dogs) high obstructive AIO simulation was done by ligation of small intestine, receding 30 cm from its beginning, then in three days resection of small intestine portion and restoration of patency of small intestine applying "side to side" anastomosis was performed, but while anastomose creation proximal and distal intestine segments were washed with 3% aqueous suspension of sorbent Syllard P till pure suspension outflow was fixed. The last portion in the amount of 100-150 ml was left in intestine lumen.

To collect the material, after preliminary premedication the dogs were administered anesthesia for the second time, fixed on operating table and operating field management was done as for surgical intervention. Cellular composition (volume fraction in %) was determined in two areas (central and peripheral) of small intestine lymph follicles. Leukocytal intoxication index was determined according to Y.Y. Kal-Calif methodics, as an indicator of tissue degradation processes and of the level of endogenous intoxication. Dogs were taken out of the experiment by anesthesia overdose.

Results. In surgical treatment of high acute obturative small intestine obstruction the cellular composition of small intestine lymphoid nodules has been changing. In the central area of small intestine lymphoid nodules increased the volume fraction of large and blast lymphocytes, there was a tendency to increase middle cell forms, but the content of small lymphocytes and plasmocytes decreased compared with the norm and corresponding period of high acute obturative small intestinal obstruction.

In nodules' peripheral zone there was a tendency to increase the number of macrophages and other cells, but no significant changes in cellular division were found, compared with the corresponding period data after obstruction's simulation.

Structural changes in small intestine lymphoid nodules in surgical treatment of high acute small intestine obstruction under condition of enterodetoxification by sorbent Syllard P were different from those conditions at which enterosorption has not been performed. In the peripheral zone of lymphoid nodules distribution of almost all cells changed in comparison with experimental data without sorbent use. Thus, increased percentage of blasts and large lymphocytes, small lymphocytes, macrophages and plasmocytes, there were cells that divided by mitosis and index of damaged cells volume fraction decreased, possibly due to reduced level of destructive changes or increased activity of macrophagal cells.

In the central areas of lymphoid nodules decreased the volume fraction of middle lymphocytes and increased the number of small forms; indicators of relative volume of blasts and large lymphocytes, cells which divide, particularly plasmocytes increased.

Key words: intestinal obstruction, enterodetoxification, immune system, small intestine lymphoid nodules.

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AGE FEATURES OF MORFO-HISTOCHEMICAL STATE OF NEURONS OF THE SUPRAOPTIC NUCLEUS OF THE HYPOTHALAMUS IN WISTAR MALE RATS

Introduction. Currently, the increasing interest of researchers is attracted to brain structures that ensure the central regulation of homeostasis. First of all, it refers to the hypothalamus and its neurosecretory paraventricular and supraoptic nuclei, (SON) [Акмаев, 1992; Акмаев, Гриневич, 2003; Geerling et al., 2010]. This is one of the major sites of synthesis of the “classical” neurohormones oxytocin and vasopressin [Абельсон, 1985; Громов, 1998; Marar, Amico, 1998].

SON is a group of closely packed magnocellular neurons in an amount of from 4000 to 7000, lying laterally to the optic chiasm [Swanson, Kupers, 1980; Silverman, Zimmerman, 1983]. SON neurons as well as magnocellular PVN neurons synthesize oxytocin and vasopressin as vasopressin-neurophysin glycopeptide and oxytocin-neurophysin-glycopeptide [Japundžić-Žigon, 2013], besides oxytocin-synthesizing neurons are mainly concentrated in antero-posterior direction and vasopressin-synthesizing neurons are located posteroventrally in a ratio of 1:1 to 1:1.6 (respectively) [Navarro et al., 1994]. The cells in SON in adults are orientated in mediolateral direction in parallel to the optic tract [Leng et al., 1991].

SON is one of the central organs of the osmotic control under normal conditions, it regulate cardiovascular function, secretion of ACTG and cortisol by the adrenal glands [Bisschop et al., 2013]. Acting synergistically with ACTG-releasing factor (CRF), it increases the concentration of ACTH, the effect of CRF on ACTH stimulation is mediated through the activation of adenylate cyclase mechanism, and the effect of vasopressin is mediated through the activation of protein kinase C [Lopes-Azevedo et al., 2013].

The *objective* was to examine age features of morpho-histochemical state of hypothalamic neurons of SON in Wistar rats.

Materials and methods. The study was hold on 40 male Wistar rats that were allocated into four age groups (2, 4, 6 and 18 months), 10 animals in each group. Animals were on a standard diet with free access to food and water. The rats of appropriate age were decapitated under anesthesia (sodium etaminal 40 mg/kg, ip). Brain was immediately removed and placed into a Buen's retainer. It was dehydrated in alcohols in increasing concentration and then embedded into paraffin blocks. Serial

sections were prepared on the rotary microtome MICROM HR-360 (Microm, Germany) in thickness of 5 microns for morphometric studies of hypothalamic neurons and in thickness of 14 microns for immunofluorescence studies. Later sections were deparaffinized in xylene, rehydrated in descending concentrations of ethanol (100%, 96%, 70%), three times washed in distilled water or phosphate buffer pH 7.4 for 10 minutes.

5 micron brain sections were stained with chrome-gallocyanin alumesn by Einarsson to determine RNA in the structures of neurons. After staining, the slides were embedded in Canada balsam. Morphometric analysis was performed on a microscope Axioskop (Zeiss, Germany). Using the highly sensitive video camera COHU-4922 (COCHU Inc., USA) images of the neurons of SON of the hypothalamus were loaded into computer digital image analysis hardware and software system VIDAS-386 (Kontron Elektronik, Germany). In each age group at least 400 neurons were studied. Only those neurons that have a nucleus and nucleolus in the slice were studied. As a result of the automatic analysis the area of the neuron, the nucleus and nucleolus (μm^2) and the RNA content in the cytoplasm, nucleus and nucleolus neuron in reference units of optical density ($\text{Uod}/\mu\text{m}^2$) were measured. Increase of the functional activity of neurons was estimated according to the area of cells, their cytoplasm, nuclei, and especially the nucleoli, as well as increase of RNA content and concentration in cell nuclei and nucleoli.

The experimental data were processed with the parametric Student's t statistics, considering significant differences in the two groups at $p_{st} < 0,05$. To assess the statistical relationship of the studied parameters it was used the correlation analysis of the EXCEL software package (Microsoft Corp., USA). The presence of the relationship between parameters considered, if the correlation coefficient was greater than 0,5.

Results. Discussion. Considering the age dynamics of morphofunctional state of neurons of SON in Wistar rats it was found that 2- and 4-month period was characterized by relative stability of morphometric parameters of cells and their nuclei on the background of significant 1.5-fold ($p_{st} < 0,05$) increase the area of nucleolus (Table 1) and reduce of heterogeneous RNA content in neuronal structures (in the cytoplasm by 11% ($p_{st} < 0,05$), in the nucleus by 37,5% ($p_{st} < 0,05$), in the nucleolus by 5% ($p_{st} < 0,05$) (Table 2). While in adult 6 month old rats compared with the previous period it was observed the decrease in the area of cell and its core for 22% ($p_{st} < 0,05$), with the area of the nucleolus increased by almost 2-fold ($p_{st} < 0,05$), and the RNA content in all these structures of the neuron was increased by 10% ($p_{st} < 0,05$), 34% ($p_{st} < 0,05$) and 25% ($p_{st} < 0,05$) in cytoplasm, nucleus and nucleolus, respectively. The 18-month old animals showed a significant increase in the area of cytoplasm and nucleus by 21% ($p_{st} < 0,05$) and 22% ($p_{st} < 0,05$), respectively, reduce of the area of the nucleolus by 34% and decrease in the RNA content in the nucleus by 20% ($p_{st} < 0,05$).

After examining the age features of distribution of magnocellular neurons of SON by their area we have found that with the growth and development of animals it was observed the change of their relationship in the studied brain structure. While prepubertal and pubertal periods, corresponding to 2 and 4 months of age, were

characterized by the predominance of large neurons with an area of beyond than 300 μm^2 , whereas in adults the number of large and medium-sized cells was almost equalized. By the old age it was a decrease in numbers of small and medium-sized neurons with a predominance of large.

The revealed age-related changes of linear parameters of neurons and structural changes in supraoptic nucleus indicate the susceptibility of this structure to age-related changes with probable increase of remaining neurons functional activity and development of their partial hypertrophy. While the established reciprocal relationship of morphometric and densitometric characteristics of neurons is probably caused by compensatory mechanisms and is aimed at mobilization of the cell population neurons activity.

Conclusions and prospects for further research. 1. During the growth of the animal both the size of neurons of SON and their functional activity undergo significant changes. There was observed an age-related (before puberty) decline of morphometric parameters of the neuron and the cell nucleus, with increased content of RNA.

2. Distribution of neurons in the SON by area up to 6 months of age is characterized by relative stability; there is predominance of large cells. There are further significant structural changes in the nucleus in aged, 18-month old animals: large neurons dominate more and almost all small neurons disappear.

3. In old animals the age-related changes of SON of the hypothalamus manifests with the increase of sizes of the cells and nuclei and structural rearrangements of the nucleus: predominance of large cells and disappearance of small ones which is accompanied with great increase of RNA content in nucleolus.

In further work on the study of the morphofunctional state of the supraoptic nucleus of the hypothalamus it is planned to hold a comparative analysis of morphological and densitometric characteristics of its neurons under various experimental pathologies such as hypertension, gestational diabetes, streptozotocin-induced diabetes.

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Key words: supraoptic nucleus, hypothalamus, Wistar rats, morphological and histochemical condition.

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MORPHOLOGICAL DESIGN OF EXPERIMENTAL ISCHAEMIC STROKE

Introduction. Ischaemic stroke (cerebral infarction) is an acute disturbance of cerebral circulation with a lesion of the brain matter and cerebral dysfunction as result of impairment or discontinuation of blood supply (Vilensky B.S., 2008). Specialists believe that stroke remains an emergency state with a higher mortality than in oncological diseases (Zozulia I.S., 2009). The epidemiological situation with stroke supports the observation that the overwhelming majority of deaths, caused by the above pathology, take place in patients before age 70-75. It is this fact that has provided stroke, as the cause of lethality, with the second position by its significance among diseases in the world (Kennedy R., Lees K.R., 2009). Beyond all doubt the above problem requires an urgent solution, its successful guarantee consisting in

early and qualitative clinical-morphological diagnosis of stroke (Tsymbaliuk V.I., Kolesnik V.V., Torianik I.I. et al., 2014).

The purpose of the research was as follows: to study morphological peculiarities in the course of experimental ischaemic embolic stroke in Wistar rats.

Material and methods. consisted of male Wistar rats (n = 254) at the age of 3 months and with body weight of 160-175 g. These animals were intact and with modelled ischaemic stroke. In order to develop a model of ischaemic stroke the authors used embolization of collateral branches of the common carotid artery of the right cerebral hemisphere with particles of barium sulphate suspension (II). Observations were carried out during the first 28 days. The experiments were performed in compliance with the national “General Ethical Principles for Experiments on Animals” (Ukraine, 2001), which agree with regulations of the “European Convention for the Protection of Vertebrate Animals Used for Experimental and other Scientific Purposes” (Strasbourg, March 18, 1986).

Histological and ultramicroscopic preparations were made following the standard scheme. The material was analysed with help of light and electron microscopes (LOMO, Russia: x100; x200; x300; x400; Olympus, Japan: x6000; x800; x10000; x15600; x16800; x20400).

Results. This complex research revealed that the structure of the cortex and white matter of cerebral hemispheres in the group of rats of intact control met structural-functional indices of their age-sex norm. The modelled ischaemic stroke, received in an experiment in male Wistar rats, was of the phase character. By pathogenesis this stroke fully corresponded to its natural prototype and depended upon the terms of beginning of its début. The 1st day of observation revealed the presence of “artificial” emboli, formed by particles of barium sulphate suspension (II), violation of integrity of capillary walls and their stratification. The 3rd day was characterized by intensification of destructive processes in neurons (chromatolysis, appearance of vacuoles, disappearance of ribosomes). Ultramicroscopic changes in the structure of capillaries became more pronounced. The 7th and 14th days demonstrated some slowdown of destructive processes and acceleration of discharge of cell detritus elements, organization of destructive foci. The 17th day of experiment revealed intensification of the processes, caused by utilization of cell detritus and organization of destructive foci. The formation of liquor-glial cysts and glial scars went on. The 21st day of observation was marked by completion of the processes of formation of glial scars (which contained 3-5 layers of cells) and liquor-glial cysts, concentrated in areas of former necrosis. The 28th day of experiment showed the final completion of processes of formation of glial scars and liquor-glial cysts with complete utilization of cell detritus.

Conclusions:

1. The way of embolization of collateral vessels with particles of barium sulphate suspension (II) in conditions of functioning circulation causes guaranteed disengagement of the major and collateral circulation in the relevant cerebral hemisphere of rats and development of typical lesions, which are characteristic of embolic ischaemic stroke.

2. The modelled ischaemic stroke is of the phase character, by pathogenesis it fully corresponds to its natural prototype and depends upon the terms of beginning of its initial changes.

3. The morphological picture, which accompanies the modelled ischaemic stroke, is characterized by the appearance of megakaryocytes, thrombocytes and “artificial” thrombi in circulation and formation of foci of “softening” (the 1st day of experiment), astrocytes and liquor-glial cysts (the 3rd day), formation of collagen fibres and glial-connective tissue scars (the 7th-17th days) and development of phagocytosis (the 3rd-21st days).

Key words: experimental embolic ischaemic stroke; morphological changes; light optical, transmission electron microscopy study.

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EVALUATION OF PROTECTIVE EFFECT ON MYOCARDIUM OF NEW DERIVATIVES OF 3,2'-SPIRO-PYRRHOL-2-OXINDOLE IN THE COURSE OF ACUTE CARDIAL ISHEMIA

Introduction. Searching for new substances that have cardioprotective characteristics that can be a basis for development of a new home-produced medicine is an actual task for pharmacology. In this aspect new Derivatives of 3,2'- Spiro-Pyrrhol-2-Oxindole are perspective biologically active substances that have antihypoxic and cerebroprotective action.

Objectives To evaluate effectiveness of new Derivatives of 3,2'-Spiro-Pyrrhol-2-Oxindole in conditions of a model myocardial ischemia in order to identify their cardioprotective effect .

Materials and Methods. Examination of cardioprotective action of 10 original Derivatives of 3,2'-Spiro-Pyrrhol-2-Oxindole has been held on models of adrenal cardiopathy and diathermocoagulation myocardium necrosis.

Results. Data analysis indicates that two Derivatives of 3,2'-Spiro-Pyrrhol-2-Oxindole compounds with a laboratory code R-86 and R-108 have cardioprotective action that manifested itself on two models of acute cardiac ischemia. Compound R-86 has had the most protective effect on ischemic myocardium in the conditionally effective dose of 10 mg/kg of intragastric administration that has been compared as for the ability to reduce the mortality of animals during the critical moment of experiment as well as during the whole observation time with Reference-drugs Cordarone (10 mg/kg), Mexidolum and Thiotriazolin (100 mg/kg) during their intra-abdominal administration. Obtained data shows that there is a perspective for the further in-depth study of Derivative 3,2'- Spiro-Pyrrhol-2-Oxindole Compound R-86

cardioprotective characteristics, particularly the identification of potential cellular mechanisms for its protective effect on ischemic myocardium.

Key words: Derivatives of 3,2'- Spiro-Pyrrhol-2-Oxindole, acute cardiac ischemia, cardioprotective effect.

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HISTOLOGICAL CHANGES OF ESOPHAGO-CARDIAC AREA UNDER THE INFLUENCE OF PORTAL HYPERTENSION IN EXPERIMENTS ON RATS

Introduction. Esophago-cardiac area is the place where the longitudinal tearing and bleeding of the mucous membrane and deeper located layers occur with the Mallory – Weiss syndrome (MVS). Many researchers point to the degenerative and atrophic changes in the mucosa of the esophagus and stomach in patients with MVS. Last time, more attention is paid to the presence of subclinical portal hypertension in these patients. Thus, according to the various studies, in patients with MVS is present transient or stable portal hypertension. It causes a restructuring of the microvasculature of the esophageal-gastric junction area. This causes venous stasis, violation of trophic and development of portal gastropathy, which leads to weakness mucosa. However, there are only a few studies of relation between portal hypertension and MVS. This motivates to deep study this problem.

The aim of our research is to study the histological changes of esophago-cardiac area under the influence of portal hypertension in experiments on rats.

Materials and methods. The research was performed on 27 rats weighing 160-250g. Modeling chronic portal hypertension was done by a combination of intrahepatic and prehepatic block of portal vein. Intrahepatic block of portal vein was done by intoxication with carbon tetrachloride (CCl₄). Prehepatic block of portal vein was done by partial ligation of the main trunk of the portal vein. Histological changes in the liver, esophageal-gastric transition were studied at 4, 6, 8 week of study.

Results. Pathological changes in the liver, esophagus and stomach were visible at 4 weeks of the experiment. In later studies the changes were brightly expressed. After 8 weeks in rats with portal hypertension were marked histopathological changes of all walls of the esophagus that are typical for portal hypertension. Noted the sclerosis of interstitium of mucosa and submucosa, plethora of venules and perivascular edema of interstitium in submucosal basis, leukocyte infiltration of the wall, cavernous transformation of the veins. In all planes of the sections is defined a large number of varicose veins and venules. In the preparations of the thoracic esophagus and cardia of the stomach large veins are visualized in submucosal membrane. At the same time in the lamina propria of mucosa the size of the veins and their number is much smaller. In the abdominal esophagus picture is different - large veins in large

numbers were in the lamina propria of mucosa owing to penetrations of veins of submucosal basics through the muscle plate of mucosa, while there are more pronounced changes in their walls. In the cardia of the stomach marked atrophy of the surface epithelium, dystrophy of glands epithelium, erosion and ulceration of the epithelium, as well as morphological signs of widespread temperate and pronounced chronic gastritis. In submucosal basis of cardia of the stomach found edema, thinning, fragmentation and focal elimination of fibrous structures. It turns out a large number of irregularly dilated capillaries, venules and veins of all sizes with aggregation of red blood cells in their lumen. In some cases, the aperture of veins are dilated, their walls are much thinned, garnetted, with a reduction of cellular components and multiple sclerosis. Outgrowths of intima in these veins form a jumper to give the cavernous-like structures.

Conclusion.

1. In response to the increase of portal venous pressure in the area of esophageal-gastric transition occurs the appearance of the new vessels. Those veins dont have complete vessel wall, which is much thinned, atrophied and more prone to rupture.
2. There were the symptoms of esophagitis in distal esophagus. Noted superficial and deep erosions.
3. In the cardia of the stomach marked atrophy of the surface epithelium, dystrophy of glands epithelium, erosion and ulceration of the epithelium, as well as morphological signs of widespread temperate and pronounced chronic gastritis.
4. Founded degenerative changes in the walls of veins and cavernous transformations causing erosion and ulcerative lesions of stratified squamous epithelium, they lay under, are the main pathomorphological factors for occurrence of rupture and bleeding in this area.

Key words: Mallory – Weiss syndrome, portal hypertension, histological changes of esophago-cardiac area.

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SURFACTANT-ANTIBACTERIAL THERAPY OF ACUTE EXPERIMENTAL PNEUMONIA: MORPHOLOGIC ASSESSMENT AND ANALYSIS OF PROTEOLYSIS PROCESSES

Introduction. Increased level of morbidity and mortality from acute inflammatory pathology of lungs constitutes one of the paramount problems for modern medical science. While antibacterial agents consistently hold a principal role in

etiopathogenetic management of pulmonary inflammation, precipitous growth of antibiotic resistance and limited spectrum of available drugs, which are active against multidrug-resistant pathogens, demand continuous improvement of antimicrobial treatment modalities. The ability of exogenous surfactant to decrease surface tension of bronchoalveolar fluid and to re-expand atelectatic areas offers an opportunity to use it as a pharmaceutical vehicle to enhance spreading properties and delivery of antibiotics via respiratory tract into foci of pulmonary infection. Despite theoretical feasibility, this approach has yet to be studied in detail. The study was aimed to investigate effects of combined intratracheal administration of antibiotic and surfactant in rats with experimental bacterial pneumonia by means of morphologic assessment and analysis of proteolysis processes.

Materials and methods. Doses of the surfactant (Suzacrin, Docpharm, Ukraine) and amikacin (Amicil, Kievmedpreparat, Ukraine) were based on the maximal daily doses recommended for adult humans, i. e. 10 mg/kg for the Suzacrin and 15 mg/kg for the Amicil. Adult male Wistar rats (n = 119) weighing 180-220 g were assigned to 10 groups depending on the type of substance instilled into trachea on the stage of pneumonia induction (bacterial inoculum or normal saline; 0.2-ml bolus) and type of treatment provided 6 hours after pneumonia induction by means of a secondary tracheal puncture (0.4-ml bolus). A bacterial inoculum used for pneumonia induction consisted of *Pseudomonas aeruginosa* suspension (strain ATCC 27853) prepared fresh daily from an overnight blood agar culture.

Lung tissue samples were stained with hematoxylin and eosin and examined by means of light microscopy. Key morphologic findings were assessed semiquantitatively by scoring according to their intensity (0 – absent, 1 – mild; 2 – moderate; 3 – severe). Proteinase-inhibitory system status was investigated by determining trypsin-like, elastase-like and antitrypsin activity as well as acid-stable inhibitors in bronchoalveolar wash (BAW) and serum using the BioMate-5 spectrophotometer (Great Britain). All numerical data are presented as mean \pm standard error and compared using the un-paired Student's t-test. A probability level of $p < 0.05$ was considered to be statistically significant.

Results. As distinct from the groups of monotherapy with surfactant or antibiotic, combined surfactant-antibacterial treatment demonstrated statistically significant reduction of all manifestations of acute purulent inflammation when compared with intratracheally administered normal saline: purulent material in bronchi (0.82 ± 0.18 vs. 2.25 ± 0.25 , respectively), bronchial wall destruction (1.09 ± 0.31 vs. 2.67 ± 0.19 , respectively), peribronchitis (0.73 ± 0.30 vs. 2.25 ± 0.30 , respectively), accumulations of neutrophils in respiratory tissue (1.18 ± 0.23 vs. 2.42 ± 0.23 , respectively), microabscesses in parenchyma (0.73 ± 0.30 vs. 1.92 ± 0.38 , respectively).

Among all groups of infected animals, group of combined therapy showed lowest values of elastase-like ($2,91 \pm 0,15$ in serum and $3,62 \pm 0,59$ in BAW) and antitrypsin activity ($30,31 \pm 2,56$ in serum and $42,85 \pm 10,86$ in BAW), as well as highest values of acid-stable inhibitors ($8,85 \pm 0,46$ in serum and $4,32 \pm 0,28$ in BAW).

Conclusion. Both morphologic assessment and analysis of proteinase-inhibitory system demonstrated significant advantages of the combined therapy over monotherapy with surfactant or antibiotic as evidenced by reduction of

histopathologic manifestations of acute pneumonia, decrease of local and systemic proteolytic activity and increase in activity of proteinase inhibitors.

Key words: surfactant, pneumonia, *Pseudomonas aeruginosa*, treatment, proteolysis.

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MORPHOLOGICAL CHANGES IN THE LIVER OF IMMATURE RATS WITH CHRONIC TOXIC HEPATITIS

Objective. To investigate the morphological changes in the liver of immature rats with chronic toxic hepatitis (CTH) and liver cirrhosis (LC).

Materials and methods. Experimental studies performed in 2 series of experiments on 60 white laboratory immature rats (initial body weight 60-70g). In the 1st serie of experiments, animals (n=20) during six weeks of twice-weekly intragastric administration of 20% oil solution of CCl₄ at a dose of 0,1 ml/100 g weight in combination with a 5 % solution of ethanol as drinking. The control group included 10 intact rats.

In a second series of experiments used 30 rats, including 10 intact animals (control group) and 20 animals with intragastric administration of 20% oil solution of CCl₄ and ethanol during eight weeks followed by "rest" for six weeks after the end of administration of hepatotoxins with the aim of modelling of CTH and LC.

Results. Morphological features of CTH in the 1st series of experiment on immature rats are considerable swelling, cytolysis, vasculitis, degenerative and necrotic changes and severe inflammatory infiltration. These serve as predictors of fibrosis morphological substrate for the development of numerous dense connective porto-portal, porto-central septum with obliteration of central veins and the formation of different sizes pseudolobules.

In the immature rats of the 2nd series of experiment after 14 weeks from the start of the experiment were observed the characteristic features of LC, formed in the background of CTH, was the presence of connective tissue septum with central venous obliteration and formation pseudolobules. Spontaneous regeneration in this case occurred largely due to polyploidization and hypertrophy of hepatocytes.

Conclusion. The experimental CTH in immature rats is characterized by significant disturbance of lymph formation, lymph outflow and edema, that is significantly altered the structural and functional status of hepatocytes, leads to liver fibrogenesis and requires medical correction.

Key words: chronic toxic hepatitis, liver cirrhosis, immature rats.

© **Kulygina V.N., Mohammed Al-Mohammed Ali**

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MORPHOLOGICAL RESEARCH OF SOLID TOOTH TISSUE UNDER DEVELOPMENT OF CARIOSITY IN THE NECK AREA AND CHARACTERISSTICS OF LOCAL DAMAGE OF PERIODONTAL TISSUES

Introduction. The prevention and treatment of inflammatory periodontal diseases, despite of a large number of domestic and foreign scientific works available at the moment, is still in the focus of dentists` community. A special role in the comprehensive prevention of localized inflammatory periodontal diseases belongs to effective treatment of early pathological changes in the teeth, namely, a cariosity in the neck area of teeth. For deeper study of the mechanism of development of local pathology in periodontal tissues under carious process in the neck area of the teeth and early diagnosis of diseases, it seems reasonable to conduct a morphological research of the nature of these changes both in enamel/dentin of the tooth, and in the periodontium.

The objective of the study is to examine the morphological structure of hard dental tissues under development of cervical caries, and the nature of local damage to periodontal tissues.

Materials and methods. 9 permanent teeth (4 pointed teeth and 5 premolars of the upper jaw) extracted for orthodontic reasons served as the material for morphological research. Each tooth was cut with a diamond cutter at low speed in the vestibular-oral direction into two halves after fixation in 10% neutral formalin solution. We made 15 - 20 μm - thin cross-sections, histochemically treated them with PAS-Alcian blue stain, and studied at different magnification of Olympus microscope. Mucosal biopsies of gums were sectioned 5 mm-thick and stained with Hematoxylin-Eosin.

Results. We found some factors predisposing the development of caries in the neck area of the tooth crown due to the histological features of the tooth enamel. These factors are: thin layer of enamel penetrated with multiple unmineralized lamellae, remained cuticle covered with a pellicle featuring distinct properties of microorganisms adhesion and forming dental plaque by these microorganisms.

The presence of dental plaque microorganisms and their metabolic products in the neck area (bacterial enzymes) contributes to irritation and damage of the periodontal tissues, which determines their leading role in the etiology and pathogenesis of local lesions of periodontal tissues.

Acute initial caries of cervical localization is characterized by absence of cuticle and the surface layer of prismless enamel, destruction of individual enamel prisms and pulping the lamellae, as well as no 'enamel bushes' and availability of small lacunes in the cementum body of the tooth root. These factors indicate possible negative impact of acute initial caries in the neck area of the teeth on surrounding tissues and on development of periodontal diseases. The confirmation of this hypothesis is established degenerative and inflammatory changes in periodontal tissue biopsies of the mucous membrane of the gums such as expansion of intercellular space, edema of papillary and reticular layer of the mucous membrane, invasion of gingival

epithelium in the connective tissue papillae, and increasing number of blood vessels and their lesions.

The chronic middle-stage caries is characterized with complete destruction of enamel and partial or complete collapse of the dentinal tubules with formation of 'dead paths', and compensatory processes such as formation of 'glossy' dentin layer (hypermineralization). The necrosis of cementum and absence of enamel-cementum border are the evidence of violation of the integrity of the junctional epithelium and dentogingival junction as a cause for development of local periodontal tissue lesion. The histological examination of periodontal tissue biopsies with concomitant localized periodontal lesions revealed vacuolar degeneration and necrosis of epithelial cells, events of degradation, swelling and disorganization of collagen structures of connective tissue, histiolympocytic infiltrates, deep invasion of gingival epithelium into underlying mucosa layers with formation of periodontal pockets, and plethoric blood vessels with luminal occlusion. These changes confirm the role of local traumatic factors, namely, the caries process in the neck area, in the development of localized periodontal diseases.

Key words: caries of the teeth, inflammatory periodontal diseases, morphological changes.

© **Chegodar D.V.**

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PROCESSES OF PROTEOLYSIS IN RATS WITH EXPERIMENTAL PNEUMONIA AT ENDOTRACHEAL USE OF THE NANOSILVER SOLUTION

Introduction. Search of the pharmacological means possessing the antiinflammatory and antibacterial mechanism of action is one of actual tasks. By perspective substratum for creation of such preparations silver can be considered. And, thanks to intensive rates of development of nanotechnologies, there is an opportunity to use silver in the nanodimensional range.

The purpose of research was to study effects of endotracheal introduction of nanosilver solution in the lungs of intact animals and when modeling experimental pneumonia on the basis of an assessment of reactions of nonspecific proteinases and their inhibitors.

Materials and methods. The experimental research was carried out in 53 white Wistar male rats (body weight of 180 - 210 g). The solution representing nanoparticles of silver of 10 - 20 nanometers (0, 1%) in a matrix of sodium alginate (0, 6%) and in the water environment (99, 3%) was used. The activity of proteinases-inhibitor system components in the blood serum and bronchoalveolar lavage was carried out using enzymatic methods.

Results. At endotracheal introduction of nanosilver solution in an intact animal in the blood's serum and the bronchoalveolar lavage, minimal reaction of the components of proteinases - inhibitory system was observed. In the conditions of inflammation modeling in the lungs at endotracheal introduction of nanosilver solution in the blood serum, only the tendency to increase in elastase-like and trypsin-like activity was observed. Level of antitrypsin activity in serum of blood against introduction of nanosilver was characterized by reliable increase at 9% in comparison with control, and level the acid-stable protease inhibitors increased by 28% in relation to control and 32% in relation to sodium alginate. At bronchoalveolar lavage when modeling inflammation in lungs against introduction of nanosilver solution, the increase in elastase-like activity at 57% in comparison with control was observed, however in comparison with physiological solution of reliable changes it isn't revealed, and in relation to sodium alginate level of elastase-like activity was authentically 36% lower. Level of trypsin-like activity against introduction of nanosilver's solution was characterized only by a tendency to increase. At the same time essential activation of inhibitors of proteinases was observed, and that pointed reliable increase in antitrypsin activity at 27% in relation to control, 10% in comparison with physiological solution and 7% in comparison with sodium alginate. Level of acid-stable protease inhibitors was characterized by reliable increase at 25% in comparison with control group, 24% in relation to physiological solution and 13% in comparison with sodium alginate.

Conclusion. Endotracheal introduction of nanosilver solution into an intact animal does not leads to expressed activation of components of proteinases - inhibitory system, both at systemic, and at local level. When modeling inflammatory process in lungs endotracheal introduction of nanosilver leads to reliable decrease in activation of nonspecific proteinases and the increase in the inhibitory potential which has been especially expressed at local level. Decrease in activation of proteinases and stabilization of inhibitory potential when using solution of nanosilver when modeling pulmonary pathology testifies to existence of anti-inflammatory effects of solution of nanosilver that allows recommendation of further researches.

Key words: pneumonia, nanosilver, proteinase, proteinase inhibitors, inflammation.

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ANTIMICROBIAL QUALITIES OF MODERN DRESSINGS, IMPREGNATED WITH ANTISEPTICS

It is well known, that infection diseases and complications are an actual problem in surgery and happen in 70 % of cases.

The aim. To research *in vitro* antimicrobial activity of antimicrobial dressings against pathogens of wound infection.

Materials and methods. Antimicrobial activity of cotton, impregnated with antimicrobial composition of decamethoxin and carboxymethylamylum, oxyethylcellulose, antiseptic dressing with chlorhexidine digluconate, activtex C, activtex CF, activtex F, dressing with furagin was studied on reference and clinical strains of *S.aureus* (n 25); *E.coli* (n 22); *K. pneumoniae* (n 6); *P.aeruginosa* (n 19).

Results and discussion. The results of antimicrobial activity of dressing materials demonstrated high qualities of dressings, impregnated with composition of decamethoxin with modified biopolymers (carboxymethylamylum, oxyethylcellulose) against strains of *S. aureus*, *E. coli*, *K.pneumoniae*, *P. aeruginosa*. We found bigger zones of growth retardation of *S. aureus* ($32,40 \pm 0,51$ mm), *E. coli* ($26,40 \pm 0,32$ mm), *K.pneumoniae* ($20,80 \pm 0,37$ mm), when cotton with composition of decamethoxin was used, in comparison with other dressings. Activtex C, activtex CF, activtex F were active against *S. aureus* (zones of growth retardation - 21-22 mm, $p < 0,01$), *E. coli* (zones of growth retardation - 15-20 mm, $p < 0,01$), *K. pneumoniae* (zones of growth retardation - 15-19 mm, $p < 0,05$). But their activity on the strains of *P. aeruginosa* (zones of growth retardation - 10-16 mm) was lower than in cotton impregnated with decamethoxin (growth retardation - $21,8 \pm 0,2$ mm, $p < 0,001$).

Conclusion. Dressings, impregnated with composition of decamethoxin have higher antimicrobial activity than materials with chlorhexidine digluconate, furagin. It proves their effectiveness in topical treatment of purulent-inflammatory diseases.

Key words: antiseptics, decamethoxin, chlorhexidine, furagin, wounds.

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ULTRASTRUCTURAL CHANGES OF RETINA IN THE SIMULATION OF DEPRIVATION MYOPIA

Introduction. Modern clinical research methods, despite its high resolution, do not allow to estimate the ultrastructural retina changes in the dynamics of pathological process. Dynamic monitoring of retina changes occurring in a process of eye myopisation has a clinical significance in a case of progressive myopia. Studying of ultrastructural retina changes when myopia progressing is possible only in the standardized experimental conditions. The obtained data will allow to detail a pathogenesis of the dystrophic changes formations arising in various retina areas under myopia conditions.

Materials and methods. Experiments were carried out on 12 Wistar rats in the experimental biological clinic of the Odessa National Medical University in

compliance with bioethics principles. Deprivation myopia has been simulated in the animals aged of 14 days by a blepharorrhaphy of the one eye. In 14 days, the animals were put out of experiment. Fragments of the eyeball, after suitable preparation are studied by means of transmission electronic microscopy.

Results. In the retina of rats with deprivation myopia model the signs of hydropic changes in cytoplasmic structures of pigment epithelium cells are fixed, as compared to the intact animals retina. The apical and central areas are well defined in the cells, while the basal folding is shortened. The folds are loose, sometimes not defined at all. In the basal cell the foci of of cytoplasmic organelles destruction are found. Immaturity of the discs in outer segments are noted, relatively fewer quantity of mitochondria are present in the inner segments, the basis makes up the cytoplasm with few organelles. Nuclear region of photoreceptor cells and other retina layers does not differ practically from the ultrastructure of the intact animal retina. However, in some areas a hydrops of nuclear area and atrophy of other parts of the photoreceptor cells are occurred. Ganglion cells are large ones, with plenty of protein synthesis organelles. It should be noted that the hydropic changes in the nuclear area and ganglion cell synapses are observed in some retina parts. Processes of the Mueller cells in this field are the electron-dense and contain a vacuolated cytoplasm. Reticular layers are formed.

Conclusion. Simulation of deprivation myopia is accompanied by dystrophic and degenerative changes in the retina, predominantly of the pigment epithelium and photoreceptor cells. Cellular hyperhydratation and destruction of organelles are observed. Detected violations of the structure are most pronounced in peripapillary retinal areas and the minimal ones in the equatorial region.

Key words: retina, myopia.

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AGE DYNAMICS OF THE LIVER FUNCTIONAL STATE ON THE BACKGROUND OF THE EXPERIMENTAL CHRONIC ALCOHOLIC LIVER DAMAGE AND I'TS PHARMACOLOGICAL CORRECTION.

Introduction. The alcoholic liver disease becomes more common in Ukraine, which has a high fatality rate. Pathologies associated with alcohol intoxication are the major social and medical problems of our society.

In the literature despite the large number of studies the mechanisms of the biological effects of alcohol, the age characteristics of the changes of biochemical parameters in female rats during chronic alcohol intoxication are covered not enough.

Work goal – to explore and to study the effect of chronic alcohol intoxication on serum biochemical parameters in immature and young mature rats and in terms of pathogenetic correction of chronic alcoholic liver disease quercetin and L-arginine L-glutamate.

Materials and methods. Modeling chronic alcohol intoxication conducted by the method of G. Kovaleva and A. Petrenko. Female rats were divided for 2 ages groups: I – immature rats (60-75 g weight, n = 40), II – young mature rats (185-190 g weight, n = 40). Both of these groups were divided into sub-groups: 1 – control group (n = 10); 2 – rats with chronic alcoholic liver disease (CALD, n = 10), 3 – rats with CALD + quercetin (100 mg / kg, n = 10); 4 – rats with CALD + L-arginine L-glutamate (35 mg / kg, n = 10).

All statistical analyses of the obtained in the performance of digital data was carried out by a computer program Microsoft Excel XP, using the non-parametric U Mann-Whitney test for small samples. Differences were considered statistically significant if the p value was <0,05.

Results. The results of the study of age-related changes in some biochemical parameters of blood serum are given in the article. It characterizes the pathogenesis of chronic alcoholic liver disease in experimental modeling of chronic alcohol intoxication in female rats.

Established that under conditions of chronic alcoholic liver disease observed changes in serum of female rats, describing the development of cytolysis of hepatocytes, hepatocellular insufficiency syndrome and intra-hepatic cholestasis, which increase significantly.

The effect of quercetin and L-arginine L-glutamate on biochemical indices of blood of animals with chronic alcoholic liver disease in two age groups is studied.

Conclusion. Chronic alcoholic liver damage is accompanied by the deviations of the main reliable biochemical data of carbohydrate, protein and lipid metabolism at the laboratory rats of the both age groups. The presence of cytolysis syndrome, cholestasis, mesenchymal inflammation confirm the development of hepatocellular insufficiency. It is proved the significant decrease in immature and young mature rats with chronic alcoholic liver damage serum parameters: total protein, albumin and a significant increase – total bilirubin bound and unbound forms, increased activity of alanine aminotransferase, aspartate aminotransferase, γ -glutamyltranspeptidase, alkaline phosphatase and thymol test in comparison with control groups of the appropriate age.

It is established the positive effect of hepatoprotectors: quercetin and L-arginine L-glutamate. Established that quercetin restores protein synthetic function of the liver, which resulted in a significant reduction in the concentration of total bilirubin and its fractions, reduced activity of alanine aminotransferase, aspartate aminotransferase, γ -glutamyltranspeptidase, alkaline phosphatase, decrease in the concentration of total, direct, indirect bilirubin and thymol test. It is proved that the introduction of L-arginine L-glutamate significantly improved the functional state of the liver, compared with quercetin, which was manifested by decreasing of the intensity of cytolytic, cholestatic processes and of the manifestations of toxic liver damage and

restoring the reparative regeneration of liver tissue at the immature and young mature rats with chronic alcohol intoxication.

Key words: alcoholic liver disease, rats, serum biochemical data, cytolysis and cholestasis syndromes.

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COMPARATIVE CHARACTERISTICS OF EXPERIMENTAL REPRODUCTION DISTURBANCES PORPHYRIN EXCHANGE ON THE MODELS ALCOHOLIC AND LEAD POISONING

Introduction. The biological role of heme compounds high. Disorders of porphyrin synthesis caused by a hereditary deficiency of activity as one of the eight steps of heme synthesis and caused by the influence of many toxic environmental factors. There are disturbances of metabolic homeostasis and energy shifts of the body. The most optimal model of pathology can allow to conduct investigation of the whole body and to determine the degree of some changes. For the purpose of evaluating pathophysiological features of disturbances porphyrin metabolism in rats conducted a series of studies on different experimental models (chronic intoxication with ethanol, acetate of lead) and determined certain parameters of heme metabolism and the degree of liver injury in this case.

Materials and methods. The degree of liver damage by alcohol intoxication was studied due to morphological, morphometric and biochemical methods. We used 150 animals on the 2 experimental models for disturbed porphyrin metabolism: 1) by ethanol intoxication for 90 days were administered 0.1 ml / kg of 40 % ethanol; 2) subcutaneous injections of lead acetate at the rate by 2.5 mg per 100 g weight or 10 mg per 1 kg of body weight every day for 10 days. In intact rats and rats with disturbed porphyrin metabolism determined levels of ALA and PBG in urine, enzyme activity of ALT and AST, alkaline phosphatase (ALP), thymol test parameters in serum.

Results. Investigation of biochemical parameters of the liver during ethanol intoxication showed a significant increase of total bilirubin in the blood - in 2.3 times at the subgroup with disturbances of porphyrin metabolism and in 1.83 times at subgroup 2 compared with controls. Thus, the figure was significantly elevated at subgroup 1 in comparison with subgroup 2. Significantly raised the rate of total lipids – in 1.8 times, cholesterol - in 1.5 times at subgroup 1 compared to intact animals. Increasing these parameters may indicate disturbances of bile formation and bile outflow. The degree of increased activity of enzymes ALT and AST in the blood is a marker of liver cell cytolysis. As a result of the experiment indicated

aminotransferase increased activity was observed in both subgroups. Thus, the activity of ALT increased in the 1st subgroup in 3.9 times in the 2nd subgroup in 2.67 times, while AST activity increased relatively less, but significantly relative to control - in the 1st subgroup in 2.87 times, and in the 2 subgroup in 1.67 times. These results indicate a high degree damage of the liver cells due to the experimental conditions in both subgroups, thus increasing AST reflects mitochondrial damage and cell structures proves severity of alcohol intoxication animals. Analysis of the results indicates the development of acute inflammation in the liver due to alcohol intoxication in both subgroups, the degree of investigated parameters greater in the subgroup with disturbed porphyrin metabolism. Thus, long-term administration of ethanol to rats leads to the development of hepatitis and in disturbances of the porphyrin metabolism.

Definition of indicators intermediary metabolism of heme in urine showed that rats of the 1st subgroup had increasing of uroporphirin in 3.0 times and coproporphorin in 1.42 times compared with the control. The content of ALA and PBG increased in 34.3 and 2.6 times, respectively. In 2 subgroup of heme metabolic indices did not change.

These results led to the conclusion that chronic alcohol administration to animals leads not only to toxic liver damage and the development of acute hepatitis, but also to disorders of porphyrin metabolism. Such disorders were observed only in some animals (4 %, $p < 0.05$ relative to the 2nd subgroup of rats), which obviously had a genetic predisposition to hemoporphirae and alcohol intoxication allowed to discover it. These data coincide with the literature that disturbances of porphyrin metabolism occur with chronic use of alcohol.

In the experimental reproduction of lead porphyria found a significant increase in the levels of ALA and PBG in urine - it increased in 6.74 and 9.7 times respectively, compared with intact rats, indicating the disturbances of porphyrin metabolism in rats.

Research indicators of liver cytolysis due to experimental conditions revealed increase of thymol test in 3 times ($p < 0.05$) in group 2 compared with intact rats. Significantly increased activity markers of liver cell damage ALT and AST: in 5.0 and 4.1 times, respectively. The activity of alkaline phosphatase increased in 3.71 times. These results can be explained by the development of inflammation, accompanied by increased activity in the serum of rats' indicators of cytolysis, cholestasis and parenchymal inflammation. Thus, the results revealed hepatitis due to lead intoxication.

Our studies are reasonable grounds for future research on finding the most optimal and easily reproducible experimental model of disturbances porphyrin metabolism.

Conclusions. 1. Chronic alcohol intoxication experimental rats not only lead to liver damage, but also disturbances of porphyrin metabolism. Thus disturbances of porphyrin metabolism are found in approximately 4% of test animals.

2. Lead intoxication causes an increase in markers of porphyrin metabolism: ALA and PBG content in urine increased in 6.74 and 9.7 times respectively. Thus there is the most severe damage of the liver: ALT and AST activity increased in 5.0 and 4.1 times respectively.

3. Acute hepatitis occurs on the background the influences of all trigger factors (ethanol, lead), accompanied by increased activity in the plasma of rats indicators cytolysis, cholestasis and tissue inflammation.

4. The best possible reproduction for metabolic model porphyrins is lead porphyria.

Key words: porphyria, model, alcohol and lead intoxication.

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COMPARATIVE HISTOLOGIC CHARACTERISTIC OF HEALING ENTERO-ENTERIC ANASTOMOSIS IN AN EXPERIMENT USING PROLONGED PERIDURAL ANALGESIA

Objectives. Morphological study is an important confirmation of the clinical findings on the effectiveness of anesthesia and treatment in the experiment. The aim of the study was to compare the morphological changes on the third day after the imposition of entero-entero anastomosis in dogs during prolonged peridural analgesia using 0.25% bupivacaine and without it.

Methods. An experimental study was performed on 20 mongrel dogs in 2011 in chronic experiment. During working with laboratory animals we followed the recommendations of the European Commission to conduct biomedical research using animals and methodological recommendations of the State Pharmacological Center MDH Ukraine. All studies including surgery and removal plots entero-entero anastomosis for histological studies were conducted under general anesthesia with regard to the adequacy of the components of anesthesia. Taken material fixed by 10% formalin solution, was prepared sections according to the standard scheme, stained with hematoxylin and eosin, and then examined under a microscope.

Results. Summarizing the results of histological examination revealed that the use of prolonged peridural analgesia by bupivacaine 0.25% on the 3-rd day of the experiment provides better anti-inflammatory and reparative changes in place imposition entero-entero anastomosis compared with the control group with conventional treatment and anesthesia. In the main group was found less severity of infiltration in the wall of the small intestine, degenerative changes of wall elements and circulatory manifestations in the small intestine were less significant compared to the control group animals. Changes in immune system activity and reparative processes in animals of the second group were better compared to the control group.

Conclusions. Histologically found that the use of peridural analgesia helps to reduce the severity of inflammation, early activation of reparative processes, improve microcirculation in place entero-entero anastomosis of the small intestine, which reduces the risk of suppuration, degradation and failure of the seam. Therefore, the use of peridural analgesia by low concentrations bupivacaine recommended for use in clinical practice of abdominal patients.

Key words. Peridural analgesia in the experiment, the morphological changes in the entero-entero anastomosis.

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MORPHOLOGICAL CHANGES OF IMMATURE RATS THYMUS WITH CHRONIC DRUG – INDUCED HEPATITIS AND THEIR RELATIONSHIP WITH TRANSFORMING GROWTH FACTOR β -1 LEVEL, CORRECTION BY "ANTRAL" AND "QUERTIN."

Summary. This article focuses on the relationship between the level of transforming growth β -1 factor and morphological changes in the tissues of the immature rat's thymus with rifampin-isoniazid induced chronic hepatitis. The article also discusses the differences of the immature rat's thymus morphological picture with chronic drug induced hepatitis after correction by "Quertin" and "Antral".

Materials and methods. Experimental study of the immature rat's thymus morphological changes with chronic rifampicin-isoniazid-induced hepatitis performed on 40 nonlinear white immature rats, aged 1 month with an initial weight 50-55 g.

All experiments were conducted in compliance with the "General ethical principles of animal experiments", adopted the first National Congress on Bioethics (Kyiv, 2001).

Hepatitis was simulated by intragastric administration of 86 mg/kg of rifampicin and 50 mg/kg of isoniazid three times a week, during 29 days. On 30 day animals were subjected to euthanasia by cervical dislocation under anesthesia, sampling and fixation of morphological material carried by the conventional method. Statistical analysis of the results was performed in "STATISTICA 6.1"

Introduction. The problem of drug induced liver disease is relevant both in Ukraine and in the world [Shulpekova, 2008; Skrypnyk, 2008]. Increasing of iatrogenic injuries the liver, and increasing level of diseases requiring prolonged using of drugs with hepatotoxic effects, for example tuberculosis is observed [Mishin, 2004, Murray, 2008]. In some articles discusses the relationship of transforming growth factor β -1 and the development of thymus accidental involution, it is therefore appropriate to investigate the functional and morphological state of the thymus with chronic drug induced hepatitis, especially in the child's body, because the value and impact of these organs on immunological reactivity during this period is very important [Rikalo, 2009, 2010, Kapitonova, 2006].

Thymus is very variable organ, its structure changes in a variety of congenital and hereditary diseases, medicinal effect on the organ in different periods of ontogenesis [Roit, 2000].

Unexplored is the influence of cytokines, including transforming growth β -1 factor on the morphological structure of the thymus [Voloshin, 2011, Lukyanov, 2006, Holodkova, 2008].

The aim is - to establish relationships between the morphological pattern of the thymus in chronic drug-induced hepatitis and level of transforming growth factor β -1 (TGF- β 1) to determine the relationship between drug-induced hepatitis and specific reactivity of immature rats.

Results. These morphological studies indicate a very significant deviation of thymus morphological picture in animals of control and experimental groups. We revealed changes increasing the area of the medulla relative to cortex, as in the cortex observed different-sized areas of delymphatisations, reduction of the lymphocytes number in the thymus cortex.

The tendency to inversion of cortical and medullary areas also reflects the thymus accidental involution. Regression of cortex area caused by a decrease in the number of lymphoid cells, inhibition of proliferative activity and reduced lymphocytopoiesis in the thymus, resulting from exposure to toxic substances on the immune system.

In the immature rats thymus treated by "Antral" observed morphological features of the thymus accidental involution, namely reducing the relative area of the cortex, reducing the number of thymocytes in the cortex and medulla and rising of epithelioreticulocytes number. Although it should be noted that all of the effects are less pronounced in comparison with the (RI) group.

In the thymus tissue of rats which on background of drug hepatitis treated "Quertin" in comparison with the experimental group, we can observe significant morphological signs of regeneration, including increasing the ratio of the area of the cortex to the medulla and the number of cells.

Key words: thymus, liver, chronic drug-induced hepatitis, immature rats, rifampicin isoniazid, "Quertin", "Antral".

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MOLECULAR ASPECTS OF FIBROSIS IN HEART REMODELING CAUSED BY ITS ADRENERGIC INJURY

Introduction. The goal of this work is to perform the combined investigation of the problem of diastolic dysfunction of the heart including functional, morphological and molecular methods.

Materials and methods. Isoproterenol (Sigma, USA, 5 mg/kg) was injected subcutaneously to the Wistar rats 7 days at raw. The evaluation of results was performed in 26 days after the course of isoproterenol. Some of these rats got the intravenous injections of Corvutin (5 mg/kg by quercetin) for 5 days followed by per oral Quertin (15 mg/kg by quercetin) for 21 days. Then we have evaluated the cardiohemodynamics using Millar Instr. (SPR-838; Millar Instruments, Houston, TX). The heart was subjected to morphological and molecular studies. Gene expression was performed using High Capacity cDNA Reverse Transcription Kit (Invitrogen™) for reverse transcription and TaqMan®Universal PCR Master Mix (2X) and 384-samples TaqMan®Low Density Arrays (Life Technologies, CIIA) for mRNA of 48 genes.

Results. Rats after adrenergic injury of the heart by isoproterenol had higher parameters of myocardial elastance, end-diastolic pressure and lower end-diastolic volume indicating the diastolic dysfunction of the heart. On morphological level it is associated with massive fibrosis of myocardium. We have observed the higher level of mRNA of collagens type 1-alpha1 and 3-alpha1, and tissue inhibitors of matrix metalloproteinases type 1 and 2 and lower level of matrix metalloproteinase type 2 mRNA compared to controls. And the correction of this injury with combination of quercetin-containing drugs mostly canceled the isoproterenol-induced pathological changes.

Conclusion: We have shown that diastolic dysfunction in this model is associated with massive fibrosis in myocardium and higher level of expression of genes encoding collagens and inhibitors of matrix metalloproteinases. Furthermore, we have shown that quercetin-containing drugs may protect the heart from all of the mentioned changes.

Key words: myocardial injury, fibrosis, gene expression.

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MECHANISMS AND STAGING OF ENDOGENOUS INTOXICATION SYNDROME DEVELOPMENT

Summary. The analysis of studied indexes in dynamics made possible to distinguish four stages of endogenous intoxication syndrome (EIS) development at traumatic illness (TI) of brain: reactively-metabolic, inflammatory-toxic, stage of system endogenous intoxication (final development of EIS) and stage of multisystem insufficiency (MSI) development. The reactively-metabolic stage development underlie hyperergic reaction of the neuroendocrine systems with the intense increase in blood of adrenocorticotropic hormone, corticosterone, vasopressin; hypermetabolism and development of “diabetic pentalogy” (hyperglycemia, hyperinsulinism, insulin resistance, decline of beta-cells function and tissues sensitiveness to insulin). The inflammatory-toxic stage was determined by intense

hyperenzymemia, which specified on the damage of cellular and lysosomal membranes; by endogenous intoxication (accumulation in blood middle mass molecules (MMM) and products of lipid peroxidation); by generalized inflammatory reactions (increase of circulatory immune complexes in blood, C-reactive protein, ceruloplasmin and interleukine-1-beta). The stage of system endogenous intoxication was characterized by intense accumulation lactate in blood, that specified on joining of system hypoxia; by the intense secondary MMM increase with the accumulation of low-molecular and aromatic peptids; by exhaustion of the antioxidant systems; by the intense increase of proinflammatory cytokines, especially interleukine-1-beta and interleukin-6; matrix metalloproteinase activating; by the intense increase of neuronal proteins (S100B and NSE), that specified on further generalization of inflammation and progress of brain damage. Development of the MSI stage was determined an urea accumulation in blood and kreatinine, fall-off of metabolism index, that testified to the deep decreasing of metabolism and parafunction liver and kidneys; by the further MMM accumulation; red blood cells hemolises; by the intense NSE increase; by antibodies to the phosphotides in blood, especially – to cardiolipin, that reflected addition of autoimmune processes; by the damage of heart, what the increase of activity of lactate- and aspartate dehydrogenase testified to, creatininekinase-MB and troponin I.

Key words: traumatic disease, brain, endogenous intoxication syndrome.

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MORPHOMETRIC CRITERIA OF MYOCARDIAL INJURY IN RATS OF BOTH SEXES WITH STREPTOZOTOCIN-INDUCED DIABETES MELLITUS AND DIFFERENT ACTIVITY OF NITRIC OXIDE

Introduction. According to the WHO data first place among endocrinopathies based on indicators of morbidity, disability and mortality takes diabetes. Among its hardest and most common complications are neuropathy and cardiomyopathy a significant role in the pathogenesis of which plays defected metabolism of nitric oxide (NO). With diabetes mellitus there occurs a state of generalized deficiency of NO. The study of epidemiology of diabetes mellitus has also revealed the presence of a gender component. Other studies show the role of male and female sex hormones in the ability of NO the state of the myocardium in pathological conditions. However there are no complex studies proving a direct correlation between gender and activity of NO in the pathogenesis of diabetic cardiomyopathy. Aim– to determine the gender effect of nitric oxide modulators on the degree of structural changes in rat myocardium during the development of diabetesmellitus.

Material and Methods. Matured rats (females and males), have used for experiments, which were divided into 3 groups: group 1 – animals with streptozotocin-induced diabetes mellitus (SDM) caused by streptozotocin (50 mg/kg); group 2 – animals with SDM on the ground of L-arginine (25mg/kg, one day before and subsequently daily intraperitoneally until the withdrawal of animals from the experiment); group 3 – rats with SDM on the ground of aminoguanidine (first month – 10mg/kg one day before and then daily intraperitoneally, second and third months – 5mg/kg daily intraperitoneally). Rats were studied in 1, 2 and 3 months of SDM manifestation. Investigations have included calculation of percentage damaged cardiomyocytes.

Results. Research of animal from the first experimental group showed that 1 month after injection of streptozotocin in ventricular myocardium there were single necrosis of rich black color with clear contours in the absence of transverse stripes, contracture of cardiomyocytes, moderate swelling of the stroma. At the same time morphological changes of the development of SDM with L-arginine were similar, but their severity was significantly lower. Structural abnormalities of the development of SDM with aminoguanidine were more pronounced than in animals of the first group. Macular and necrobiotic changes of cardiomyocytes were distributed in nature, with necrosis covering several segments of muscle fibers that led to complete disappearance of cross stripes. With increased duration of hyperglycemia (2nd and 3rd months of the experiment) deepening of the above pathological changes was observed. The development of SDM is accompanied by an increase in the number of necrotic cardiomyocytes in the myocardium of the ventricles, the intensity of these changes is more significant in males. Prolonged use of L-arginine reduces the degree of structural defects in the myocardium at SDM equally in males and females, and aminoguanidine – increases the signs of structural damage especially in females, despite the postponement of such an effect.

Conclusion. The development of SDM in rats was accompanied by an increase in the number of necrotic cardiomyocytes, the intensity of these changes was more significant in males. Prolonged use of L-arginine reduces the degree of structural defects in the myocardium with SDM equally in males and females, and aminoguanidine increases signs of structural damage especially in females, even though this effect was postponed. For all model conditions (absence of therapy, L-arginine or aminoguanidine) the degree of myocardial damage during the development of SDM is lower in females than in males.

Key words: diabetes mellitus, myocardial structure, L-arginine, aminoguanidine, sex.

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PATHOPHYSIOLOGICAL MECHANISMS OF PARTICIPATION OF DOPAMINE IN RENAL DYSFUNCTION IN EXPERIMENTAL NEPHRITIS

Introduction. Role of serotonin, melatonin, dopamine and noradrenalin in adjusting of circadian rhythm of kidney function in a norm and pathology intensively studied the last years [I.G.Kushnir, G.I.Kokoshchuk, 2008]. It is shown that these monoamines influence mainly on a glomerular vessels and processes of ultrafiltration, however data about the state here glomerulo-tubular and tubulo-tubular balance and tubulo-glomerular feedback are very small. Aim of this investigation was to study the role of dopamine in providing of attended of transport natrium ions in proximal and distance segments of nephron with experimental nephritis.

Materials and methods. Experiments are conducted on 26 Vistar rats with mercuric chloride nephritis (1 mg/kg of HgCl_2 once per day). Level of dopamine in the kidney was increased because of blockade of monoaminooxidase-B with selegiline (2,5 mg/kg in 9⁰⁰ and 21⁰⁰) in the day of experiment. After a 5% water loading investigated the partial functions of nephron by our methodology (patent UA №83666 MPK G 01 №33/50).

Results. According to the findings in animals with experimental nephritis in the light phase of the circadian cycle of selegiline causes a decrease diuresis, decreased excretion of endogenic creatinine and natrium ions.

In the night hours selegiline caused by a similar effect on the direction of the nephron and this effect was even more pronounced than in the light phase of the circadian cycle.

To determine correlation between the work of the proximal and distal parts of the nephron in the day and night correlation analysis of the functional state of partial functions of the nephron.

In the light phase of the daily cycle detected clear direct correlation between filtration charged natrium ions and its transport in the proximal and distal nephron (the coefficient of correlation $r = +0,994$ and $r = +0,678$, $p < 0.01$, respectively). Between the proximal and distal transport of natrium ions also revealed a direct correlation ($r = +0,588$, $p < 0.01$).

Selegiline in the dark phase of the daily cycle significantly reduced the correlation between the conjugate filtration charged sodium ions and its transport in the distal tubules ($r = +0,404$, $p < 0.05$).

Selegiline showed an ambiguous effect on the partial nephron function: in the dark phase of the daily cycle blocked proximal reabsorption of natrium, which is typical for the effects of dopamine on the kidney, but at night selegiline stimulated distal sodium transport, which resulted in reduction of the cation excretion with urine.

Conclusion. In experiments on rats with experimental nephritis under the influence of selegiline - selective inhibitor of monoamine oxidase-B, found the deviation of typical circadian rhythm of kidney function and loss of function stated conjugation between the processes of transport of sodium in the proximal and distal nephron.

These data indicate an important role of dopamine in the mechanisms maintaining tubulo-tubular balance in the nephron, particularly in the dark phase of the circadian cycle.

Key words. Experimental nephritis, circadian rhythm, dopamine.

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TO THE QUESTION OF HYPERGLYCEMIA PATHOGENESIS UNDER CONDITIONS OF ACUTE DISTURBANCE OF CEREBRAL CIRCULATION

Introduction. Interdependence of ischemia-reperfusion brain damage and carbohydrate metabolism disorders has been proved by clinical observations and experimental investigations. However, the pathogenesis of a worse course of acute disorders of cerebral circulation at hyperglycemia presence and causes of its in patients without diabetes and with this suffering remains not exactly determined. Purpose of investigation – to carry out of comparative analysis of experimental diabetes mellitus influence and incomplete global cerebral ischemia with a subsequent reperfusion on indices of morphofunctional state of pancreatic islets.

Material and methods. Morphometric parameters of the pancreas islets, concentrations of insulin immunoreactive material and insulin in β -cells and islets were studied in rats with four-month diabetes mellitus (DM) (streptozotocin, Sigma, USA, 60 mg per 1 kg of body weight, only once) as well as in nondiabetic animals on the 12th day after the 20-minutes bilateral occlusion of the common carotid arteries using by indirect immunofluorescence method with the help of commercial set of Peninsula Laboratories Inc. (USA) set by digital computer system analysis VIDAS-386 (Kontron Elektronik, Germany) in an automatic regime. Statistical significance of differences were estimated by Student t-criterion.

Results. Ischemia-reperfusion of the brain in rats without DM and four-month DM resulted in the origin of isolated β -cells, dispersed on area of cuts. In small, middle and large islets DM and ischemia-reperfusion of the brain in rats without DM reduce for sure the area of insulin immunoreactive material and the filling coefficient of the islets by given material. Gigantic islets disappear in the pancreas of rats with DM and in case of combination of diabetes with ischemia-reperfusion.

There was a decrease in the number of β -cells in small islets 32 % less, the insulin concentration in the cell – 30 % less, insulin content in the islet and concentration of the hormone in it – 116 and 33 % less correspondingly in rats without DM after ischemia-reperfusion of the brain. DM reduced the number of cells in islets 78 %

less, insulin concentration in β -cells – 17% less, as well as insulin content and its concentration in islets – 116 and 33 % less.

In the middle islets of rats without DM ischemia-reperfusion of the brain reduced the number of β -cells 27 % less, and insulin concentration in cells, content and insulin concentration in islet – 45, 84 and 91 % less accordingly. DM influence on the number of β -cells was the same, but it was somewhat lower on the rest mentioned parameters: – insulin concentration in cells decreased 26 % less, the content and insulin concentration in the islet – 63 and 65 % less correspondingly.

In large islets of rats without DM after ischemia-reperfusion of the brain the number of β -cells decreased 71% less, insulin concentration in cells – 28 % less, insulin content in islets and concentration of the hormone in it – 119 and 91 % less correspondingly, and DM decreased the number of cells 151% less, insulin concentration in β -cells – 20 %, content of insulin and its concentration in the islets – 189 and 175 % less. It is peculiar, that ischemia-reperfusion of the brain in animals with DM did not influence on none of the indices under investigation comparison with those under condition of diabetes in all islets in animals with DM.

Conclusion. In rats without diabetes mellitus incomplete global ischemia-reperfusion of the brain on the 12th day of observation results in appearance of isolated β -cells, not united in islets significantly, decrease, for certain, the number of β -cells in small, middle and large islets of the pancreas, reduces the general insulin content and its concentration in the islets and β -cells.

Key words: brain ischemia-reperfusion, hyperglycemia, diabetes mellitus, pancreatic islets.

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ULTRASTRUCTURAL CHANGES OF RATS CARDIAC MUSCLE UNDER EXPERIMENTAL DIABETES AND THEIR CORRECTION FEASIBILITIES BY MEANS OF METABOLIC DRUGS

Summary. The object of our work is to study the ultrastructural changes of cardiac muscle under experimental diabetes mellitus (DM) and to reveal the possibilities of their correction by means of epadol or corvitin drugs.

Materials and methods. The diabetic state of male Wistar rats was induced by single streptozotocin injection (50 mg/kg, iv, after 24 hours fasting). In 72 hours hyperglycemia was confirmed by blood glucose assay and the animals were fed by standard chow under free access to water. Diabetic rats (after 72 hours of STZ injection) were fed by standard chow and compared with those that were fed by chow with supplementing of omega-3 PUFAs (epadol produced by Kyiv Vitamin Factory, Ukraine) that contains 43% of eicosapentaenoic and docosahexaenoic acids 100 mg/100g/day and corvitin 50 mg/kg applied by gavage in the course of 4 weeks. As a normal control age-matched non-diabetic rats were used. Animals were separated in 4 groups: 1. Non-diabetic control rats (n=11); 2. Diabetic rats (n=10); 3. Diabetic rats supplemented by omega-3 PUFA (n=9); 4. Diabetic rats supplemented by corvitin (n=9). Specimens of hearts for electron microscope study were prepared by conventional procedure [Karupu, 1984]. Specimens were studied by electron microscope PEM-125 (Ukraine).

Results. On the assumption of DM was observed the vacuolization of mitochondrioids, pronounced edema, loss of krist regularity, total destruction. In some parts was observed the boundary edema and the sarcolemma destruction. Under the DM modelling the endothelial dysfunction was developed with the total endothelial edema of capillary, its destruction and edema of perivascular space. It was shown that the use of corvitin under the DM results in the elimination of endothelial and mitochondrial dysfunction but the processes of destruction and signs of edema retain. The use of omega-3 PUFA under the experimental DM averts the ultrastructure of myocardium disorder and the development of edema, normalizes the structure of sarcolemma and mitochondria in the sarcolemma part of cardiomyocytes.

Conclusion. It was shown that under the DM the corvitin and omega-3 PUFA positively influence on the myocardium of the rats left ventricle. The influence of corvitin mostly shows itself as ultrastructural signs of strengthening of biosynthetic processes, elimination of endothelial dysfunction and in the smaller degree by the recovery of contractile function. Omega-3 PUFA considerably prevents the negative displays of DM (on the ultrastructural level) and concerning the improvement of energetic function of cardiomyocytes. Therefore we consider that the study of the combined action of corvitin and omega-3 PUFA under the experimental DM should be recommended.

Key words: myocardium, diabetes, corvitin, omega-3 PUFA.

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**HISTOSTRUCTURAL CHANGES IN THE TESTIS IN CONDITIONS OF
VENOUS HYPOXIA AND CORRECTION OF BLOOD FLOW**

Introduction. The problem of varicose veins of the spermatic cord is one of the actual practice of Andrology, which is due, primarily, its distribution and the negative impact on spermatogenesis [Andrade-Rocha, 2007; Artyuhyn, 2008; Ahunzyanov, Nurmeev, 2010]. Shortness outflow of blood through the testicular vein can lead to venous hypoxia and disorders of spermatogenesis regardless of disease duration [Gat et al., 2006]. When varicocele violation fertility diagnosed in 80% of cases, and infertility - from 35 to 45% [Kogan et al., 2009; Will et al., 2011; Ficarra et al., 2012]. Venous stasis accompanied by lesions of testicular tissue, because it belongs to a leading position among the causal factors of male infertility.

The aim of this work was to create an experimental model of venous hypoxia, which served as the basis for developing a new method of correction krovovidtoku testicles.

Materials and methods. Research conducted on 40 mature white laboratory male rats Wistar weighing 150-180 g Experimental animals were divided into 3 groups: Group 1 - intact animals (10 rats); Group 2 - animals which simulated venous hypoxia (15 rats); Group 3 - animals which simulated venous hypoxia corrected krovovidtoku (15 rats). For the purpose of modeling krovovidtoku testicular surgery was performed, which was developed and patented [Hrytsulyak et al., 2009].

Results. The study found that 7 day simulation venous hypoxia testicular weight decreased to $0,910 \pm 0,035$ g (vs. $1,406 \pm 0,084$ g in control), decreased diameter convoluted seminiferous tubules to $137,33 \pm 3,27$ μ m (compared to $197,24 \pm 5,25$ in control). There is edema mizhkanaltsevoyi connective tissue cells accumulate in it limfoplazmotsytarnoho series. Clearance of all parts of the microcirculation expanded. The usual structure retain 39% convoluted seminiferous tubules found in 36% of mild disorders of spermatogenesis, and 20% - most spermatogenic epithelium cells shifted into the lumen and necrotic.

By histological and morphometrical methods it was shown, that experimental venous stasis in the testis leads to structural changes in it, which resemble ones appearing in men suffering varicocele testis. The results of study demonstrated that offered way of testicular blood flow correction helps venous blood outflow and has positive influence on spermatogenesis.

Conclusions. 1. Modeling in the testis venous hypoxia for 30 days accompanied by a decrease of its mass by an average of 40.4%, convoluted seminiferous tubules diameter to 42.0% in 34.0% of them there is a degree of cell damage severe spermatogenic epithelium 8.0% - devastated. The number of cells is reduced spermatogenic epithelium. Volume interstitial nuclei endocrinocytes reduced by 9.3%.

2. Experimentally, we have developed a way of regulation of venous outflow from the testicles to the background of hypoxia by excluding from circulatory caudal epigastric vein 30 days reduces venous hypoxia in the body and increase to 13.3% of its mass, diameter convoluted seminiferous tubules - 32.8%, the number spermatotsytiv on stage pahitny - 15.7% spermatids 7th stage of development - by 36.6% and the volume of interstitial nuclei endocrinocytes - by 9.4% compared with venous hypoxia.

Key words: venous hypoxia, spermatogenesis, blood outflow correction.

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ELECTRON MICROSCOPIC PICTURE OF THE CHANGES IN THE LUNGS OF RATS IN 14, 21 AND 30 DAYS AFTER SKIN BURN, ON THE BACKGROUND OF INFUSION THERAPY BY SOLUTION OF LAKTOPROTEIN WITH SORBITOL

Introduction. Burn injury causes the formation of a number of morphological and ultrastructural changes in the lungs with adaptive content and characterized by clearly defined phase flow. Morphological substrate of adaptive-compensatory change is hyperplasia of organs and tissues that form the dominant functional system to maintain homeostasis [Paramonov et al., 2000; Sikora, Volkogon, 2007].

The aim of the study was to investigate the ultrastructure features aero-hematic barrier in the lungs of rats, which during the first 7 days of the injected solution Lactoprotein sorbitol, 14, 21 and 30 days after burn your skin.

Materials and methods. Experimental studies were carried out in a problematic research laboratory functional morphology and genetics of Research Center of Vinnytsia National Pirogov Medical University, certified SPC MoH Ukraine (certificate № 003/10 of 11.01.2010), down mature white male rats Wistar weighing 160-180 g at the remote period after thermal injury, respectively 14, 21 and 30 days after burn your skin. The studied animals were obtained from the vivarium SI "Institute of Pharmacology and Toxicology AMS of Ukraine" and were in the scientific and experimental clinic at the University of aqueous standard diet with free access to food and water.

In order to organize and conduct electron microscopic studies conducted sampling of small pieces of lung boundary particle respiratory department. The material was fixed in 2.5% glutaraldehyde solution, postfiksuvaly 1% solution of osmium tetraokysu in phosphate buffer, znevodnyuvaly in alcohol and acetone and poured into a mixture of epoxy resins araldytu [Goralska et al., 2011]. Ultrathin sections made on ultramikrotomi LKB-3, contrasted uranilatsetatom and lead citrate method and Reynolds studied using electron microscope TEM-125K, the Department of Histology State University "Ternopil State Medical University named after I. Gorbachevskogo. "

Results. During the research the features of the ultrastructure of aero-hematic barrier in the lungs of rats, that were injected by solution of lactoprotein with sorbitol during the first 7 days after injury have been found. It has been revealed that in 14 days after thermal injury changes in the blood vessels of the microcirculating channel, disturbance of microcirculation and plasmorrhagia, diapedesis of erythrocytes and leukocytes through the vascular walls, destructive changes of all components of alveolar septum and aero-hematic barrier are less expressed than in rats, that after a burn injury were injected with 0.9% NaCl solution, in the same period of observation.

The level of destructive and degenerative changes in the lung tissue, interstitial and alveolar edema of aero-hematic barrier, damage of the respiratory epithelium and endothelium, violations of the surfactant system of lungs are also less evident. In 21 days after burn injury of the skin in the respiratory epithelium and the endothelium there were found signs of reparative regeneration of cells, the existence of which is indicated by the proliferation of alveolitis type II, which confirms their role in the regeneration of respiratory epithelium, hypertrophy and hyperplasia of fibroblasts, as well as hypertrophy of the elastic and collagen fibers in interalveolar septa. In 30 days after the burn injury of the skin in some areas of aero-hematic barrier the signs of regeneration of respiratory epithelium, alternating with undamaged areas was found. In the basal plate excessive proliferation of collagen fibers was observed.

Epithelial type I most areas of aero-hematic barrier contain virtually no cytoplasmic vesicles. The cytoplasm of type II alveolocyte no signs of degeneration, but the number plate osmiofilnyh cells is lower than in rats without burn your skin injected with sorbitol solution Lactoproteinum at the same time of observation. On the apical surface of type II are identified alveolocyte microvilli, endoplasmic reticulum tubules - expanded. There was no alveolocyte type II with marked degenerative changes.

Conclusins. 1. Analysis of ultrastructural changes in the lungs of rats 14 days after burn injuries of the skin, which for the first 7 days were injected with sorbitol solution Lactoproteinum showed that changes in the blood vessels of the microcirculation, abuse mikrotsyrkulyaiyi and plasmorrhagia, diapедesis of erythrocytes and leukocytes through vascular walls, destructive changes in all constituents mezhhalveolyarnyh septum and aero-hematic barrier less pronounced than in rats after burn injuries which skin injected 0.9% NaCl solution at the same time of observation.

2. The level of destructive and degenerative changes in the lung tissue, interstitial and alveolar edema aero-hematic barrier damage the respiratory epithelium and endothelium, lung surfactant system abuse were less pronounced than in rats after burn injuries which were administered 0.9% NaCl solution at the same time of observation.

3. After 21 days after burn injury in the respiratory epithelium of the skin and endothelium showing signs of reparative regeneration of cells, which can show alveolocyte proliferation of type II, confirming their role in the regeneration of the respiratory epithelial hypertrophy and hyperplasia of fibroblasts and hypertrophy of elastic and collagen fibers in mezhhalveolyarnyh CEPT.

4. After 30 days after burn injury skin in some areas aero-hematic barrier shows signs of respiratory epithelial regeneration, alternating with undisturbed areas in the basal plate marked increase in the number of collagen fibers.

Key words: lungs of rats, skin burns, remote period, aero-hematic barrier, ultrastructure, lactoprotein with sorbitol.

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EXPRESSION OF IMMUNE PROTEASOME SUBUNITS LMP2 GUT-ASSOCIATED LYMPHOID TISSUE LYMPHOCYTES IN CONDITIONS OF CHRONIC SOCIAL STRESS AND MODULATION OF THE INTESTINAL MICROFLORA

Introduction. Chronic social stress is able to cause significant disturbance in the functioning of innate and adaptive immunity and is one of the risk factors for later autoimmune and inflammatory diseases [Powell et al., 2013].

However, the main regulators of their own processing and microbial antigens are proteasome constitutive catalytic subunits X, Y and Z, in which immune cells can be filled on immune subunit (immunoproteasomy, IMP) LMP7, LMP2 and MECL-1. Replacement constitutive immune subunits need not only to optimize the presentation of antigens, but also to generate LMP2 / LMP7 / MECL-1-dependent epitopes in areas of inflammation, are not produced in "quiet" tissues [Basler et al., 2013].

The aim of study was to investigate the distribution of LMP2-lymphocytes in intestinal-associated lymphoid tissue of Wistar rats in conditions at CSU and modulation of the intestinal microflora.

Materials and Methods. The study was conducted on 70 female rats of Wistar. Animals received from the nursery Veterinary Association PE "Biomodelservis" (Kyiv). Experimental work was carried out in accordance with national "General ethical animal research" (Ukraine, 2001) and the provisions of the "European Convention for the Protection of Vertebrate animals used for experimental and other scientific purposes" (Strasbourg, 1986). The studied animals were divided into seven experimental groups. It is investigated the influence of chronic social stress and modulation of the composition of intestinal microflora on the distribution of LMP2-cells in the lymphoid structures of the ileum of rats.

Results. It is established that the development of CHSS results leads to an increase of quantity of LMP2⁺-lymphocytes, but change in concentration of LMP2 depends on the kind of stress in immunopositive cells. The development of chronic social stress accompanied by unidirectional tendency to increase the total number of LMP2 + -lymphocytes lymphoid structures in the ileum of rats. Introduction of *kanamycin* to the stressed rats mainly increases the general quantity of LMP2⁺-lymphocytes, but *lactobacterine* results doesn't influence on the total density of LMP2⁺- cells in multidirectional changes in these concentrations of the immune proteasome subunits.

Conclusions. 1. Development of stress increases the number of LMP2 + -lymphocytes lymphoid structures in the ileum of rats does not affect the concentration of LMP2 in cron and decreases in HSS2 in LMP2 + -limfoblastiv and small lymphocytes.

2. Introduction San preferably increases and Lb little effect on the overall density LMP2 + -lymphocytes, changes in different directions concentration of immune proteasome subunits.

Key words: stress, LMP2⁺-lymphocytes, probiotics, antibiotics.

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MORPHOMETRIC ANALYSIS THE STATE OF MITOCHONDRIA IN LUNG AND MYOCARDIUM IN DIFFERENT MODELS OF INTERMITTENT HYPOXIA

Introduction. Since Altman discovered bioblasts, the study of mitochondria (Mt) remains actual. Nowadays, it is known that changes in Mt organization can be observed in association with different physiological situations including cell cycle, cytoskeletal trafficking, energy status apoptosis and different pathology states, including hypoxia [Serebrovskaya 2002.,Giovanni 2005 at al., Chen, 2009]. The adaptation to hypoxia depends from molecular, biochemical and genetic processes in Mt [Scarpulla 2008; Whelan, Zuckerbraun, 2013], but there is no clear understanding way by witch Mt adapts to different hypoxic regimens and how it adapts to intermittent hypoxia (IH) – one of modern methods of adaptaton to the hypoxia. The aim of the study was to investigate the state of lung and heart mitochondria under different models of intermittent hypoxia.

Materials and methods. Work carried out on 65 mature male rats weighing 200-230g. Animals were divided on six groups. The first group – control (intact) animal; the second group animals were breathing hypoxic mixture, containing 7% O₂ in N₂ while 30 min. Animals of third and fourth groups were breathed gas mixture with 12% O₂ in N₂ during 5 min with a duty from to the 15 min breathings by air. This cycle was repeated 4 times per day during three weeks. After that, the fourth group animals were breathed hypoxic mixture, containing 7% O₂ in N₂ while 30 min additionally. Animals of fifth and sixth groups were breathed gas mixture with 7% O₂ in N₂ by the same chart as third and fourth groups. By the end of experiment animals were killed by the decapitation then, lung and myocardium tissues took away for the forward research. The decapitation of animals was conducted under weak ether anesthesia. The research was done in accordance to the European convention about defence of vertebrates that used for experimental aims (Strasburg, 1986) and by the after principles of Helsinki Declaration (2000). Lung and heart ultrastructure were investigated by the method of electron microscopy. Pieces of the lung and myocardium were double fixed with glyturaldehide and oxide osmium, dehydrated in the alcohols of growing concentration and inundated in mixture of epokside resins (epon-araldite).Ultrathin cuts in thick 40-60 nm were contrasted with an uranyl acetate and citras of the lead. In researches were used reagents Fluka (Switzerland) and Sigma (USA). Samples were examined in electronic a microscope PEM-125 (Ukraine). The Mt state was analised by morpho- and stereometric methods estimating: general Mt amount (em./mkm²), amount of structural changed Mt, %

middle Mt diameter (mkm) and the sum of surfaces in the amount of tissue volume $S_{i_{tot}}$, (mkm²) [Вейбель,1970; Ташке, 1980]. Intergroup differences were estimated using Student's t-test; these differences were considered to be significant at $p < 0,05$.

Conclusions. It was shown the adaptive influence of three week breathing gas with mixture 12% O₂ in N₂ while 5 min with fourfold changing for atmospheric air has an adaptive influence on the lung and heart mitochondria. After three week breathing with gas mixture containing 7% O₂ in N₂, the destructive changes of mitochondria in lung and myocardium were dominant.

Key words: mitochondria, intermittent hypoxia, myocardium, lung.

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PECULIARITIES OF STRUCTURAL AND FUNCTIONAL CHANGES OF KIDNEYS AFTER MODULATION OF ION CHANNELS UNDER THE CONDITIONS OF CHRONIZATION OF EXPERIMENTAL EXOTOXIC NEPHROPATHIES

Introduction. Explanation of etiopathogenetic mechanisms of exotoxic nephropathies is particularly actual for scientifically based nephroprotection. *The aim of our research* was to study structural and functional state of kidneys and protective properties of ion channels modulators flocalin and diltiazem under the conditions of chronization of exogenous nephropathies.

Materials and methods. The experiments were carried out on laboratory white rats 0,15-0,17 kg of weight. Histochemic hypoxic nephropathy (HHN) was modeled by administration of sodium nitrite (50 mg/kg, subcutaneously) and 2,4-dinitrophenol (3 mg/kg intraperitoneally). The second group received mercuric chloride solution (5 mg/kg, subcutaneously). Starting from the 30-th day after modeling we injected intraventricularly flocalin suspension and diltiazem (Sanofi, France) at the doses of 5 mg/kg on 1% starch solution during 7 days. Urine and plasma creatinine, sodium and potassium concentrations were measured, proteinuria was registered. The sections of kidney tissues after deparaffinization were stained with hematoxylin and eosin and further studied under light microscope. The data was statistically analysed with «Statgrafics».

Results. The effect of adenosine triphosphate-sensitive potassium channel activator flocalin under the conditions of chronization of histochemic hypoxic and sublimate nephropathies was presented by positive dynamics of morphological changes, i.e. improvement of processes in glomerular and tubular parts of nephron. We have observed the increase of glomerular filtration rate, filtration load and the reabsorbed

fraction of sodium ions, increase of proximal transport of sodium ions, decrease of proteinuria. Administration of calcium channel blocker diltiazem on the ground of analogous exotoxic injury has lead to less pronounced, compared to flocalin changes of structure of the injured kidney. Diltiazem has lead to increase of functional ability of proximal tubules and decrease of proteinuria only in rats with sublimate nephropathy.

Conclusion. Experimental assessment of the comparative effect of ion channels modulators on the structure and the basic processes of homeostatic function of kidneys has shown that compared to diltiazem, flocalin demonstrates predominantly nephroprotective properties under the conditions of chronization of histoemic hypoxic and sublimate nephropathy.

Key words: exotoxic nephropathy, structural and functional changes of kidneys, flocalin, diltiazem.

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MECHANISMS OF EXPERIMENTAL STREPTOZOTOCIN DIABETES DEVELOPMENT

Introduction. Autoimmune mechanisms of diabetes mellitus 1 type are actively studied now. The damage of pancreas insulin apparatus underlies these mechanisms. A basic damage role belongs to the wide spectrum of antibodies to insulin and pancreatic tissues. The major mechanism of beta-cells damage is an apoptosis which started by T-cells effectors. It will be realized by caspase mechanism activating, which includes activating of Fas-receptors by Fas-ligand, activating of the nitrogen oxide system and free radical oxidization. For the study of these mechanisms an adequate model which reproduced the autoimmune damage of pancreas insulin apparatus with the expressed insulin insufficiency and hyperglycemia is needed in an experiment. This research was devoted to designing of such model and study of mechanisms and stages of diabetes mellitus 1 type development.

Material and methods. White unbred rats-males. All experiments was responded to positions of "European convention about defence of vertebrates", general ethics principles of animals experiments, to Law of Ukraine, and to Conclusion of bioethics commission of the Donetsk national medical university. The general term of streptozotocin diabetes design was 10 days. Glucose level in the blood for the process of streptozotocin diabetes design was triply tested. Control for this series was by 5 animals instead of streptozotocin injected analogical volumes buffer citrate. In 1th time of design of streptozotocin diabetes and on 60th time of observation animals weighed. In second series the state of secretory activity of pancreas insulin apparatus

in 35 animals were studied. Were used standard spectrometry and enzyme-linked immunosorbent methods.

Results and discussion. Directly after streptozotocin injection to the 21th day of observation toxic necrosis and inflammation developed. They were accompanied of macrophage reaction activating and expressed lymphoid infiltration. A compensatory reaction manifests as beta-cells proliferation. Next to that immunopathological processes (cellular and humoral immunity reactions) started. They had autoimmune direction to the pancreas insulin apparatus and insulin antigens. At this time glucose level (hyperglycemia) grew slowly, insulin levels diminished, C-peptide and glucagon levels increased. On some time due to beta-cells hyperplasia the equilibrium of indemnification and damage processes came is the 2th stage, when levels of glucose, insulin and C-peptide remained not variables (were on a «plateau»). In this research this stage lasted from 21th to 45th time of observation. In future, due to connecting of the second immunopathological processes a autoimmune insulite was formed. From 60th day the secondary increase of glycemia and decline of insulin and C-peptide levels developed. Pancreatic disturbances confirmed a glucagon decline in blood, that represents sclerotic processes in the islet of Langerhans. It is necessary to mark, that the stages passed one for one not suddenly, but slowly changed each other.

Conclusion. In this research at this model the stages and key points for the estimation of experimental streptozotocin diabetes course are discovered. It allows to pass to the next stage of research – estimation of character and role of immunopathological processes, cellular and humoral immunity reactions.

Key words: experimental diabetes, streptozotocin, insulin, C-peptide, glucagon.

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THE FEATURES OF EXPRESSION OF BCL-2 AND P53 PROTEINS AND PROLIFERATIVE ACTIVITY IN PANCREATIC ISLETS UNDER THE INFLUENCE OF INTERMITTENT HYPOXIA IN EXPERIMENTAL CONDITIONS

Intorduction. The interest of usage of non-pharmacological methods for preventing and treating diseases is retained recently. They are including particularly an intermittent hypoxia (IH) as a natural incentive of nonspecific resistance of an organism. One of the notable but little-studied effects of dosage hypoxia is its effect on the endocrine pancreas apparatus. *The aim* was to analyze the expression of markers of apoptosis and proliferative activity of beta-cells in rats after multiday hypoxic training.

Materials and methods. Research was carried out on 30 Wistar rats hypoxic training (HT) was modeled in a pressure chamber where the animals were 6 hours a day at an altitude of 1000-5000m above sea level from 1 to 5 day and since day 6 at an altitude of 6000m. The 5 bromodeoxyuridine (BrdU) was administered to animals over the last 7 days of the experiment for studying of the proliferative activity of beta-cells.

After decapitation under anesthesia the pancreas was fixed in Buen's retainer and after standard histological processing it was embedded in paraplastic blocks; sections from different parts of the pancreas were made on microtome; after deparaffinization and rehydration they were treated with primary antibodies to Bcl-2, p53 and BrdU. Then they were treated with secondary antibodies. The analysis of immunofluorescence reactions was performed on the digital image analysis system using fluorescence microscope with high-emission filter and camera. Data were analyzed using the package applications and statistical programs. Student's t test was performed to assess the reliability of the differences in the groups.

Results. The number of BrdU-immunopositive endocrinocytes after IH increased by 64%, which corresponds to the increase of the specific number of beta cells. In 10 days period after IH the figure became significantly lower by 10%. IH did not change the index of proliferative activity, while 10 days after the expiration of IH, the figure was significantly decreased compared with the rate of control rats. The number of Bcl2-positive endocrinocytes at the end of IH significantly increased by 12% compared with control rats. However, in 10 days period after IH, the figure significantly decreased. IH leads to a decrease in the anti-apoptotic index by 23% compared with the rate of control rats. In 10 days period after IH the figure was not significantly changed. IH leads to a decrease in the number of p53-immunopositive endocrinocytes by 40% compared with the rate of control rats. in 10 days period after IH the index decreased by half. IH leads to reduced in proapoptotic index by 2.5 times compared with the of control rats. This index decreased by 3.5 times in 10 days period after IH. IH leads to decrease in apoptotic index by 37%, and 10 days after the IH, the figure was 55% less than in control animals.

Conclusions. Obtained results show a stimulating effect of IH on some molecular mechanisms of beta endocrinocytes. We believe that the increase in the number of beta cells due not so much with the stimulation of proliferation, as caused by inhibition of apoptotic mechanisms. Also for the first time the long-acting insulin-stimulating effect of IH after hypoxic training was revealed the.

Key words: intermittent hypoxia, apoptosis, proliferative activity, beta cells.

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MORPHOLOGICAL CHANGES IN THE RETINA OF RATS WITH

EXPERIMENTAL DIABETES UNDER CONDITIONS OF THE USAGE OF MILLIMETER ELECTROMAGNETIC IRRADIATION

Introduction. The goal of investigation was confined to investigate microvessel system of retina in rats with streptozotocin (STZ) -induced diabetes, and peculiarities of that system after influencing different skull zones with electromagnetic radiation of millimeter bandwidth (EMR MB).

Materials and methods. In Wistar rats via streptozotocin (STZ) administration (50,0 mg/kg, i.p.) diabetes model was induced (level of glucose was higher than 300 mmol/L). Histological examination performed in five months from the moment of model induction using trypsin method of vessels visualization with calculation of the number of ghosts of pericytes and acellular capillaries. "Ramed-Expert" (Ukraine) was used to generate EMR MB with working wavelength 7,1 mm, radiation frequency 42,3 GHz, power flux density 0,1 mW/cm², modulation frequency 10±0,1 Hz.

Data were estimated using one-way ANOVA method (Analysis of Variance) with consequent processing using Neuman-Keuls criteria. Ratio of P<0,05 was taken as reliable differences.

Results. Hystological investigations of the number of ghosts of pericytes in the retina of rats with insulin-depended form of diabetes during four months of observation revealed the net increasing of this index up to $3,17 \pm 0,38$, and this index exceeded such one in intact rats by 3,3 times (P<0,05). In rats with diabetes which have been shame-affected by EMR the number of ghosts was $2,78 \pm 0,27$, which was lower by 12,3% when compared with the diabetes rats without any shame influences (P>0,05). In the group of rats treated with STZ and which have been affected by EMR with parieto-temporal zone as a target, the investigated index was by 20,2% less in comparison with that one registered in STZ-rats without treatment (P<0,05) and simultaneously it was by 9,9% less when compared with sham-affected group of STZ rats. In the group of diabetic rats which have been affected by EMR at facial zone, included eyes as a target, the number of pericytes ghosts have been reduced up to $1,45 \pm 0,13$, and that value was by 2,19 times less when compared with the STZ-diabetic control rats (P<0,05). That index was also by 42,7% less hen compared with such one determined in diabetic rats treated with EMR directed at parieto-temporal zone (P<0,05). Besides, investigated index exceeded that one registered in intact rats by 51,0% (P<0,05).

The number of acellular capillars in animals with STZ-diabetes was $8,5 \pm 1,1$ per mm², and that value exceeded such one registered in control group of animals by 4,2 times (P<0,05). In the group of rats which have been sham-affected by EMR the number of acellular capillars was $8,0 \pm 0,9$ per mm², which was not differ from analogous index in rats with STZ- diabetes (P>0,05) and exceeded the analogous index in control group by 4,0 times at the same time (P<0,05).

In rats which have been treated with the ERM directed to parieto-temporal zone the investigated index was $7,1 \pm 0,8$ mm², and it was not differ from such one detected in STZ rats with diabetes without treatment (P>0,05), and by 3,6 times was larger when compared with that one in control intact animals (P<0,05). The usage eyes zone as a

target for EMR reduced the number of acellular capillars by 1,81 times in comparison with STZ-rats without treatment ($P < 0,05$). Meanwhile that index continued to be bigger when compared with control intact animals by $\times 2,35$ times ($P < 0,05$).

Conclusions. Streptozotocin-induced diabetes in rats is followed by morphological deterioration of retinal microcirculation which is manifested in increasing of the number of both acellular capillaries and pericyte ghosts.

Electromagnetic radiation of millimeter bandwidth (7,1 mm) which was directed to eye ball induced the protection with regard to streptozotocin diabetic retinopathy development.

Key words: streptozotocin, sugar diabetes, diabetic retinopathy, electromagnetic radiation of millimeter bandwidth.

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DESCRIPTION OF A LEVEL OF THE MYOCARDIAL INJURY BY ADRENALINE IN FEMALE AND MALE RATS IN CORRELATION WITH LONGEVITY OF OBSERVATION AND THE LEVEL OF THE SEX HORMONES

Introduction. Nowadays, the research studies of the gender differences in the variation of the heart diseases and the effectiveness of the corrective and preserving methods are still very important. Among the vast majority of the cardioprotective agents the attention of the scientific community is drawn to melatonin. Melatonin is the hormone produced in the epiphysis. It has been proven, that this biologically active substance has distinctive antioxidant, antistressor, cardioprotective and antidepressant qualities. However, the role of the gender and sex hormones in the cardioprotective role of melatonin is still poorly understood.

Aim – to investigate the level of cardioprotective effectiveness in correlation with the gender and the level of sex hormones.

Materials and methods. The studies were conducted on the matured female and male rats (b.w. 170-190 g). Necrosis of myocardium caused by injection of cardiotoxic dose of adrenaline (1 mg/kg). 1 hr before this injection the rats were given melatonin (5 mg/kg). The usage of the methods of morphometrics allowed us to calculate percentage of the Heidenhain-positive cardiomyocytes in the specimens of the ventricular myocardium. All the rats were divided into 3 groups: 1st group consisted of the rats which had their gonads intact; 2nd group consisted of the rats after gonadectomy and 3rd group consisted of the rats which were receiving a hormone replacement therapy (HRT, male rats – 2 mg/kg of testosterone, female rats – 0.1 mg/kg of hexestrol and 5 mg of progesterone every day for 4 weeks).

Discussion and results. The usage of melatonin is decreasing the number of the necrotized cardiomyocytes. The most effective in the cardioprotective role melatonin showed itself in the early stages of the necrotic process development (1 hr

after adrenaline injection). With an increase of the longevity of observation the effectiveness of melatonin was less pronounced. More sensitive to the positive effect of melatonin happened to be female rats. The study of the gonadoectomy rats showed an increase in the effectiveness of melatonin in the male cohort. That was supported by the comparison of the intensiveness of the dynamics of the percentage of necrotized cardiomyocytes in the groups which did not receive the correction. In the female rats in analogical comparison, that dependency was not found. That fact showed us the stable effectiveness of the melatonin, despite of the rapid decrease of the estrogen levels in the blood. With the usage of the HRT in the group of male rats, the percentage of the necrotized cardiomyocytes was small in the same as in the group of gonadectomy animals but also smaller than in the gonads preserved rats. That fact showed an increased ability of melatonin on the testosterone background. In the female rats, with the usage of the HRT effectiveness of melatonin per 1 hr of development was much less than in the gonads preserved rats.

The results showed us the best cardioprotective effectiveness of melatonin on the early stages of the formation of adrenal necrosis. With preserved functionality of the gonads melatonin showed the best cardioprotective qualities in the female rats and in the cases of absence of the gonads on the background of the HRT – in the male rats.

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FEATURES OF THE LIVER ULTRASTRUCTURE AT THE YOUNG IMMATURE RATS WITH CHRONIC TOXIC HEPATITIS

Introduction: Knowledge of the cell and molecular mechanisms of liver fibrosis increased significantly during recent years. At the experimental models were demonstrated phase of inflammation and repair of the liver, the interaction between endothelial cells, inflammatory mediators, myofibroblasts, extracellular matrix components during regeneration of liver tissue. Today we know that the progress of liver fibrosis depends on genetic factors and environmental factors.

The aim: To study the features of structural changes un the liver tissue at the young immature rats as a compensatory response to chronic injury.

Materials and methods: The research was made on 30 laboratory rats. The main group of the study consists from 30 rats, which according to the age were distributed to three subgroups. First subgroup included 5 young immature rats aged 2 months, second subgroup - 5 young mature rats aged 6 months. Third subgroup was represented by 5 old mature rats aged 18-20 months. The control group included 15 intact rats of the same age, which was also divided into three subgroups. In rats of the main group was experimentally reconstructed model of chronic toxic hepatitis. Study of the liver structure was made with the usage of electron microscopy method.

Results: At the young immature rats signs of dystrophy prevail in light hepatocytes. In general, it should be noted that the light hepatocytes mainly die by necrosis, whereas for dark cells typical apoptosis. There are marked changes from the side of sinusoids: their expansion, thinning of endothelial pad, indicating a violation intrasecretory liver function when exposed injury factor. The external secretory function at the young immature rats characterized only by signs of cholestasis.

Conclusion:

1. Disorders of the liver exocrine function at the young immature rats showed by cholestasis.
2. The death of the hepatocytes of the young immature rats with chronic toxic hepatitis can be by apoptosis and necrosis.

Key words: apoptosis, necrosis, electron microscopy, rats, hepatitis.

© **Kushch O.G., Voloshin M.A., Vasylchuk N.G.**

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NRA⁺-INTERDIGITATING CELLS DISTRIBUTION IN PARACORTICAL REGION OF MEDIASTINAL LYMPH NODE UNDER NORMAL CONDITIONS AND IN EXPERIMENTS

Introduction. The synthesis and accumulation of glycoconjugates are consistently changing and redistributing under development, functional changes of cells. The study of the dynamics of the distribution of glycoconjugates in cell structure facilitates better understanding of histogenetic processes, chronology of cellular reactions in the formation of lymphoid organs and the formation of their functions. Empirically we found that French snail lectin (HPA), which is a ligand to α NacDGal residues, specifically detects antigen-presented interdigitating cells.

Irreversible morphofunctional changes can occur due to changing of the carbohydrate component of the membrane and cytoplasmic receptor cells system. The study of glycosylation processes and detection of abuse causes help to determine not only the morphology and degree of differentiation of immune cells, but also the level of their functional activity and ability to migrate.

Materials and Methods. 3 groups of white Wistar rats were used in the experiment: first - intact rats, second – experimental animal, which were embryo vaccinated with γ -human immunoglobulin on the 18th day of fetal development, and the third group – rats which were administrated with inactivated "Vaccigrip" split vaccine. Glycopolymers of interdigitating cells were detected by scoring of sections by French snail lectin (HPA) which is specific to terminal residues of N-acetyl-D-galactosamine. HPA⁺-cells of paracortical region of mediastinal lymph node were counted in conventional unit area of 1000 μ m².

Results. We studied in a comparative perspective the number and topography of HPA⁺- interdigitating cells in paracortical region of mediastinal lymph node of rats that underwent fetal antigenic stimulation and under normal conditions.

Positive for lectin Snail HPA⁺ - macrophages were also found in addition to interdigitating HPA⁺ cells in the stroma of mediastinal lymph nodes.

NRA⁺- interdigitating cells of mediastinal lymph nodes located in paracortical region. Maximum number of them are 14 days after birth and $6,83 \pm 0,40$ per reference area in incipient after natal period.

Fetal administration of antigens leads to changes in the morphofunctional state of the NRA⁺ cells (the number of processes are increasing, their thickness and length). The number and density of the receptors are increasing for French snail lectin receptors on the cytoplasmic membrane of given cells.

The most frank morphofunctional changes in the state of NRA⁺-interdigitating cells are detected after fetal administration of vaccine "Vaccigrip."

Key words: mediastinal lymph node, paracortical region, lymphocyte, HPA⁺-interdigitating cells, antigen.

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AGE-DEPENDENT CHANGES IN STRUCTURE AND FUNCTIONS OF HEARTS IN SPONTANEOUSLY HYPERTENSIVE RATS

Heart failure (HF) is characterized by pathological changes of structure and functions of the heart and can be the consequence of the chronic arterial hypertension. That is why the development of HF in spontaneous hypertensive rats (SHR) could be a model of the same pathological processes in human. The investigation of SHR revealed the HF at 22-26 months old animals, the pathogenic role of Ca²⁺ metabolism and NO production is established as well as β -adrenergic, angiotensin- and bradykinin-dependent mechanisms [Karup, et al., 2010; Brooks, et. al. 2009; Zhou, et. al., 2007; Chan, et. al., 2011; Nurmi, et. al., 2012]. At the same time the mechanisms of the cardiac remodeling development and its correction on the early stages that is not studied enough make high interest.

The aim of the study was to establish the character and the level of cardiac remodeling in presenily aged SHR comparing with Wistar rats.

Experiments were carried out on male rats 18-months old with the weight 359 ± 7 g and systolic blood pressure higher than 150 mm Hg in SHR line (n=8) and 379 ± 15 g and normal systolic blood pressure for Wistar line (n=9).

The significant changes in cardiohemodynamic parameters were revealed between these two groups of animals. The pump function of the heart in SHR were significantly less comparing to Wistar rats: stroke volume was twice less ($P < 0,001$), ejection fraction in 1,8 times ($P < 0,001$), stroke work – 5 times less ($P < 0,001$). The markers of diastolic heart function in SHR also were decreased comparing to Wistar group: end-diastolic volume on 17 % ($P < 0,001$), dP/dt min in 1,8 times ($P < 0,001$), Tau W in 2,2 times ($P < 0,001$) and Tau G twice less ($P < 0,001$). End-systolic pressure

and dP/dt max were lowered in SHR comparing to Wistar animals in 1,27 ($P<0,001$) and 3 times ($P<0,001$) correspondingly. These changes could be explained by increase of arterial rigidity in 1,4 рази ($P<0,001$) comparing with data received in Wistar group (Table) that is evidence of prevalence of cardiac muscle afterload and also by fibrotic changes. в порівнянні з даними у щурів лінії Wistar (табл.), що свідчить про переваж. Significant fibrosis is appeared in the heart of SHR with age and amounted 18,1 % from total area of left ventricle comparing with 1,8 % in Wistar rats ($P<0,05$) and is localized mostly in endocardium region.

Left ventricle weight index in SHR was higher comparing to Wistar ($3,18\pm0,20$ and $2,05\pm0,11$, correspondingly; $P<0,001$). Also the index of right ventricle weight was changed: $0,61\pm0,03$ and $0,45\pm0,04$ in SHR and Wistar rats correspondingly ($P<0,01$). The ratio between left and right ventricles weights was higher in SHR on 15 % ($4,69\pm0,44$ та $5,39\pm0,52$).

Thus presenile SHR show first stages of pathological heart remodeling with fibrosis and pump dysfunction.

The data received are in correlation with the data of another works that used echocardiography, microelectrodes and investigation of separate cardiomyocytes. Qiu, et. al. (2012) have shown that SHR during CH development were characterized by decrease of ejection fraction of left ventricle and by increase of end diastolic diameter and volume of it.

Key words: spontaneously hypertensive rats, aging, heart remodeling, cardiohemodynamics, fibrosis.

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CHANGES ACTIVITY OF NONSPECIFIC PROTEINASES AND THEIR INHIBITORS IN RATS MUSCLE TISSUE WITH EXPERIMENTAL REPERFUSION SYNDROME

Introduction. Reperfusion syndrome is one of the most frequent clinical conditions encountered in a number of diseases. The most common is to determine of reperfusion syndrome as an increase in the severity of ischemia after medical correction. Excessive activation of proteases is an important pathogenetic link in the development of a series of destructive and inflammatory reactions of human body. The main function of inhibitors is to block proteolysis of protease activity who directly participate in the development of tissue destruction. Consequently, the

developing imbalance in the nonspecific protease-inhibitory system of muscle tissue may play an important role in the development of systemic complications. The aim of this work - to establish the character changes of nonspecific proteases and their inhibitors in the muscle tissue of rats previously ischemic limb and their role in the pathogenesis of reperfusion syndrome developing.

Materials and methods. The experimental research was performed on 59 white male Wistar rats with body weight of 180-210 g. . Ischemia-reperfusion syndrome was simulated by applying rubber bands on both hind limbs at the level of the inguinal fold for a period of 6 hours. Revascularization was performed at once by dissection of the rubber bands after six-hour application. Determination of activity of the components of the protease-inhibitor system were carried out using enzymatic methods on the spectrophotometer "Biomat 5" (UK). Trypsin-like activity (TLA) was measured by the speed of detachment of N-benzoyl-L-arginine from the synthetic substrate of the ethyl ester N- α -Benzoil-L-arginine ethyl ester hydrochloride (BAEE) (Sigma). Determination of elastase- like activity (ELA) was based on study of the hydrolysis rate of synthetic substrate Boc-L-alanine-4-nitrophenil ester (Boc-Ala-ONp) (Sigma). Determination of alpha-1-proteinase inhibitor (ATA) was performed measuring the inhibition of the tripsin-caused decomposition of BAEE. By the same way the activity of acid-stable inhibitors (ASI) was determined after pretreatment of the muscle tissue by warming in acid environment. The crude protein was determined with spectrophotometric method by Lawry. Statistical data processing was carried out using the methods of variation statistics with the calculation of the average values (M), estimation of the probabilities of discrepancies (m), estimation of the reliability of changes using the Student's t-test. For reliable difference between the mean values was taken the difference with $p < 0.05$

Results. Research has shown that in modeling ischemia-reperfusion syndrome took place changes of component proteinase-inhibitory system, manifested by activation of proteases in skeletal muscle homogenates of previously ischemic limbs. After 6 hours of ischemia in the tissue the ELA to decrease on 7% relative to the control group. After 6 hours of reperfusion ELA to increased relative to the control by 23%, after 12 hours and 24 hours – 58,5% and in 48 hours - 68%. After 6 hours of ischemia relative to the control TLA decreased on 8%. In experimental animals after 6 hours reperfusion TLA increased by 7% compared with the control group, after 12 hours – 62,6% 24 hours - 55%, and 48 hours - 62%. Studies of inhibitory activity have shown that the experimental animals were observed increase of ATA relative to the control group. In the group with 6-hour ischemia ATA increased by 20,3% relative to the control. The animals suffered 6 hours reperfusion ATA increased 161,42% , 12 hours – 133,5%, 24 hours - 180%, 48 hours – 139,3% relatively control .

ASI activity in skeletal muscle homogenates limbs decreased relative to the control group. In the animals after 6 hours of ischemia activity of ASI decreased relative to the control by 86%. In group after 6 and 12 hours of reperfusion ASI was lower by 66% 24 hours - 70% 48 hours - 87% than that the control group animals.

Conclusion. As seen from the development of experimental data ischemia-reperfusion syndrome accompanied by a change of activity of nonspecific proteinases and their inhibitors in muscle tissue. Reperfusion disorders are characterized by the

accumulation of trypsin-like and elastase-like proteases with high destructive potential and can lead to further degradation and destruction of muscle tissue. Upon activation of proteases there is a reduction of the local inhibitors potential, primarily by reducing the synthesis of acid-stable inhibitors. Intensity of the local imbalance of proteases and their inhibitors, of muscle tissue accrues in transformation of ischemic and reperfusion damage depends on the time of reperfusion.

Key words: reperfusion syndrome, muscle tissue proteolysis.

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MORPHOFUNCTIONAL CHANGES IN LUNG AND HEART MAST CELLS DURING LONG-TERM ACTION OF SUCH HERBICIDES AS DIPYRIDYL PHOSPHATE AND RAUNDAP IN SMALL DOSES

Introduction. Mast cells (MC) (mast cells, labrocytes) - fixed connective tissue cells containing granules in the cytoplasm that stained metachromatyc by aniline dyes.

Mast cells - a heterogeneous pool of multifunctional connective tissue cells that possess a certain autonomy and at the level of tissues regulate metabolism and maintain homeostasis stability. They are found mainly along the perivascular and nerves in almost all organs. They are considered unicellular glands representatives ARUD system. Doing antagonistic functions on the principle of "feedback" MC synthesize opposing the mechanism of action of substance: biologically active monoamines, enzymes, a wide range of cytokine receptors, including to the IgE, which triggers anaphylaxis. MC involved in the formation humoral and cell immunity. Producing of heparin and vasoactive substances they affect the penetration of blood vessels and the microcirculation in the structural and functional state of the extracellular matrix.

MC activity measured by number of metachromatyc grains and the level of their degranulation.

Background are connected with the extremely wide application of herbicides in agriculture and their presence in acceptable doses in food. Their influence on autoregulation, the compensatory-adaptive processes in the preclinical stage of intoxication and the role of the MC changes in these conditions have been insufficiently studied.

The purpose of the given research was to study the compensatory-adaptive reactions of lung and heart MC in terms of long-term effect of low doses of such herbicides as Dipyridyl phosphate and Raundap.

Material and methods. For the experiments were used 25 albino rats Wistar weighing 130-150 g., which were divided into two groups of experiments - to 10 animals in each plus 5 control rats. Animals and groups were administered orally daily 0.0125% water solution Dipyridyl phosphate - 1 ml per 100 g. rat body weight,

which is 1/100 LD50. Group II animals were similarly injected with 0.01% solution of Raundap (concentration allowed in foods).

Control rats were 5 who were on usual mode of vivarium.

After 6 months of experiments all rats were taken out of the experiment by decapitation. Pieces of tissue of the lungs and heart were fixed in 10% neutral formalin solution, was carried out through a battery of alcohols and were putting in paraffin according to generally accepted methods. Paraffin sections were stained with hematoxylin-eosin and by Van Hieson. In addition to cuts made in the cryostat from fresh tissue indicated by staining of 1% water solution of toluidine blue and alcianblue studied quantitative and structural and functional changes of the MC due to metachromasia reaction. Histochemical method Hlennera by tetrasolium also investigated the activity of oxidase (MAO) using as substrate hydrochloric acid tryptamine.

Results. In the lungs of rats, which during 6 months were orally administered daily herbicide (DFT) and Raundap in small doses, microscopically detected foci of inflammatory infiltration of interalveolar septa by macrophages, lymphocytes and fibroblasts. Sometimes focal sclerosis with obturation septal capillaries and atelectasis of some adjacent alveoli. There is a moderately expressed panaacinar focal emphysema. With regard to the bronchi, the impermanent detected swelling of the mucous membrane and pays attention peribronchial hyperplasia of lymphoid tissue compared to control. Lymphoid infiltration is quite noticeable and closing around the arteries.

Stained sections of lung tissue with toluidine blue and alcianblue interalveolar membranes detected a large number of evenly distributed cells with evidence of metachromasia. In size they are dominated by other cell infiltrates in the cytoplasm contain different amounts metahromatych granules. The high secretory activity of the MC indicates degranulation. Granules of various sizes and shapes are brown or various shades of red color. The largest number of MC is defined in the pleura introduced by DFT. It must be emphasized that these histological and histochemical changes in the lungs when administered both herbicides similar but much less pronounced and fickle when administered orally herbicide Raundap.

Microscopic examination of the heart of all experimental animals take attention to moderate hypertrophy of myocardiocytes and some recovery of proliferation of endothelial cells and other cells of the stroma of myocardium. There uncommon perivascular infiltrates lymphohistiocytes. Sometimes it noticed granular degeneration in miocardiocytes. When stained sections with toluidine blue and alcianblue in delicate layers of connective tissue, especially perivascular and in pericardium, determined a significant increase in the number of MC compared with controls. Focally they are in a station of active degranulation and vacuolization. Given that MC most actively produce biologically active monoamines, which are detoxicated by monoamine oxidase (MAO), the histochemical study of this enzyme activity in the lungs and myocardium we found uneven distribution. In cell infiltrates of interalveolar membranes she was high in macrophages and fibroblasts. In the heart the highest MAO activity showed myocardiocytes localized perivascular and in areas

of proliferative inflammation. Along them were identified groups, sometimes large fields of myocardiocytes with low MAO activity.

Conclusions. Under the influence of small doses of herbicides as Dipyridyl phosphate and raundap in the lungs and heart are enhanced compensatory-adaptive processes which cause increasing the role of MC. By enhancing their function they regulate metabolism at the regional level, including the impact on the structural and functional status of parenchymal elements, on MAO activity in myocardiocytes. Establishing relationships between synthetic and degranulation function of MC and MAO activity in myocardiocytes provides search term factors influencing these processes.

Key words: mast cells, lung, heart, herbicide Dipyridyl phosphate, Raundap.

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SURVEY OF ANTIBIOTIC RESISTANCE OF S.PNEUMONIAE TA H.INFLUENZAE STRAINS, ISOLATED FROM THE PATIENTS WITH RESPIRATORY TRACT INFECTIONS DURING 2010-2012 YEARS IN UKRAINE

Introduction. One of the keys to effective treatment of patients with community acquired respiratory tract infections are antibiotic resistance profile of regional knowledge of key pathogens. Lack of regular microbiological monitoring in Ukraine forced to use the data obtained in the neighboring countries, including Russia and Eastern Europe, creating a error and did not meet modern requirements for antibiotic therapy.

In order to obtain reliable data on their own structure and frequency of antibiotic resistance in H.influenzae S.pneumoniae and Ukraine within the international research SOAR (Survey Of Antibiotic Resistance) and funded by the pharmaceutical company GSK, UK conducted a multicenter clinical and microbiological screening study.

Materials and methods. The study of the frequency and patterns of resistance to these pathogens most commonly used antibiotics has been built on a multicenter comparative controlled study of strains isolated in geographically different regions. The sensitivity of microorganisms to antibiotics was determined in a centralized reference laboratory (Dnipropetrovsk, Head - PhD Bratus OV).

The material used for the microbiological examination of sputum, bronchial alveolar washings, the secret of the nasal cavity, pharynx secret, paranasal sinuses nasal fluid,

fluid tympanic cavity of the ear. The main source of *S. pneumoniae* served as sputum, which was allocated 82 (61.2%) strains. The study was conducted to antibiotic therapy and, if indicated in the treatment. Delivery of material to the laboratory did not exceed 1.5-2 hours from the time of its receipt.

Susceptibility of *H. influenzae* to 10 antimicrobials such as ampicillin, amoxicillin clavulanate, cefuroxime, ceftriaxone, tsefiksymu, azithromycin, clarithromycin, ciprofloxacin, levofloxacin, trimethoprim / sulfamethoxazole. In tests using dual serial dilutions of these antibiotics (Oxoid, UK).

To determine the characteristics of the strain as "sensitive", "moderately resistant" or "resistant" using international criteria of interpretation mikroorhinzmyv sensitivity in vitro, namely standard CLSI (2013).

Introduction, storage and processing tests were performed using the program Microsoft Excel (2007).

Results. The absolute activity against *S.pneumoniae* demonstrated by aminopenitsyliny. Yes, 100% of tested strains were susceptible to amoxicillin / clavulanate. Activity cephalosporins remained quite high. Yes susceptible to cefuroxime, ceftriaxone and tsefiksymu, respectively, were 95.5%, 88.8% and 100% of strains *S.pneumoniae*. At the same time met strains with relatively high levels of resistance to certain cephalosporins - 4 and 8 mg / l.

The studies demonstrated consistently high in vitro activity of macrolide antibiotics in Ukraine. The index of sensitivity to this group of drugs was at 88.1% for erythromycin, clarithromycin and azithromycin, that fate insensitive strains *S.pneumoniae* not exceed 12%.

As for the group of fluoroquinolones was found that the proportion of resistant strains to ciprofloxacin *S.pneumoniae* was 10.5%, with all 14 strains were isolated pomirnorezystentnymy. Everything is 100% *S.pneumoniae* strains were susceptible to levofloxacin.

A multicenter antibiotic resistance survey of *S.pneumoniae* та *H.influenzae* strains, isolated from the patients with respiratory tract infections was first conducted in Ukraine. It was established that 12,7% of pneumococci were not susceptible to penicillin. 6% of *H.influenza* strains were resistant to ampicillin. Amoxicillin/clavulanate, levofloxacin and ceftriaxone preserved absolute activity against both pathogens. The results of current survey may be used for amendment of national guidelines for the management of patients with respiratory tract infections.

Conclusions. 1. Standing in a study level insensitivity *S. pneumoniae* to penicillin (12.7%) indicates the absence of Ukraine clinically significant problems resistance to penicillin.

2. The data demonstrate the high efficiency of in vitro respiratory fluoroquinolones and certain problems of pneumococci sensitivity to ciprofloxacin. Respiratory fluoroquinolones may be used in the treatment of patients with pneumococcal infections, especially in cases of pathogen resistance to other classes of drugs, but the decision on their appointment should be balanced, particularly in some clinical situations (eg, differential diagnosis of non-specific lung infections TB), and consider the potential for serious side effects.

3. A high level of resistance to *S. pneumoniae* co-trimoxazole (90.3%) demonstrates the need for a complete renunciation of the empirical use of this drug in patients with NIDSH.

4. Established almost absolute activity of amoxicillin / clavulanate, cephalosporins (except cefuroxime), macrolides and fluoroquinolones.

The data currently indicate no significant threats related to antibiotic resistance in *H.influenzae* *S.pneumoniae* and Ukraine.

Key words: *S.pneumoniae*, *H.influenzae*, antibiotic resistance, community-acquired respiratory tract infections.

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THE MORPHOLOGICAL CHARACTERISTIC AND PECULIARITIES OF THE BLOOD SUPPLY OF THE HEART VALVES IN INFANTS

Introduction. In clinical medicine there are abnormalities of the heart valves and their structural components that are diagnosed as congenital and acquired malformations [Кнышов, 2003]. Description of valvular heart devoted many of the works of both domestic [Sokolov, 2003; Orlovskyy et al., 2007] and foreign authors [Miesfield, Sievers, 2007; Sacks, Yoganathan, 2007; Tilea et al., 2010]. But today there are rather contradictory opinions about the presence of blood vessels in heart valves, their origin and morphological characteristics of the structure [Sokolov, 2003; Yakovets et al., 2010; Riley, Smart, 2011; Weind et al., 2002].

If you follow the thoughts of several authors of past centuries, leaf valves are two closely located to each other layers of endocardium, in this case, the presence of blood vessels they can not argue. If the wings are present fiber cross-posmuhovanoyi muscle tissue layers of loose connective tissue [Sokolov, 1970; Yakovets et al., 2010], or leaf thickness greater than 0.5 mm [Weind et al., 2002], in which case it is impossible to say in the presence of wings blood vessels. Some authors argue that the blood vessels in the wings valves appear only in heart disease and normal during ontogeny no [Swanson et al., 2010].

The purpose of this study was to examine the microscopic structure of the valves / dampers valvular children under 1 year and create a three-dimensional model of tendon attachment sites strings to the atrio-ventricular valves of the heart valves.

Materials and methods. The material for the study were the 29 valves hearts of children under 1 year, including mitral - 10 tricuspid - 10 aortic - 5, pulmonary trunk - 4. To study used a macroscopic method, light microscopy and method of 3-D reconstruction.

Results. The direction of our investigation was to study the microscopic structure of leaflets of heart valves in children of 1 year of old and to make the model of three dimensional organizations of the portions of leaflets of atria-ventricular valves where the chordae tendineae are attached to them. The macroscopic method, light microscopy and method of 3-D reconstruction were used for investigation. The results of investigation showed that, the leaflets of the atria-ventricular valves are made of loose connective tissue and have not the layered organization. Comparatively, the leaflets of the ventriculo-vascular valves have as loose as dense connective tissues which detect the layers within the leaflets. The striated cardiac muscle tissue was found within the leaflets of atria-ventricular heart valves. The blood vessels were found as in the base as toward to the free regions of the heart valves. The macro- and microcirculatory blood vessels were found in the basal region of the heart valves. In the free region were detected the microcirculatory vessels only. The chordae tendineae carry from 2 till 5 main blood vessels toward the leaflet of valve. These blood vessels don't give branches within the chordae tendineae. They give branches with formation of the capillary network when the blood vessels reach the leaflets of the atria-ventricular valves. To study the morphology and peculiarities of the blood supply of the heart valves will provide to characterize the structural-tissue potential, which possible to be used for tissue engineering to do the modern bioprosthesis of heart valves. The results which we get are the basis for to understand the pathogenesis and morphological changes that are happened within the valves in the acquired defects.

Conclusions. 1. The results of these studies indicate that leaf atrio-ventricular valves formed amorphous loose connective tissue and no layered structure unlike ventricular valves and vascular valves, which are formed as a loose amorphous and dense connective tissues that determine the layered structure valvular heart valves. As part of atrio-ventricular valves of the heart valves visualize cross-posed cardiac muscle. Blood vessels occurred as the basis of the valves / dampers heart valves and closer to the free edge. At the heart of vessels observed macro- and microcirculation, while closer to the free edge were found only microvasculature.

2. As part of tendon strings to shutter valve goes from 2 to 5 main blood vessels that are heading to the wings, not haluziyatsya and at the junction TENDON string of sash atrioventricular valve capillary branching and form a grid.

Key words: heart valve, blood supply, 3-D reconstruction, leaflet, atria-ventricular, ventriculo-vascular.

ANTHROPOLOGY RESEARCH

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PATHOLOGIC SUBSTRATE OF PROGRESSION OF DYSFUNCTION OF THE PLACENTA IN PREGNANT WOMEN WITH SIGNS SYDEROPENIC SYNDROME

Introduction. Placental dysfunction often leads to abortion and is accompanied by chronic hypoxia and / or fetal malnutrition is a major cause of perinatal morbidity and mortality. The frequency of this pathology ranges from 50 to 77 % in recurrent miscarriage, 30-35 % in gestoses, 24-45 % in the cases of extragenital pathology. Dysfunction of the placenta occurs often in pregnant women suffering from anemic states of various etiologies whereas the most common is iron deficiency anemia . According to the literature the frequency of manifest iron deficiency in pregnant women in the world ranges from 25 to 50 % . In Ukraine and other CIS countries we have seen a significant increase in the frequency of iron deficiency anemia among pregnant women over the past 10 years. According to our data in 2009 - 2013 p. frequency of anemia of pregnant women increased from 15.0 % to 22.6%. In each case, the second cause of anemia in pregnancy is iron deficiency, while 22.4 % of women are manifestations of moderate anemia observed in the early stages of pregnancy.

The aim of the study was to evaluate the functional state of receptors for estrogen and progesterone in the placenta of women who suffered during pregnancy on placental dysfunction and / or iron deficiency anemia.

Materials and methods. The research was conducted at the city hospital № 2 during 2013. There were examined 30 pregnant women with signs of anemia and placental dysfunction in pregnancy of 28-36 weeks. All pregnant women were randomly divided into three groups. I (control) group consisted of women with physiological pregnancy and childbirth - 10 observations. The second group consisted of women suffering from anemia of pregnancy, the third group - women with placental dysfunction and anemia. After delivery, all women had received the placenta are subject organometric, macroscopic, histological, histochemical and immunohistochemical methods. The level of expression of estrogen receptor (RE) and progesterone (PR) was assessed by indirect streptavidin - peroxidase method. Prevalence and intensity of the reaction was evaluated in a semiquantitative scores from 0 to 3 points.

Results. It is shown that expression of receptors of estrogen and progesterone in pregnant women suffering from iron deficiency anemia and placental dysfunction was significantly ($p < 0,05$) decreased , while changing the expression of receptors for estrogen and progesterone in the placenta of women have been had the manifestations of iron anemia and placental dysfunction during pregnancy is closely correlated with the contents of hormones in serum ($r = 0,68$ and $r = 0,65$). The connection between pathogenetic mechanisms of hormonal regulation in pregnant women with placental dysfunction severity of pathological changes at the tissue, cellular and subcellular level is discussed.

Conclusions.

Key words: placental dysfunction, iron deficiency, receptors, hormones, immunohistochemistry.

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THE IDENTIFY OF POSSIBLE CAUSES OF CERVICAL DYSPLASIA OF EARLY AND MID-REPRODUCTIVE AGE WOMEN

Introduction. The problem of infectious diseases of the urogenital tract is highly relevant due to the high rate of infection, and their effects on reproductive and genetic health of the nation. Disorders of women vaginal microflora is particular important in obstetrics and gynecology as well as changes in microbiota leading to a reduction of nonspecific resistance of the organism and of inflammatory processes. Properly focuses on latent viral infection cause pathology of pregnancy, childbirth, fetal asphyxia and generalized infection of newborns.

That's why the goal of our research is to establish the etiologic factors in the development of cervix dysplastic changes of early and mid-reproductive age women. 41% of early reproductive age women and 59% of middle reproductive age patients have been found cervical dysplasia. 71.8% of core group patients have been observed a mild dysplasia. 28.2% of them have an average one. 13 women (65%) with the first type of stroke and 7 women (35%) with the second (inflammatory) type are found during cytological study of control group women. Muco-purulent nature discharge from the genital tract, sometimes with odor, itching and burning in the area of the vagina and vulva are the complaints of main group patients. There is no complaints in the control group.

Materials and methods. The studying of women's gynecological history has shown that 7 women (17.9%) of the main group have opsomenorrhea menstrual cycle; 4 cases (10.3%) have a metrorrhagia; 6 women with cervical dysplasia uterus (15.4%) have been observed ovarian cysts; 4 women (10.3%) have been fixed a multyfollicular structure of ovaries. There is no congenital malformations of female genitalia. 8 patients (20.5%) have a cervical erosion; 9 women (23.1%) have occurred Nabothian cervical cysts; 2 persons (5.13%) have cervical polyps; 5 patients (12.8%) are experienced acute adnexitis that complicated by hydrosalpinx in 2 (5.13%) cases. Bacterioscopic study of 31 the main group patients (79.5%) has found the IV degree of purity, that the inflammatory process means. In the control group the III degree of purity (75%) of vaginal smear dominates.

Results. Bacteriological study of patients with cervical dysplasia has set the increasing of quantitative indicators of vagina contamination and significant concentrations of opportunistic pathogens (Staphylococcus aureus 104 CFU/ml - 9 (23,1%), Staphylococcus haemolyticus 105 KUO/ml - 2 (5.1%), Staphylococcus saprophyticus 104 CFU/ml - 4 (10,3%), E.coli 105 CFU/ml - 8 (20,5%), Enterococcus faecalis 106 CFU/ ml - 6 (15.4%), Candida albicans 105 CFU/ml - 11 (28,2%), Candida krusssei 103 CFU/ ml - 2 (5,1%), Gardnerella vaginalis 107 CFU/ml - 13 (33,3%), Proteus mirabillis 106 - 1 (2.5%) and Klebsiela pneumonia 106 - 2 (5.1%). The 17 women of control group (85%) has been found lactobacilli; 5 (25%) has met Staphylococcus epidermidis. The main group patients has been

registered the highest incidence of infectious agents of a new generation - in 6 cases (15.4%) chlamydia has been fixed; in 5 cases (12.8%) mycoplasmosis has been fixed; in 22 cases (56.4%) ureaplasmosis has been fixed; 7 women (7, 7%) have been found HSV1/2 type. Control group patients have been diagnosed only ureaplasmosis in 3 cases (15%) of surveyed women that corresponds in quantitative terms to a questionable result.

The results of identification of human papilloma virus DNA attract the attention. The highest percentage of patients with cervical dysplasia has had human papilloma virus of 51st type (15.4%), 45th and 56th types (12.8%), rarely encountered viruses of 16th, 31st, 33rd, 58th (7.7%) types, 18th and 39th types (5.1%), respectively. The combination of different types of HPV has been observed in 17.9% of main group women.

The colposcopic research has diagnosed the field dysplasia at 15.4% of main group patients, simple leukoplakia and isolated warts at 10.2% of patients, ectopia prismatic epithelium at 35% of women, endocervicitis at 23% and atsetowhite epithelium at 12.8% of patients.

Thus, cervical dysplasia at early and mid-reproductive age women has been diagnosed on the background of hormonal disorders of the hypothalamic-pituitary-ovarian system, vagina and cervix inflammatory diseases that are caused by opportunistic microflora and infectious agents and by a new generation of human papillomavirus (the highest percentage of the 51st, 46th and 56th types was fixed). In this regard, comprehensive planning of cytological, molecular, genetic, hormonal and morphological studies of early and mid-reproductive age women with cervical dysplasia are necessary to develop individual approaches to treatments and reliable criteria for the clinical course of the disease.

Conclusions.

Key words: reproductive age, dysplasia of the cervix, vagina microbiocenocys, human papilloma virus, diagnosis, colposcopy.

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GROWTH FACTOR AND CALCIUM ROLE IN A PATHOGENY LEYOMYOMA OF PROLIFERATIV TYPE AT WOMEN OF REPRODUCTIVE AGE

Introduction. Leyomyoma a uterus represents a serious problem in medicine. It is caused by growth of frequency of a pathology and its complications, especially at women of reproductive age. Leyomyoma a uterus represents monoclonal prolyferat. The mutant myocyte is a consequence of a vegetative mutation. Mezenhimal tumours of a uterus arise from myometrium and endometrial stromas. There is opened a

question of the pathogenetic mechanism of growth leiomyoma simple and proliferative type.

Dominant role in proliferation cellular components of endothelium veins plays vascular-endothelial factor. Polymorphism 1154 G/A gene VEGF is clinically displayed by occurrence of a mutant myocyte, development uncontrollable neoangiogenesis, leiomyoma. Surplus, deficiency, a disbalance of the maintenance of calcium leads to metabolism infringement. The disbalance of an exchange of calcium varies composition of blood, leads to increase of speed of aggregation of thrombocytes, augmentations of the maintenance of fibrinogen, decrease in quantity of erythrocytes, infringements of processes of microcirculation, mitosis.

The purpose. The work purpose is studying of a role of a macroelement of calcium and molecular - genetical features in a pathogeny leiomyoma a uterus at women with polymorphic alleles of gene vascular-endothelial growth factor.

Materials and methods. 327 women of reproductive age who have been distributed on bunches are surveyed: bunch I – control - 21 almost healthy woman, II - 102 women about idle time leiomyoma, III - 204 women with leiomyoma of proliferative type. Made quantitative definition of the maintenance of calcium in integral and menstrual blood an atomic absorption method, frequencies of alleles of polymorphism of a gene vascular-endothelial factor of growth made a method polymerase chain reaction. Defined size of an interrelation of chances of development leiomyoma a uterus (odds ratio, OR).

Results. Total frequency of polymorphism of a gene vascular-endothelial factor of growth at simple leiomyoma has compounded 91,2 %, at leiomyoma of proliferative type - 90,7 % with size of interrelations of chances (odds ratio, OR) 1,9; 2,0 also was in confidence interval limits (CI) - 0,53 - 2,19; $P=0,95$. At leiomyoma of proliferative type authentic decrease in the maintenance of calcium in integral blood in 1,1 times in comparison with norm and augmentation in 3,3 times in menstrual blood, than in integral blood ($p < 0,001$) was marked.

Conclusion. Polymorphism of a gene of vascular-endothelial factor growth is a pathogenetic part of development leiomyoma a uterus which mechanism of action descends in consequence para-, autocrinal regulation and control for proliferation of cells, regulation of intercellular interactions to what frequency of its definition (90,7 % - 91,2 %) testifies.

The calcium maintenance in integral and menstrual blood confirms its prognostic importance as process chains of apoptosis, allows to reveal development discalcinosis in the form of subclinical hypocalcemia and subclinical hypercalcinosis in tissue of a uterus which is clinically displayed by development idle time leiomyoma or leiomyoma of proliferative type depending on expressiveness degree discalcinosis.

The further researches are directed on forecasting of development of gynecologic complications at women with leiomyoma a uterus with applications molecular - genetical predictors their occurrence.

Key words: growth factor, calcium, leiomyoma, uterus, proliferative type.

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THE ROLE OF ENDOGENOUS AND EXOGENOUS RHYTHMS IN PREDICTION OF ALCOHOL WITHDRAWAL SYNDROME

Introduction. The combination of timely prediction of pathological condition in combination with the methods of dynamic assessment of patients is a condition for providing quality medical care. The aim of the study was to investigate the role of space weather and biorhythm phases in the prediction of alcohol withdrawal syndrome.

Material and methods. The object of clinical and physiological observations were 35 patients with a diagnosis "Delirium Tremens" and 58 patients with a diagnosis "Alcohol withdrawal syndrome without delirious disorders" hospitalized in the intensive care unit. Assessment of alcohol withdrawal conducted on the scale CIWA-Ar. In retrospect calculated phases of physical, emotional and intellectual biorhythms, radio emission stream and planetary Ar- and Kr - indices.

Results. The method of canonical correlation analysis revealed that the level of CIWA-Ar moderate, but statistically determined phase of emotional and intellectual biorhythms on hospitalization day, as well as the flow of radio emission energy on 2 days before hospitalization and planetary Kr-index on 3 days prior to hospitalization. It was found that delirium often occurs naturally in people who are in a positive emotional biorhythm phase, while in the negative phase of the emotional biorhythm usually prevents the evolution of delirium. There were no significant differences between the phases of intellectual and physical biorhythms. The evolution of delirium preceded by at least 3-2 days (not 1-0 days) lower planetary Kr- index compared with those for individuals only with the impede of delirium.

Conclusion. Severity of alcohol withdrawal syndrome determined by the phases of endogenous and exogenous (heliomagnetic) rhythms.

Key words: heart rate variability, dysfunction of the autonomic nervous system, alcohol withdrawal syndrome, biorhythm, space weather, delirium.

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MANIFESTATION OF SEXUAL DIMORPHISM CORRELATION BETWEEN CARDIOINTERVALOGRAPHY AND ANTHROPO-SOMATOTYPOLICAL PARAMETERS IN YOUNG PEOPLE PODILLYA ECTO-MESOMORPHIC SOMATOTYPE

Introduction. Research in recent decades has focused on search, development and study of objective research methods that allow to evaluate the condition of the body, and given sufficient limited number of indicators, and get an answer on the work of adaptation and adaptive mechanisms by which optimizes the relationship between agencies and systems, as well as with the environment [Baevskyy, 2004; Nikolaev, 2005].

The method allows cardiointervalography objective information on the status of non-specific mechanisms to maintain homeostasis [Zharinova, 2007; Korkushko, 2009; Voss, 2013].

The aim of our study was to establish the manifestations of sexual dimorphism relationships between indicators and cardiointervalography anthropo-somatotypological parameters for boys and girls of various skirts Somatotypes.

Materials and Methods. On the basis of the research center of Vinnitsa National Pirogov Medical University within-university research theme "Development of normative criteria care of different age and sex groups (young age, cardiovascular system)" conducted a comprehensive survey of city 16-20 year old girls and 17-21 year old boys. As a result of a questionnaire, screening health assessments and detailed clinical and laboratory studies were selected 134 healthy girls and 133 boys who conducted the study cardiointervalography and anthropometric survey. In practically healthy boys and girls of Podolsk region of Ukraine of ecto-mesomorphic somatotype there were evaluated correlations indicators cardiointervalography and anthropo-somatotypological parameters of the body.

Anthropometric survey was conducted by the method V.V.Bunaka [1941], which included the definition of total (length and weight), partial (longitudinal obhvatnyh, transverse, anterior-posterior) size and thickness of skin and fat folds. Somatotype determined by the method J.Carter and B.Heath [Carter, 2003]. Component composition of body weight - on how J.Matiegka [1921].

Statistical analysis of the results conducted a statistical package "STATISTICA 5.5" (CNIT belongs VNMU im.NIPirogova, license №AXXR910A374605FA). Relations between indicators and KIH anthropo-somatotypological parameters were determined using Pearson statistics.

Results. In the analysis of statistically significant relationships with statistical indicators KIH constitutional parameters for boys and girls ecto-mesomorphic somatotype established: SDNN index in boys had strong feedback from TSHZHS under the shoulder blade ($r = -0,63$), medium strength Feedback 'Connection with endomorfny somatotype component ($r = -0,58$) and average force direct contact with body weight, body surface area, height pubic point girth hips, legs in the upper third, neck and hips, sagittal size of the chest, muscle weight by Matejko ($r = 0.41$ from - to 0.56). The girls had connections SDNN index of medium strength with direct circumference of the chest during inspiration and expiration, with cross serednohrudynny size ($r = 0.53$ to 0.58 on).

Analysis of relationships with anthropometric indicators KIH, somatotypological indicators and indicators dynamometry right and left hand healthy urban boys and girls skirts revealed the following features: the boys ecto-mesomorphic somatotype

with increasing strength bonds with higher rates of total, longitudinal, obhvatnyh size and lean body mass observed increased activity of the parasympathetic ANS (confirmed by numerous direct connections with SDNN, variation scale, performance record total power in all ranges and in a range of high frequencies, as well as numerous feedback with an amplitude of fashion MIT and other regulatory systems); but with a parallel increase in power relations more than in TSHZHS, endomorfinoho component somatotype and body fat mass observed increased activity of the sympathetic part of ANS (confirmed by direct connections to the amplitude of fashion and all indicators of autonomic homeostasis method R.M.Bayevskoho and numerous feedback from SDNN, fashion, variation scale, performance record total power in all ranges and in a range of high frequencies).

Girls ecto-mesomorphic somatotype with increasing power relations more than in the circumference of the chest, torso and transverse dimensions dynamometry right and left hand an increase in parasympathetic activity of the ANS (confirmed by numerous direct connections with all statistical indicators KIH, fashion, performance Record the total power in all ranges and in a range of high frequencies, and with the exception of performance dynamometry brushes, multiple feedback with an amplitude of fashion and all indicators of autonomic homeostasis method R.M.Bayevskoho).

Conclusions. 1. In the analysis of correlations between parameters cardiointervalography and anthropo-parameters somatotypological body healthy boys and girls Podolsky Ukraine region ecto-mesomorphic somatotype somatotype set pronounced manifestations of sexual dimorphism statistically significant relationships both in number and strength, and, in some cases, direction.

2. Under ecto-mesomorphic somatotype growth of the coupling with higher rates TSHZHS and fat body mass characterized the greater activity of the sympathetic division of ANS. In a parallel increase in power relations more than in total, longitudinal obhvatnyh size and lean body mass characterized the increased activity of the parasympathetic ANS Division.

3. With the growth of the coupling girls ektomezomorfiv with great performance obhvatnyh body size, body and transverse dimensions of performance dynamometry brushes characterized more active parasympathetic ANS Division. There were found out expressed manifestations of sexual dimorphism of statistically significant relationships both by number and strength, and direction.

Key words: sexual dimorphism, cardiointervalography, healthy young men and women, ecto-mesomorphic somatotype, anthropometry.

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CORRECTION OF ANXIETY-DEPRESSIVE DISORDERS AND THEIR INFLUENCE ONTO THE QUALITY OF LIFE IN PATIENTS WITH CHRONIC BRAIN ISCHEMIA

Background. Chronic cerebrovascular diseases are still significant medical-social problem resulting in the increase of disability in the population. Emotional disturbances, especially depression and anxiety, are the major determinants of the negative dynamics of the quality of life of these patients.

Purpose: To investigate the efficiency of venlafaxine for the treatment of anxiety-depressive disorders in patients with chronic cerebral ischemia.

Materials and methods: 142 (159 males, 83 females) patients with with the Ist and IInd stages of chronic cerebral ischemia aged between 53 and 72 (mean 61,49±6,13 years; M±StD) have been investigated. 64 patients from the main group were taking Venlafaxine - selective serotonin and norepinephrine reuptake inhibitor while 78 patients from the control group were taking only basic treatment. Clinical and psychometric tests were performed. The diagnosis of depression was established according to ICD-10 criteria for depressive disorder. The next scales were used for the diagnostic evaluation: Center for Epidemiological Studies Depression Scale (CESD), Hamilton Depression Rating Scale (HAMD), Hospital Anxiety and Depression Scale (HADS), Hamilton Anxiety Rating Scale (HAMA), *The Spielberger-Hanin Test*. SF-36 questionnaire was used to evaluate the quality of life. The data was analyzed using the SPSS-13 program.

Results. Applied battery of diagnostic psychometric scales has revealed that venlafaxine administration was connected with decrease in intensity of depression and anxiety comparatively to patients who received only basic therapy. The most reliable results were obtained administrating MADRS: in the main group characteristics were 17,3 ± 4,4 points at the beginning of therapy and 16,2 ± 2,6 points after at the end of treatment ($|z| = 2,7$; $p < 0.001$); in the control group 18,5 ± 4,8 and 18,3 ± 2,9 points ($|z| = 0,39$; $p > 0.05$) respectively. Venlafaxine administration in the main group was characterized with significant reduction in both personal and situational anxiety, whereas there have not been any meaningful changes in the severity of anxiety in the control group. Effective influence onto depression with anxiety contributed to improvement of the quality of life in patients with I-II chronic brain ischemia: the most prominent positive changes (increase respectively by 18.1, 18.7 and 23.6%) occurred with 3 dimensions of SF-36 (general health, social functioning and role emotional).

Conclusions. Administration of Venlafaxine provides an efficacious correction of anxiety-depressive disorders in patients with I-II stage of chronic brain ischemia. Treatment of anxiety-depressive disorder in patients with chronic brain ischemia should be included to measures required for the quality of life correction.

Key words: chronic cerebral ischemia, depressive disorders, treatment, venlafaxine, quality of life.

QUALITY OF LIFE, SENSORY AND AFFECTIVE COMPONENTS OF LOW BACK PAIN EXACERBATIONS DURING TREATMENT IN HOSPITAL

Introduction. Back pain is a common problem and a leading reason for all physician visits. The majority of people who experience an episode of low back pain will improve over time. Wide variations in the use of pain medications, physical measures, injections suggest professional uncertainty regarding optimal therapy. Despite rapid increases in the use of opioid and non-opioid pain medications, complementary and alternative medicine, and surgery, there is no clear evidence of improved functional status or declining work disability related to back pain.

Purpose. The aim of the study was to investigate the clinical efficacy of complex treatment of exacerbation of lumbar pain using medication katadolon.

Materials and methods. We examined 46 of aggravation of lumbar pain (17 men, 29 women). The average age of patients was $47,5 \pm 12,27$ years. A clinical neurological examination with assessment of pain intensity for Visual analog pain scale (VAS), emotional state of the Beck depression scale (Beck Depression Inventory), the functional state of the spine - for tests Schober, Tomayera quality of life for patients - with help of The MOS 36-item Short Form Health Survey (SF-36). Patients received standard combined therapy (vasoactive drugs, vitamins, physiotherapy, massage, etc.). Against the background of basic therapy administered drug katadolon dose 100 mg 3-4 times / day orally for 5-7days. Statistical data processing was performed in the statistical package SPSS20 (© SPSS Inc.).

Results. A course of inpatient treatment with the drug for 5-7 days katadolon possible to achieve regression of pain. This is confirmed by a decrease in pain intensity on a scale of VAS $51,06 \pm 12,33$ to $27,87 \pm 7,02$ mm ($p < 0.001$) increase in the volume of active movements, a decrease in the immobilization of the lumbar spine. By the seventh day of treatment observed statistically significant changes during the performance test Schober and Tomayera ($p < 0,01$). A course of treatment possible to achieve positive dynamics of the physical component of quality of life (PCS) for the SF-36 ($p = 0,039$). The greatest influence on the results of treatment provided psychological characteristics of patients. Mental depression symptoms were observed in 56.5% of patients, but with the additional use of psychometric tests depression was diagnosed in 78.3% of patients. In patients with clinical depression outcomes were worse, and the quality of life and lower efficiency.

Conclusion. Catadolon may be a useful and safe treatment for low back pain. However, the results confirm the fact that the prevalence of depressive disorders among patients with acute exacerbation of low back pain (78.3%), their negative impact on the sensory component of pain and quality of life for patients.

Key words: *low back pain, catadolon, efficiency, quality of life.*

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SIGNIFICANCE OF GENE RECEPTOR OF VITAMIN D POLYMORPHISM IN OSTEODEFICIENCY PATHOGENESIS OF WOMEN IN POSTMENOPAUSAL PERIOD

Introduction. It can be assumed that the general and local disturbances of the bone formation and bone resorption regulation directly or indirectly depend on the structural genes adequacy associated with mineral metabolism in postmenopausal women and have influence on osteodeficiency (OD) degree. The leading role among them has gene of vitamin D receptor (VDR).

Aim: The effect of +61968C/T and -3731A/G VDR gene polymorphisms on the severity of OD, the blood levels of osteoassociated hormones (OAH), sex hormones (SH), proinflammatory cytokines and mineral elements were investigated in the women with postmenopausal OD.

Materials and methods. Subjects: 37 women with OD in menopausal period and 15 patients (40.5 %) without OD in the control group were examined. OD was observed in 22 women (59.5 %), osteopenia (Op) was detected in 15 women (40.5 %) and osteoporosis (OP) – in 7 women (18.9 %).

OD degree was detected by the bone mineral density index (BMD). Biochemical analyzer «BS-200» determined activity of alkaline phosphatase (ALP), calcium (Ca), phosphorus (Ph) or magnesium (Mg) in the blood. The serum levels of OAH: parathyrin (PT), calcitonin (CT), osteocalcin (OC), insulin (I), cortisol (CR), triiodothyronine (T3), thyroxin (T4) and levels of estradiol (E2), testosterone (TS), progesterone (P), proinflammatory cytokines: IL1 β and TNF α were investigated by ELISA. For detection of VDR gene polymorphisms PCR/RFLP (polymerase chain reaction/restriction fragment length polymorphism) assay have been used. Statistical analysis was performed using the program «STATISTICA 6» (StatSoft, Inc.). Allele frequencies and their departure from Hardy-Weinberg Equilibrium (HWE) were estimated by χ^2 test. Degree of association of genotype and allele with OD was calculated from the odds ratio (OR) with regard confidence interval (CI=95%). Confidence of the polymorphic allele and genotype influence on blood levels of the OAH, SH, cytokines, BMD was revealed by ANOVA (F test).

Results. Polymorphism 61968C/T VDR gene in the homozygous variant C/C was investigated in a group of women without OD in 46.7 % and in 13.6% in a group of women with the OD ($p=0.03$). At the same time, a genotype T/T was more frequent in women with OD – 45.3 %, than without it – 13.3 % ($p=0.04$). The character of frequency distribution of genotypes of -3731A/G VDR gene polymorphism was similar. Homozygous case A/A was more frequent in women without OD (53.3 %), and rarely in women with OD (18.2 %) ($p=0.02$). Conversely, genotype G/G was revealed in 36.4% of cases with OD and in 6.7% in the group without OD ($p=0.04$). Frequency distribution of genotypes of +61968C/T VDR gene polymorphism were

significantly different in the groups of women with and without OD ($\chi^2=6.44$; $p=0.04$), according to HWE for each group: $\chi^2=0.18$; $p=0.96$ and $\chi^2=0.15$; $p=0.97$. OR calculation revealed that the genotype T/T predisposed to OD development and increased the risk of disease more than 5 times (OR=5.42; CI=0.98-29.92), whereas genotype C/C had a protective effect regarding the development of OD and defined risk reduction 5.5 times (OR=0.18; CI=0.04-0.88). OR analysis for alleles identified that the presence of T allele increased the risk of OD development 4 times (OR=3.87; CI=1.45-10.33). The genotype frequencies of the -3731A/G gene VDR polymorphism (see table 2) were significantly different between groups of women, depending on presence or absent OD ($\chi^2=6.44$; $p=0.04$). HWE for groups with and without OD was observed as: $\chi^2=0.08$; $p=1.00$ and $\chi^2=0.01$; $p=1.04$, respectively. Availability of A/A genotype reduced risk of OD 5.3 times (OR=0.19; CI=0.04-0.86), while genotype G/G was associated with increased risk of OD 8 times (OR=8.00; CI=0.88-72.70). Accordingly, the presence of allele A had 4-fold protective effect against the OD development (OR=0.25; CI=0.09-0.69), whereas the presence of allele G, on the contrary, contributed to the development of the disease, increased the risk 4 times (OR=3.97; CI=1.45-10.88). Effect of +61968C/T content VDR gene polymorphism on TS level in the blood (F=3.34; $p=0.048$), IL1 β (F=3.64; $p=0.040$) and also on the BMD (F=7.20; $p=0.005$) was identified. Variation of genotypes of -3731A/G VDR gene polymorphism had effect on the blood levels of PT (F=6.18; $p=0.0095$), P (F=10.99; $p=0.0006$), TS (F=5.27; $p=0.015$), ALP (F=13.85; $p=0.00014$), Ca (F=8.55; $p=0.002$), Ph (F=6.62; $p=0.0065$), Mg (F=5.44; $p=0.013$) and BMD (F=6.65; $p=0.0064$).

Conclusion. Women in postmenopausal period without osteodeficiency have genotypes C/C and A/A of polymorphic locuses +61968 C/T and -3731 A/G of VDR gene's was elicited in 3.4 and 2.9 more often. Their availability was decreased the risk of development of disease in 5.5 and in 5.3, corresponding. Genotypes T/T and G/G was found in 3.4 and in 5.4 more often between women who have osteodeficiency. In this case, the risk of disease's development was increased in 5.4 and in 8 corresponding. In our research work was found the influence of polymorphism +61968 T/T of VDR gene on the increasing of cytokine 1 β blood level and decreasing of testosterone one. Polymorphism -3731 G of gene VDR was associated with decreasing of testosterone and calcium blood level. At the same time levels of parathyrine, phosphorus, magnesium and activity of alkaline phosphatase was increasing. Booth of polymorphisms have been influenced on development of osteodeficiency. This results was confirmed the influence of gene VDR allele's polymorphism in the postmenopausal osteodeficiency pathogenesis. We are thinking about consequence of abnormalities mechanism of gene regulation in bone tissue removing processes.

Key words: polymorphism, gene VDR, osteodeficiency, postmenopausal period.

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INVESTIGATION OF AGE PECULIARITIES OF THE PHENOMENON OF STUDENTS PERFECTIONISM

Introduction. Age is a central category of science, studying human development, including psychology. Age is one of the basic and complex categories of developmental psychology. Each age period describes the next phase of life. These periods consist of certain social situations as a kind of relation of the individual to the social reality that determine the paths by which the social becomes personal.

There are different age periodizations of human psychological development, but most researchers believe that over time, studying at the university matches during youth and early adulthood, characterized by the complexity of personality.

The aim of the work was to study the phenomenon of students age-makeovers in higher education institutions that have an impact on the formation of future specialist - a doctor.

Materials and methods. In the study took part 275 students of Medical Faculty, Dental Faculty and Medical Faculty № 2 with specialty medical psychology.

To analyze the phenomenon of students perfectionism was used questionnaire of Kholmogorova A.B., Garanian N.G. (2001), which made it possible to determine the general level of perfectionism. Further correlation analysis were age and perfectionism.

Results. Age was significantly negatively correlated with the rate in the general group ($R = -0,28$, $p < 0.001$), we can expect a lower rate of perfectionism of older students.

Conclusions. 1. All students who participated in the study were in the age groups of 16-17 years (early adolescence); 18-21 years (late adolescence); 22 years and older (early adult period).

2. The average age of study participants was $19,73 \pm 0,13$, the vast majority of respondents (75%) were in the age group 18,5-20,5 years - the period of late adolescence.

3. Obtained significantly negative correlation with age in the general group of study. Students in the early adult period showed that their level of perfectionism was significantly lower compared with other age ranks (early and late adolescence), which may be explained by the acquisition in early adult period of social maturity, stability, inherent in the completion period of the formation of youth identity, their own worldview and concepts of life, formed by the desire for self-assertion, independence, originality, perfectionism judgments disregard the advice of the elders, criticality and unjustified mistrust, lack of awareness of the consequences of their actions.

In all age students groups and among students of all faculties, dominated people with an average level of perfectionism. However, at the age of 16-17 years old students low-perfectionism was significantly less than that of students of other ages in categories 22 and older - significantly smaller proportion of people with high levels of perfectionism.

Key words: perfectionism, ages, adolescence, adulthood.

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FORM FACTOR OF NEUTROPHILIC GRANULOCYTES AS A QUALITATIVE INDICATOR OF THE PHAGOCYtic ACTIVITY

Introduction. At present diagnostic and curative measures are often impossible without a complex assessment of the structural and functional state of the immune system. But in most cases determination of these indices is a complicated and long process requiring special experts, expensive reagents, and equipment, besides, not always they reflect the real protective capabilities of the organism objectively. That's why at present in the practical medicine the function of the immune system can be estimated more easily and rather accurately mainly according to its non-specific cellular component. An important indicator of the natural non-specific resistance is the functional state of neutrophilic granulocytes. Changes of their functional and metabolic activity are of the non-specific nature and constitute an objective estimation criterion of the state of the effector component of the immune system. Therefore, the **research objective** was to study the correlation relationship between the index of the neutrophilic granulocyte form factor (NGFF) and generally accepted laboratory indices of the immunological examination.

Materials and methods. To achieve the stated objective 84 patients were involved (33 men and 51 women) with the secondary immunodeficiencies of the infectious genesis manifested in frequent recurrent diseases of the upper respiratory tracts. The patients aged from 18 up to 58 years. All the patients underwent blood laboratory immunological examination in the allergic and immunologic centre of LLC "Alergotsentr-KPP" (Vinnitsa) that included: determination of the phagocytic activity of neutrophilic leukocytes (phagocytic index (PhI) and phagocytic number (PhN), basal and induced metabolic activity of neutrophilic leukocytes in the reduction reaction of the nitrotetrazolium blue, stimulation index, white blood count, number of immunoglobulins A, M, G, E of the blood serum by the method of the radial immunodiffusion, level of the circulating immune complexes (CIC) in the blood serum, estimation of the subpopulation composition of lymphocytes in the peripheral blood, leukocyte migration inhibition reaction (LMI) with phytohemagglutinin (PHA). Simultaneously the index of the neutrophilic granulocyte form factor was determined in all the patients.

Statistical assessment of the results was performed using the computer program STATISTICA 6.1.

Results. According to the results of the analysis a strong inverse correlation relationship with spontaneous NBT ($r=-0,81$; $p\leq 0,05$) and direct correlation relationship with the stimulation index ($r=0,61$; $p\leq 0,05$) and Ig M ($r=0,56$; $p\leq 0,05$) was revealed.

Conclusions and prospects of further studies. Indirect correlation relationship of the neutrophilic granulocyte form factor with the index of the blood immunological examination spontaneous NBT, direct relationship with the values of the stimulation index and Ig M level testifies the ability of the neutrophilic granulocyte form factor to reflect the phagocytic activity.

Determination of the neutrophilic granulocyte form factor as a marker of the phagocytic activity can have clinical significance for diagnostics of pathologic processes during which the effector component of the immune system is stimulated. In future it is planned to perform clinical tests to study the diagnostic capabilities of the NGFF in case of infected wounds.

Key words: Immunological parameters, form factor of neutrophilic granulocytes, correlation.

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PATHOGENETIC MECHANISMS MALFUNCTION LIPID TRANSPORT SYSTEM HYPERLIPIDEMIA

Introduction. Pandemic of cardiovascular disease that swept almost all of humanity is caused, first of all, the development of atherosclerosis. From the standpoint of the pathophysiology of atherosclerosis - a kind of chronic inflammation in the vascular tissue associated with impaired of system of lipid transport, where different classes of lipoproteins are considered as links in a chain [Talaeva, Bratus, 2007; Klimov, Nikulcheva 2009; Smith, 2010]. The last stage begins with the action on lipoproteins lipoprotein lipase, which breaks down the main energetically significant lipids - triglycerides into fatty acids and glycerol, which are absorbed by the tissues [Florova et al, 2005; Gozhenko, Kotyuzhinskaya 2012 ; Tsutsumi, 2003; Yasuda et al., 2010]. In this regard, it is relevant research that could be set pathogenetic mechanisms of disorders of system lipid transport at hyperlipidemia according to activity lipoprotein lipase, which was the purpose of our work.

Materials and methods. The material of the present study used data obtained from the survey of 116 patients with diffuse cardio sclerosis aorta (including 65 men and 51 women, mean age 59.1 ± 5.7 years). The comparison group consisted of 95 patients

with stable coronary artery disease without instrumental signs of coronary atherosclerosis (including 56 men and 39 women, mean age – 65.2 ± 8.5 years). The control group consisted of 17 somatically healthy persons aged 34.9 ± 1.1 years.

Studies carried out by enzymatic lipid transport system by using test kits from «Cormay Diana» (Poland). The content of total cholesterol (TC) and triglycerides (TG) in serum and plasma cholesterol in high density lipoproteins (HDL-C). HDL-C concentration was adjusted after deposition fractions of low density lipoprotein (LDL) and very low density lipoproteins (VLDL) by heparin and manganese ions. Content of cholesterol in LDL-C and VLDL - cholesterol was calculated by the formula mathematically Fridvalta, atherogenic factor (SC) - along Klimov. Plasma lipoprotein lipase activity was determined by titration according to the method of T. Olivecrona (1992) in the modification V. Titov (2003).

Statistical processing was made with the program «Excel». Differences were considered significant at a significance level of not less than 95 % ($p < 0.05$).

Results. State of the lipid transport system in patients surveyed groups was of atherogenic character. Our analysis showed multidirectional LPL activity in patients examined groups. There was a significant decrease in enzyme activity in patients with atherosclerosis relative to the control and a tendency to an increase in enzyme activity in patients with coronary heart disease. However, it should be noted that in the control group triglyceride levels decrease in relation to the initial level was 24.12%, those with atherosclerosis, 53.72%, while in patients with coronary artery disease in normal medium LPL activity and increased initial concentration TG, lipolysis was only 12.21%. A correlation analysis showed that the patients in the control group is a negative correlation between the ratio of triglyceride and lipoprotein lipase activity ($r = -0,56$, $p < 0,01$) while the other group of patients was absent.

Conclusion. 1. Violations have been found lipid transport system, which were shown as hypercholesterolemia, hypertriglyceridemia and dyslipidemia in patients with clinical signs of atherosclerosis, and patients with coronary artery disease. 2. Lipid-transport system changes occur in the context of identified violations of the activity of lipoprotein lipase in the blood plasma, which leads to reduced efficiency of lipolysis, which violates the mechanism of transport of cholesterol and lipoprotein metabolism in general. The decrease of enzymatic activity correlates with hemodynamic status in these patients.

3. Violations of lipid-transport system associated with decreased activity of lipoprotein lipase, should be considered as possible pathogenetic mechanisms of lipid uptake and tissue development of atherosclerosis in general.

Key words: lipids' profile, lipoprotein, atherosclerosis.

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THORACOSCOPIC SYMPATHECTOMY IN TREATING OF PALMAR HYPERHIDROSIS

Introduction. Endoscopic thoracal sympathectomy in the present time is used for treatment of palmar hyperhidrosis, stressful blush (blushing syndrome), and complex regional pain syndrome of upper extremity, vasospastic acrocyanosis as well as other pathologies. *Purpose* is to study the effectiveness of thoracoscopic sympathectomy implementation in treatment of idiopathic or primary palmar hyperhidrosis.

Materials and methods. In the study basement was put a combined analysis of Central Hospital of Home Affairs of Ukraine and SI "Institute of Urgent and Recovery Surgery n.a. V.K. Gusak of NAMS of Ukraine" of 110 thoracoscopic sympathectomies on the occasion of idiopathic or primary palmar hyperhidrosis. The median age of the patients was $24,3 \pm 5,6$ years; there were 47 (42,7%) men and 63 (57,3%) women. Among the patients the combination with axillary hyperhidrosis was in 24 of cases (21,8%); craniofacial numbered 11 (10%) and blushing syndrome was 2 (1,8%). The main complaint of the patients before the surgery was significant palm sweating; and in 36 (32,7%) of cases with skin maceration events in the interdigital spaces, constantly wet clothes in the axillary area. It should be mentioned that more than a half of patients took part in the social work, connected with the business meetings that lead to the social discomfort. Also 87 of patients (79,1%) usually worked with the stationary computer or laptop that lead to the discomfort according to the understandable cause. 39 patients (35,5%) referred after the unsuccessful treatment in the beauty salons where they attempted to stop hyperhidrosis with the help of conservative methods. Before the operative treatment all the patients went through the chest radiography; conventional clinical observations; they also signed consent for operative treatment, and the patients were informed about the possible complications and treatment results.

Thoracoscopic sympathectomy was made according to the classical method on the Th2-3 level. During the postoperative period they assessed the effectiveness of the treatment due to the patient's satisfaction, effect presence and number of complications.

Results and their discussion. During the postoperative period 89 (80,9%) of patients used non-narcotic analgesics in 1-2 days of postoperative period for relief of insignificant pain syndrome in the area of trocar implementation. The significant pathologic pain syndrome was noticed in 4 patients (3,6%), subcutaneous emphysema in 9 patients (8,2%), pneumothorax was noticed in 5 patients (4,6%). Postoperative exudative pleurisy in the early postoperative period had 2 patients (1,8%), that was eliminated by the single puncture; we received 120 and 150 ml of exudate. Insignificant Horner's syndrome was observed in 13 patients (11,8%), that disappeared after one month of postoperative period without assistance. The significant compensatory hyperhidrosis had 3 (2,7%) patients, that required prolonged conservative treatment. Intra-operative complications such as bleedings from the intercostal vein was noticed in 4 cases (3,6%); that was stopped in 2 (1,8%) of cases with coagulation and in 1 (0,9%) case by clipping. 107 of patients (97,3%) was absolutely satisfied by the operative treatment.

Conclusions. Thoracoscopic sympathectomy in the primary hyperhidrosis was successful in 97,3%. Bilateral intervention was provided with three-day interval in 14 patients (12,7%) with the positive effect. In the case of technical complications we implemented additional third trocar with the introduction of subsidiary instrument for three patients (2,7%).

Key words: palmar hyperhidrosis, thoracoscopic sympathectomy.

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PATHOPHYSIOLOGI PECULIARITIES OF ENDOVENOUS LASER COAGULATION METHOD AND FOAM-FORM SCLEROTHERAPY DURING TREATMENT OF C2 CLASS CHRONIC VEIN DISEASE

The main purpose of contemporary phlebology is to transform the operative surgery procedure in the “one-day surgery” by maintenance of maximal cosmetic effect and absence of relapse as well as post-operative complications. In the study basement are investigation and treatment data of 384 patients with C2 low extremities vein disease (according to the CEAP classification. We divided the patients into five groups: in the 1 control group (consisted of 80 patients) took place the standard phlebectomy; the other 4 comparison groups went trough the following: in the 1a group was implemented endovasal laser coagulation (EVLC); and this group consisted of 62 patients; the 1b group went through the sclerotherapy (ST) and included 57 patients; the 1c group had EVLC+ST (it numbered 45 patients); 1d group went through the EVLC+ST+subcutaneous vein intersection or mini-phlebectomy (this group included 140 patients). For the effectiveness investigation of the mentioned treatment procedures took place general assessment of quality of life in patients with the help of CIVIQ questionnaire before the surgery and 1 year after the surgical treatment.

Results. Discussion. The most common complication were limited thrombophlebitises that consisted 10,2%; the second one by the frequency were subcutaneous hematomas with 6,9%; and after that went down transient paresthesias with 4,9%; and seromas and/or wound suppuration appearance that was 4,3%. The limited thrombophlebitises in the control group numbered 5%; transient paresthesias were 22,5%; subcutaneous hematomas consisted 30%; seromas and/or wound suppuration appearance numbered 27,5%. According to the whole parameters the complication number was 4-5 times higher than in the sub-groups with small invasive methods that once more underlines the great tissue traumatization by the using of this method.

The most numerous number of complications were ecchymoses; they numbered 38,8%; bands were observed in 31,25% of cases and skin pigmentation was fixed in 7,2% of cases. It should be noticed that EVLC was characterized by the ecchymoses and pigmentations but for the ST it was band appearance.

We used differential treatment practice in combined therapy; thus we apply EVLC to the upper third of shin and hip; for the lower parts we use CT, which allowed absolutely avoiding the development of neuritis of subcutaneous sensible nerves on the shin. The implementation of radial but not frontal laser on the hip with vein diameter more than 1,3 cm; it permitted to achieve the 100% absolute vessel obliteration.

Thus in comparison of all these side effects and complications we see that by the majority of the studied parameters the worthiest results were achieved in the control group; videlicet, with the patients that went through the traditional phlebectomy. In total the best results were achieved in the 1d group. The small invasive technologies during the CVD treatment increase the quality of life on the 26,8 points and traditional one on 17,4 points.

As a result of the fulfilled comparative analysis we showed that small invasive technologies had a number of advantages over the traditional surgical treatment methods in CHD, such as decrease of the complications number and side effects as well as in the substantial increase of patients' quality of life with the mentioned pathology.

Key words: chronic vein disease, phlebectomy, low invasive technologies.

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OUR EXPERIENCE PROSTHETIC PATIENTS WITH DYSPLASTIC OSTEOARTHRITIS OF THE HIP

Introduction. In the present, osteoarthritis of the hip occurs in Ukraine according to the literature in 7,25%. In 70% of patients the cause of osteoarthritis is hip dysplasia. Prosthetics dysplastic osteoarthritis patients much more complex operation than in cases of osteoarthritis in the investigation of disease, injury of the hip joint as a result of a marked changes acetabular obliquity of pelvis. This prosthesis in cases of patients with osteoarthritis of dysplastic uses special prostheses, bone grafting.

The aim of the study was to summarize our own experience prosthetic patients dysplastic osteoarthritis of the hip.

Materials and methods. Treatment of osteoarthritis - one of the most important problems of modern orthopedics, has not only medical but also social value. Surgery for hip are the most difficult section of the primary prosthesis. Ensure compliance with its fundamental principles - to restore form and function of the operated limb - in these cases it is difficult. The main difficulty is the implantation of the acetabular component of the prosthesis.

Many aspects of the problem remain poorly understood. In particular, it relates to methods of diagnosis (X-ray computed tomography, magnetic resonance imaging),

the classification of hip , a clear definition of the indications for the use of a particular type of implant, bone grafting and the use of its technology, as well as to methods of postoperative rehabilitation.

In the city hospital ambulance at the Department of Traumatology and Orthopedics Vinnitsa National Medical University Pirogov by name performed since 1998 hip replacement. In the study period, from 1998 to 2013, 1724 prostheses implanted hip joints, including 172 on the occasion of the dysplastic of the hip osteoarthritis. Total 164 patients were operated, including bilateral dysplastic osteoarthritis - 16 people (26%). Therapeutic exercises administered 16-18 hours after surgery. Dosage load 24-48 hours, walking on crutches administered through 24-78 hours depending on the election procedure fixation of the acetabular component of the prosthesis In cases of bone grafting dosage load resolved 72-96 hours. Patients were discharged with no complications 6-10 days after surgery.

Results. Not satisfactory, we considered the result with unreduced reference, limitation of motion contracture. Good results were obtained in 143 patients (87%), satisfactory in 16 (10.1%), are not satisfactory in 5 cases (2.9%). Complication after surgery was noted in 28 patients (17.2%) was the most frequent complication of deep vein thrombosis of the lower limbs. Thrombosis treatment required additional hospital stay - up to 12-14 days, these complications did not affect the long-term results of treatment. The second most common complication was the presence of the surgical wound. Fractured leg prosthesis in 2 patients (1.4%). Aseptic loosening - in 11 (6.7%) of the operated joints. Cause complications were primarily violations patients assigned to them earlier rehabilitation plan.

Conclusions. Hip replacement - a highly effective surgery. With the exclusion of technical errors and professional performance, that is, the algorithm steps prosthetics, compliance designated rehabilitation plan, in 75-96% of patients can be secured a good result.

Rehabilitation carried out in specialized clinics and effective repetition rate it annually provides resistance achieved results. Perspective of this article is to provide information and statistical data orthopaedists and traumatologists for decision to the planning of surgical treatment.

Key words: dysplastic osteoarthritis, hip prosthetics, compensation limit, subindemnification, decompensation.

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POPULATION OF CD34+/CD38- IN PATIENTS WITH ACUTE B-LYMPHOBLASTIC LEUKEMIA ON DIFFERENT STAGES OF THERAPY

Introduction. The cause of acute lymphoblastic leukemia (ALL) - the most common varianta tumors of childhood is one of the most important issues facing researchers.

In the mid-90s. XX century. papers were published showing that some variants of tumors, including acute myeloid leukemia (AML), can develop from a minor population of cancer stem cells with immunophenotype CD34 + / CD38-. Cells with these properties are called leukemia-initiating or leukemic stem cells (LSC) [Campana, 2010; Kelly, 2007].

The purpose of this study was to evaluate the parameters B-lymphoblasts expressing antigenovSD34 and CD38 as potential markers of leukemic stem cells.

Materials and methods. In bone marrow samples from 68 patients with B-linear acute lymphoblastic leukemia (B-ALL) were evaluated parameters of antigen expression CD34 and CD38 on CD19⁺ B lymphoblasts: the time of leukemia diagnostic (day 0) and during the during definition of minimal residual disease (MRD) at 15and 33 days of induction therapy in order to assess the possibility of application of these antigens as markers leukemia stem cell (LSK). Found that in the beginning of disease number of cells with coexpressionCD34⁺/CD38⁺ amounted about 79% and number of CD34⁺/CD38⁻was no more than 2%.

Results. During assessing the MRDhigh percentage bothCD34⁺/CD38⁻ as well as CD34⁺/CD38⁺among the general population leukemic cells was associated with a worse response to the therapy. It possible to assume that the population of cells CD34⁺/CD38⁻, and CD34⁺/CD38⁺ may have potential leykemic activity. Theory of leukemia-initiating cells suggests that the LCS - a rare phenomenon. However, the work of some research groups indicate that the LCS is not always small populations [Movchan, Chemin, 2012], and that functional heterogeneity within the pool blasts caused different ability of tumor cells to contribute to the maintenance of the tumor and to respond to external signals [Becker, Jordan, 2011]. There are a number of works that show that some of the antibodies used to identify the LCS (HIT2 and AT13 / 5 clones of anti-CD38), can induce Fc-receptor mediated clearance of LCS, masking potential of leukemic activity of populations of CD34⁺ / CD38⁺ cells [Vieseur et al., 2008]. In our study population for CD38⁺ / CD34⁺ are also obtained results demonstrate a higher level of cells with double positivity both on 15 and 33 days of treatment in the subgroup with higher levels of MRD. The number of CD38⁺ cells /SD34- by the 15th day of therapy was greatest in the subgroup with the level of MRD<0.1%, apparently due to recovering hematopoietic elements.

Conclusion. 1. The population of tumor cells with B-ALL in early disease is heterogeneous, there are subpopulations with different physical and functional characteristics, with varying degrees of susceptibility to the treatment. The proportion of cells with the expected phenotype LCS (CD34 + / CD38-) is not more than 2%.

2. When estimating RFI as high a percentage of CD34 + / SD38- and CD34 + / CD38 + CD19 + among lymphoblasts associated with a worse response to therapy. Suggesting that the population of cells CD34 + / CD38 + leukemic also has potential activity.

Key words: acute lymphoblastic leukemia, minimal residual disease, leukemic stem cells.

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FEATURES OF LINEAR DIMENSIONS OF THYROID GLAND IN PRACTICALLY HEALTHY PODILLYA MEN AND WOMEN OF THE FIRST MATURE AGE

Introduction. Researchers who describe as the norm and pathology of the thyroid gland, often based on mean values of macroscopic parameters, without regard to age, place of residence, which distorts the picture of the results. This approach reduces the reliability of comparisons between norm and pathology, as well as on compare of research results of thyroid from different regions [Доротенко, 2004; Асфандияров, Удочкина, 2008]. Several authors found that the macroscopic structure of the thyroid gland depends on a number of the most important factors [Власенко, 2005; Никишин, Глумсков, 2008]: location - "regional standards"; age - "age norm"; sex - sexual dimorphism.

Besides the above listed factors is no less important determination of individual variability of parameters gland of healthy people, the same age and sex [Калмин, Калмина, Никишин, 2007; Чаплыгина, Кучиева, 2011].

Aim of our work – establish sonographic morphometric parameters of thyroid and their differences in practically healthy urban residents Podolsky region of Ukraine of the first coming of age.

Materials and methods. Carried out clinical laboratory and anthropological examination of 89 practically healthy urban residents Podolsky Ukraine region of the first coming of age with subsequent statistical analysis of the results, carried out in licensed statistical package "STATISTICA 6.0" using parametric and nonparametric methods.

Ultrasonography of the thyroid gland was performed using ultrasound diagnostic system "CAPASEE" SSA-220A (Toshiba, Japan) with a convex sensor operating frequency of 3.75 MHz by conventional methods. We determined the volume and linear dimensions of the left and right parts (length, width and thickness) of the thyroid gland, and the thickness of the isthmus. Also defined area of the longitudinal section of the right and left parts, the total area of the longitudinal section of thyroid parenchyma and acoustic density of each of its shares.

Results. The most pronounced differences in morphometric and sonographic parameters of thyroid established group 25-36 year old men compared with 22-25 year old male - namely in the width and thickness of the right and left lobes and the isthmus thickness of gland are significantly higher in the older age group. In women 25-36 years, compared to 21-25 year old female was significantly greater differences established only for the width of the left lobe and thickness of the right and left parts of the investigated organ.

Longitudinal size (length) of both particles of gland in general studied and two age groups has no significant intragroup differences.

Preferably in all size of gland was set significantly larger differences and trends towards to larger values in men compared to women of similar age groups (except for

the width of the left and right particles and the thickness of the isthmus of the thyroid gland in the comparison group of men and women 21 (22) -25 years).

Key words: thyroid gland, men, women, sonographic study, age, gender.

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THE DEFINITION OF PSYCHOSOMATIC STATUS OF WOMEN DEPENDING ON DOMINANT GESTATIONAL

Introduction. In modern obstetrics many researchers set great value "dominant pregnancy." Gestational dominant replaces the dominant conception and is required for normal pregnancy and, in turn, changes the dominant clan, so necessary for normal delivery. There are physiological and psychological components of gestational and dominant clan, determined biological or mental changes that occur in women aimed at nurturing and childbirth. Dominant pregnancy is formed from the original psychosomatic status, obstetric and somatic disorders. The current dominant pregnancy contributes to uncomplicated childbirth and the postpartum period is a result of changes in the dominant timely delivery.

The goal of the study was to identify features in the mental and physical status of women with different types of gestational dominants and their comparison.

Materials and methods. The object of study was the examination and observation of 106 women aged 18-36 years who underwent psychological testing in the 3rd trimester of pregnancy. To determine the characteristics of the mental status of pregnant women used the test "mental states of self-esteem" in H.Ayzenku questionnaire EPQ, and conducted surveys somatic status of pregnant women.

Results. In analyzing the results obtained after testing on the questionnaire EPQ [1995] found that among women with GP and NGOs dominated melancholic - discreet, pessimistic, sober, rigid personality type, their share is respectively 56.7% and 55, 3%, and women with choleric type-sanhvistychnym - optimistic, active, Extroverted, friendly, affordable, 20% and 27.6% respectively.

Subject test "Self mental states" (for H.Ayzenkom) [1995] can be said that among subjects with GP dominated by women with low and moderate levels of anxiety (53.3% and 43.3%) and aggressiveness (60% and 40%); low- and middle-frustration (63.3% and 33.3%). Assessing the level of rigidity in the CO and GP can be noted dostotovirno higher level of rigidity, not peculiar subjects of OG. We also analyzed the somatic status of women who participated in the study.

During the studying it was found that the deviation from the optimum type PCGD led to complications of pregnancy, among which the main were gestoses, anemia, difficult childbirth and stroke increased obstetric injuries. As the share of influence psychosomatic status on these parameters is large, it is necessary to consider the prediction and prevention of complications of pregnancy and childbirth, and the postpartum period.

Conclusions. 1. The survey revealed that there is a relationship between mental state of women and some features of pregnancy, childbirth and the postpartum period.
2. Deviations from optimal type PKHD lead to complications during pregnancy, including major were gestosis, anemia and difficult course delivery and increased obstetric injuries.

Key words: pregnancy, childbirth complications, psychosomatic status of pregnant women, gestational dominant.

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THE ABILITY TO PERCEIVE SOCIAL SUPPORT FOR PATIENTS WITH SCHIZOPHRENIA

Introduction. Work with the social environment of people with mental disorders - most important aspect of mental health care, and social support - one of the central aspects of multidisciplinary teams [Hurovych, Semenov, 2007]. Social support - a form of assistance to overcome certain stress factors and excessive subjective requirements that apply to an individual social environment.

The aim of our study was to investigate the characteristics of patients with paranoid schizophrenia for their ability to perceive social support.

Materials and Methods. If informed consent was examined 168 patients with paranoid schizophrenia (CO; 97 men and 71 women). The main criteria for inclusion of patients in the study were: presence of general diagnostic criteria for schizophrenia (F20.0); the presence of occasional manifestations of psychosis Progressive development of "negative" symptoms in between psychotic episodes; remission; having a family of their own or parents; consent of the wife, husband or other relative reference to participate in the study.

The age of patients ranged from 23 to 45 years (mean $34,1 \pm 0,8$ years). The duration of observation was at least 1 year, with an average of 2.7 years. The duration of the disease in 57 patients was 4 years old, in 58 patients surveyed by us illness lasted from 4 to 8 years and in 53 patients over 8 years. The average age of manifestation of the disease - $25,3 \pm 2,9$ years. The control group (CG) consisted of 55 persons who had not sought medical attention on mental disorder.

Results. The features of the ability to perceive social support in patients with schizophrenia according to the dynamics of the disease. Donors identified social support: family, friends and other important. Found that the ability to perceive social support for patients with schizophrenia decreases with increasing duration of the disease.

A low degree of social integration is one of the most important characteristics of social and supportive process in patients with schizophrenia. Affected interpersonal relationships in the family of suppressed desire of its members to support patients, lifestyle which led to the disintegration of family relationships and break. Opposition

from family members to change behavior, negative emotional response to any incident, caused in patients with schizophrenia negative and aggressive acts, intensified emotional instability, aggression and irritability. Social support family did not meet the needs of the patient and not coincide with his intentions, desires, needs, and as a result, patients refused to support family members were nekomplayentny, and relations were even more negative emotive.

Conclusions. Our findings regarding the ability of schizophrenic patients perceive social support showed the following: the presence of a mentally ill person in the family is a factor in the activation prosotsialnoyi network to assist in the formation mechanisms of overcoming stress in patients with schizophrenia.

As a donor social support for patients with schizophrenia are the "family", "friends" and "significant others."

Social Network "family" in patients with schizophrenia in most cases represented paternal family. Social network "friends" in patients with schizophrenia are few in number, because of a mental state of patients, severity of symptoms obligate schizophrenic process (autism, apathy, ambivalence), a certain level of emotional behavior dezintehratyvnoyi-willed flattening. In the social network "significant other" in schizophrenic patients as donors of social support are defined wife (28.6%), mother (39.8%), parents (20.2%), male (11.3%).

Key words: paranoid schizophrenia, social support, social support donors.

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CLINICAL AND INSTRUMENTAL PREDICTORS ATRIAL FIBRILLATION IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

Introduction. According to world statistics observed steady growth of chronic obstructive pulmonary disease. Ten-year retrospective analysis of medical records inpatients found that 51.7% of patients diagnosed with COPD, cardiovascular system, including frequently in 28.9% - coronary heart disease (CHD) in 19.6% - heart failure (HF), at 12.6% - arrhythmias. The presence of comorbidities increases the frequency of hospital admissions during the year about any diseases [Bondarenko Yabluchanskyy, 2004; Kovalenko, 2010; Carverley, 2010].

The aim was to establish the prevalence of AF in patients with COPD, learn basic clinical and functional predictors of AF formation, compare data instrumental methods of examination in patients diagnosed with AF and without breaking the rhythm.

Materials and Methods. 108 patients: age of the patients was 45 and 59 - 42 (38.9%) and aged 60-74 years - 43 (39.8%), diagnosed with COPD, the average age of the surveyed (64,5±1,2) years, among them 68 were men (63,0%), mean age (66,2±2,8) years, there were 40 women (37.0%), mean age (57,08±4,2) years. All

patients underwent daily monitoring of electrocardiography (ECG) evaluation of arrhythmias, conduction, heart rate variability (HRV) assessment of coronary blood flow in the machine DiaCard 03500

Results. Danymi for daily ECG monitoring vyyaleno that patients with COPD diagnosed AF paroxysms in 32 (30.2%) patients. In patients with COPD, which are symptoms of AF paroxysms set of concentric left ventricular remodeling in 15 (46.3%) patients and eccentric left ventricular hypertrophy - in 8 (24%) ($p=0.05$), significant signs gipetrofii right ventricle increasing the thickness of the anterior wall of the right ventricle.

Cuttyevoyi differences in distribution between the degree of reduction in left ventricular ejection fraction in both groups surveyed by us are not set. Dominated by patients, as in 1 and 2 groups that had an ejection fraction of 45%, the number of patients with reduced left ventricular systolic function did not differ significantly between groups, these patients were under 5 (16.7%) 1 group and 14 (19.2%) in group 2 ($p = 0.32$). The analysis shows that left ventricular systolic dysfunction was significantly more often occurred in patients with concomitant coronary artery disease and manifestations of eccentric left ventricular hypertrophy.

Conclusions. The predictors of AF in patients with COPD have a number of structural and functional: the eccentric and concentric remodeling of the left ventricle, right ventricle remodeling due to overloading of both volume and pressure, pulmonary hypertension, right ventricular diastolic dysfunction.

Key words: chronic obstructive pulmonary disease, atrial fibrillation, predictors.

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ANALYSIS OF HORMONAL STATUS AMONG WOMEN OF CHILDBEARING AGE WITH OVARIAN VARICOSITY

Introduction. Chronic pelvic pain is a common gynecological problem and according to some sources reaches 10% of visits to the gynecologist. Ovarikovarikotsele find half the women with chronic pelvic pain [Park et al., 2004]. Although tuboovarialnogo varicocele described Richet MA in 1857, awareness of modern clinicians about the nature of the disease is low. *The objective* of the research was to study and analyze the peculiarities of the hormonal panel indices in women of childbearing age with ovarian varicosity.

Materials and methods. The hormonal status of women suffering from ovarian vein varicosity was studied by determination of the following blood serum hormone

levels: FSH, LH, TSH, prolactin, DHEA-sulfate, cortisol, progesterone, estradiol, testosterone during the follicular, periovulatory and lutein phase of the menstrual cycle. The research was carried out by the immunochemical method with ECL detection (ECLIA) using the test-system Roche Diagnostics (Switzerland). P-value was calculated using STATISTICA 6.

Results. The analysis of the hormonal panel of women of childbearing age with ovarian varicosity showed reduction of the level of estradiol (in the main group $58,5\pm 6,9$ pg/ml and $83,6\pm 9,8$ pg/ml in the control one ($p<0,05$)), progesterone ($0,5\pm 0,23$ ng/ml in the main group and $1,32\pm 0,48$ ng/ml in the control group ($p<0,05$)) against increase of FSH concentration ($8,48\pm 2,16$ mIU/ml - the main and $5,28\pm 1,11$ mIU/ml - the control group respectively ($p<0,05$)) during the follicular phase of the menstrual cycle; reduction of LH concentration ($17,37\pm 2,14$ mIU/ml against $27,34\pm 3,11$ mIU/ml in healthy women ($p<0,05$)) during the periovulatory phase, reduction of estradiol level $167,3\pm 8,4$ pg/ml against $213,4\pm 9,8$ pg/ml in healthy women during the periovulatory phase and $89,4\pm 3,11$ pg/ml against $114,6\pm 4,14$ pg/ml (healthy) during the lutein phase ($p<0,05$); reduction of progesterone level: $1,1\pm 0,32$ ng/ml against the hormone content in healthy women $2,4\pm 0,41$ ng/ml during the periovulatory and $8,1\pm 1,8$ ng/ml against $14,3\pm 2,1$ ng/ml (control group) during the lutein phase against the background of relative hyperestrogenism (increase of the ratio E2/P).

Conclusion. The above-mentioned changes in the hormonal homeostasis reveal ovarian dysfunction under the conditions of ovarian varicose veins. Ovarian varicosity can lead to development of dishormonal dysregulations and infertility in women of childbearing age. On the other hand the vasoactive effect of absolute or relative hyperestrogenism requires further studies.

Key words: ovarian varicose veins, pelvic congestion syndrome, sex hormones.

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THE PECULIARITIES OF TOTAL AND SEPARATED PARTIAL ANTHROPOMETRIC SIZES OF THE VOLLEYBALLERS AT THE YOUTH AGE

Introduction. The reliable differences of the length and the mass of a body, the square of the surface of a body, the height of the anthropometric points, the transversal and anteroposterior diameter of a body of the volleyballers at the youth age of the high level of the sportive mastery in comparison with practical healthy contemporaries who do not go in for sport are determined.

There is a main problem of the sportive selection in the system of the preparing sportsmen, which provides for the creation of a model of a sportsman in the given

speciality that is the certain composition of the signs which determine the sportive effectiveness.

The aim of our research was to determine the typical peculiarities of total, long, transversal and anteroposterior sizes of the body of the volleyballers at the youth age of the high level of the sportive mastery.

Materials and methods. The research was conducted on the base of the scientific research center of Vinnytsia national medical university named after M.I. Pyrogov. In the research the persons of the female sex at the youth age (from 16 to 20 years old) took part by the scheme of the age periodization of the ontogenesis of a person which was accepted at the VII All-Union conference on the problems of the age morphology, physiology and biochemistry АИИ СССР [Nikituk B.A., Chtetsov V.P., 1990]. Among them: 127 girls who do not go in for volleyball and at the moment of examination were practically healthy and 46 volleyballers of the high level of the sportive qualification (from the first adult grade to the masters of sport. We conducted the anthropometric research by the method of V.V.Bunak [1941]. With the calculation way we determined the square of the surface of the body by the method of Du Boi [Koveshnikov V.G., Nikituk B.A., 1992]. The long and oblong sizes of the body were measured with the help of special constructed universal rod metallic anthropometry of the system Martin. With the help of the slide gauge the dimension of the width of the distal epiphysis was made. The measuring of the diameter of the body was made with large bow compasses. The analysis of the received results was conducted with the help of the program STATISTICA 5.5 with the usage of the nonparametric methods of the mark of the indices.

Results. The reliability of the difference of the values between independent quantitative sizes was determined with the help of U- criteria of Man-Uitni. We revealed that volleyballers have reliable bigger ($p < 0.001$) mass of a body (64.20 ± 8.89 kg) than the girls who do not do sport (55.43 ± 6.85 kg). The average length of a body of the volleyballers (174.1 ± 6.6 cm) predominates this index of the non-sportswomen (164.0 ± 6.8), the difference between the given groups of comparison is statistically value. It is revealed that the well-qualified sportswomen's all oblong sizes of the body about what the height of the anthropometric points indicates, are also reliable bigger than non-sportswomen have (in all cases $p < 0.001$). During the research it was revealed that the square of the surface of the body in the group of the volleyballers has also reliable bigger value ($p < 0.001$). It is discovered that the volleyballers have reliable bigger value of the width of the distal epiphysis of the shoulder (6.368 ± 0.402), the forearm (5.170 ± 0.288), the thigh (9.192 ± 0.716) and the ankle (6.892 ± 0.456) than the girls nonsportive (in all cases $p < 0.001$). Analyzing the changes of the diameter of the body we brought out that the volleyballers of the youth age the transversal mesothoracic (26.64 ± 1.82 cm) lower chest sizes (24.58 ± 2.36) and sagittal mesothoracic size (17.67 ± 1.94 cm) are statistically bigger than non-sportswomen have. And by the indices of the width of the shoulders of the group of the volleyballers and non-sportswomen do not reliable differ. Thus, the volleyballers have more expressed adapting changes in the sizes of the chest. The specific of the sports activity of the volleyballers demands the adapting changes of the pelvic bones as well, which do the function of the bone support for the viscera

during the landing after jumping. That's why the growth of the pelvic we consider as positive sign in this kind of sport. We explored that the volleyballers in comparison with the girls who do not do sport have reliable bigger outward conjugant ($p<0.001$), valley ($p<0.1$) and swivel ($p<0.001$) distances. There is no valuable difference in interaxial distance between the groups of sportswomen and non-sportswomen.

Conclusions. The volleyballers have bigger all total sizes of the body, the height of the anthropometric points and the width of all distal epiphysis of the extrimities ($p<0.001$) than the girls who do not do sport have.

2. The statistically valuable changes in the changes of the diameters of the chest and most anthropometric sizes of the pelvic of the volleyballers in comparison with the non-sportswomen are determined.

Key words: anthropometry, volleyballers, non-sportswomen, youth age.

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CHANGES OF NON-SPECIFIC PROTEINASES, THEIR INHIBITORS AND PROINFLAMMATORY CYTOKINES IN THE SERUM OF CRITICALLY ILL PATIENTS

Introduction. Today, the pathogenesis of multiple organ dysfunction syndrome (MODS), which is the main cause of intensive care units patients' death, is more often seen from the position of systemic inflammatory response syndrome (SIRS) development. It is believed, that most critical conditions, independently on etiology, are accompanied by SIRS development. Cytokines as the regulatory factors and proteases as the effector factors, which have the main damage effect, play the key role in SIRS development. Study of changes in nonspecific proteases' and their inhibitors' system in comparison with the reactions of other proinflammatory factors could be the basis of effective criteria searching for the outcome prediction and treatment effectiveness controlling in clinic. The purpose of this study was to examine changes of non-specific proteinases, their inhibitors and anti-inflammatory cytokines in the serum of critically ill patients depending on the outcome of the disease.

Material and methods. The study was made on 54 patients in critical conditions with various etiologies, including complicated and uncomplicated acute myocardial infarction, severe skeletal trauma, severe head injury, blunt abdominal trauma, hemorrhagic shock and burn shock with various severity, acute intestinal obstruction, peritonitis, acute pancreatitis, necrotizing pancreatitis. All patients were divided into

2 groups: the first group (n = 25) included patients with a favorable outcome (recovery), second group (n = 19) - patients with a poor outcome (death within 10-15 days). The control group consisted of 10 healthy subjects matched for age and sex. Venous blood serum examination was performed at 1st, 3rd and 5th day after admission in hospital.

Determination of proteinase-inhibitory system components activity was performed by enzymatic methods on the spectrophotometer "Biomat 5" (UK). Determination of the pro-inflammatory cytokines concentrations (IL-1 β , IL-6 and TNF- α) was performed by enzyme immunoassay method with "Vector-Best" kits (Russia). Results were recorded by a micro plate scanner with wavelength 450 nm.

Processing of statistical data was carried out with using the variation statistics methods with the average values calculation (M), assessing the frequency of differences (m), assessment of the reliability of changes with using Student's t-test. The difference between the mean values in case of p < 0.05 was significant.

Results. In group of patients with favorable outcome in comparison with control was marked increased elastase-like activity (ELA), in 5 times, with the following decreasing, increased tripsin-like activity (TLA), in 1,5 times, with the same following tendency, increased antitrypsin activity (ATA), in 1,2 times, with the following increasing, insignificant increasing of acid-stable inhibitors activity (ASI), increased IL-1 β concentration, in 6 times, with the following decreasing, increased IL-6 concentration, in 5 times, with the following decreasing, and increased TNF- α concentration in 8 times more than control with the following decreasing.

In group of patients with unfavorable outcome was marked increased ELA at the 1st day, in 3 times more than control with the following increasing during 5 days to level, in 10 times more than control and in 5 times more than the same mean in group with favorable outcome, increased TLA, in 2 times more than control and in 1,5 times more than level in another group at the 1st day with the following increasing, the same level of ATA as in another group with the following decreasing to the control level, significant decreasing of ASI from the control level to level in 1,5 times less, increased level of IL-1 β , in 10 times more than control and in 1,5 times more than level in another group, with the following increasing, increased IL-6 concentration, in 9,6 times more than control and almost in 10 times more than level in another group, in admission with the following increasing, and increased TNF- α concentration at the 1st day, in 10 times more than control and on 25% more than in another group, with the following decreasing.

Conclusion. It is revealed significant activation of proinflammatory cytokines and nonspecific proteinases in critically ill patients' serum independently of etiology. In case of unfavorable outcome proteinase activity and proinflammatory cytokines levels are higher than in case of favorable outcome. In case of favorable outcome proteinase activity and proinflammatory cytokines levels decreases and proteinase inhibitors activity is stable or higher. In case of unfavorable outcome proteinase activity and proinflammatory cytokines levels increases. It indicates of SIRS progression and can be used as marker of unfavorable outcome.

Key words: proteinases, proteinases' inhibitors, cytokines, critical conditions.

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AGE-RELATED PECULIARITIES OF MENTAL AND BEHAVIORAL DISTURBANCES OF CHILDREN WITH AUTISTIC SPECTRUM DISORDERS

Introduction. In the article the author publishes the research data of peculiarities of mental and behavioral disturbances of children with autistic spectrum disorders. One of the important medical and social problems in the world, causing economic losses to society is mental illness in children. Studies in different countries show that mental illness in children population population ranged from 5 to 20% [Patel et al., 2007]; a high proportion of all mental illnesses in children occupying psychological development disorders, including autism spectrum disorders (PAC). PAC is one of the major causes of disability children. The preliminary studies conducted in the UK, Northern Ireland and the United States lifetime cost of care for individuals with autism spectrum disorders range from 1.4 to 2.4 million. Dollars for each patient [Report by the Secretariat WHO, 2013].

Objective: to study features of emotional, behavioral disorders in children with autism spectrum disorders in different age groups, to explore social interaction in these groups and obtained from the individual and age-appropriate mental and behavioral disorders in children with PAC develop effective therapeutic and corrective methods.

Materials and Methods. The work is based on a study of children and children with histories PAC compared the results with a control group of children; survey of parents; study the presence triad of impairments: social interaction, communication violations and stereotypes. In addition, subject to analysis the relationship of behavioral disorders associated with somatic symptoms.

The paper used adapted Wechsler tests to assess the level of verbal and nonverbal intelligence of the child: WISC - for children aged 6.5 to 16.5 years, WPPSI - for children from 4 to 6.5 years; Stanford Binet test, (4 ed.) for children older than two years, the scale of early language development (Early Language Milestone-ELM) and the scale of auditory-verbal development (CLAMS), designed for mass screening of children under 3 years. In addition, rating scales used infantile autism (CARS). Test SNAT (diagnostic card for kids) were used due to the lack investigated kids ages 18 to 30 months.

56 children of different age groups from early childhood to adolescence were investigated.

Results. Analyzed and studied the features of mental and behavioral disorders in 56 children and adolescents with autism spectrum disorders (PAC) of various age groups (3-17 years) who were treated at the children's department of Zhytomyr Regional Psychiatric Hospital №1. Age-specific distribution of the studied conducted in

groups: 3-5 years - 14 people (25%); 6-11 years - 28 people (50%); 12-17 years - 14 people (25%).

Symptoms often appear first PAC aged 5-7 years when the child first enters the child psychiatrist. Unfortunately, only in recent years (2012-2013rr.), There is the so-called "early treatment". Of all studied only in 3 (5%) breach autism spectrum under the age of 3 years.

The differences in mental and behavioral disturbances of children with autistic spectrum disorders were studied. Depending on the age-related peculiarities of these disturbances the author offers differential approach to medical correctional work.

Conclusions. 1. Age-related signs of emotional and behavioral disorders in autism spectrum disorders in children depend on the individual characteristics of the child and of the family values of the society, as well as the time diagnosing PAC.

2. Features of age mental disorders and behavior in children with autism spectrum disorders affect the choice of treatment and corrective measures. In early childhood dominated by individual correction programs. In the preschool and early school years - both individual and group corrective measures. In adolescence, social adaptation necessary to prepare children for a given work to reach language Adolescents program of choice is TEASSN.

3. Early diagnosis of autism spectrum disorders in children improves the results of corrective therapy.

Key words: autism, children, age-related peculiarities, correction.

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COMPARISON OF TRANSVERSE BODY SIZE BETWEEN HEALTHY AND PATIENTS WITH ACNE YOUNG BOYS AND GIRLS OF PODILLIA WITH AND WITHOUT INCORPORATION OF SOMATOTYPE

Introduction. *Aim* of our work – to establish differences of transverse body size between common group of healthy people and patients with acne boys or girls with and without incorporation of somatotype.

Materials and methods. A clinical laboratory and anthropological examination of 84 patients with acne boys and 116 patients girls of Podillya have done. The results are compared with data anthro-somatotypological survey of 150 healthy boys and 160 girls of similar age and region of residence of the database of research center Vinnitsa National Medical University named after Pirogov.

Applied the following methods: general clinical - to verify the diagnosis of acne; anthropometry by the method of Bunak in the modification of Shaparenko [2000]; determining somatotype by the method J. Carter and B. Heath [1990]; statistical analysis of the results carried out in licensed statistical package "STATISTICA 6.0" using parametric and nonparametric methods.

Results. In healthy young men as mesomorphic somatotype and without somatotype installed significantly ($p < 0,05-0,001$) smaller width differences and trends towards smaller values most distal epiphysis and transverse dimensions of the chest compared with the respective groups of patients youths in general and with different degrees of acne. Shoulder width and width of the distal epiphysis of the forearm in healthy young men mesomorphic somatotype and without somatotype significantly ($p < 0,05-0,001$) larger and has a tendency to higher values compared to its respective groups of patients youths in general and with various degrees of acne.

In healthy women mesomorphic somatotype and without somatotype installed significantly ($p < 0,05-0,001$) smaller differences and trends towards smaller values of most of the size of the pelvis and distal epiphysis and transverse dimensions of the chest compared with the respective groups of patients in general and women with different degrees of acne. The width of the shoulders in healthy girls mesomorphic somatotype and without somatotype significantly ($p < 0,05-0,001$) larger and has a tendency to higher values compared to its respective groups of patients in general and women with different degrees of acne. Between the thoracic spine pelvic size in healthy women without somatotype significantly ($p < 0,05-0,001$) higher compared with the respective groups of patients in general and women with different degrees of acne.

Established tendency to larger values of transverse dimensions mesomorphic somatotype in boys ($p = 0,051$) and without somatotype ($p = 0,072-0,077$) with an average severity of acne compared with those boys sizes of mild severity (width of the distal epiphysis of the shoulder and hip transverse lower-belly size). Patients girls with mild acne severity found significantly less ($p < 0,05$) values for pelvic size between the crest representatives mesomorphic somatotype and width of the distal epiphysis of the forearm for girls without somatotype compared with related females with an average severity of disease.

Established that the value of most cross-body size statistically significant ($p < 0,001-0,05$) more than in healthy and sick boys mesomorphic somatotype and without taking into account somatotype total group and with different degrees of severity of acne compared to girls these groups.

Conclusions. 1. Cross-body size in boys and girls of mesomorphic somatotype and excluding somatotype have severe morphological homogeneity - a set of differentiating features in the analysis between healthy and diseased acne in boys or girls have significant differences, reflecting the divergence mechanisms of formation individual variability in these groups compared.

2. The authentic difference in the value of pelvic size in healthy and sick women in general and with different degrees of severity of acne in line with the provisions on genetic predetermination hormonal activity that affects the dimensional characteristics and shape of the pelvis in women.

3. A small number of differences between same sex with and without the somatotype with varying degrees of severity justifies not own inheritance of the disease, and the norm of reaction (in our case, the severity of acne), which in addition to genotype, codependent with various environmental influences, which, in turn, enables different phenotypic expression (expressive) investigated multifactorial disease.

4. The established gender differences in body size of cross: significantly higher values of investigated parameters in healthy and sick boys and representatives of mesomorphic somatotype and with different degrees of severity of acne compared to girls respective groups.

Key words: transverse dimensions of the body, somatotype, juvenile men, juvenile women, acne.

METHODICAL ARTICLES

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PECULIARITIES OF ANTHROPOMETRIC TERMINOLOGY TRANSLATION FROM UKRAINIAN INTO ENGLISH

Introduction. in Ukraine still has no standard classification on anthropometric terms of translation in English. *The purpose* of the work was the standardization and unification of anthropometric terms of translation Ukrainian to English. English and domestic scientific literature was analyzed. Anthropometric comparison of the most useful measurements of longitudinal, transverse, circumferential body sizes, skinfolds, craniometric sizes, pelvis sizes and body diameters were done in Ukraine.

Materials and methods. It was noticed that in different surveys investigators translate anthropometric terminology incorrect and there are no single unified terminology for their translation.

Results. This guide was developed by us based on these scientific sources Human Systems Information Analysis Center [1994], International Standards for Anthropometric Assessment [2001], National Health and Nutrition Examination Survey (Body measurements) [1988], National Health and Nutrition Examination Survey (Anthropometry procedures manual) [2007], National Aeronautic and Space Administration [2008], Body Measurement Techniques: a Comparison of Three-dimensional Body Scanning and Physical Anthropometric Methods [2001] Anthropometry the individual and the population [2005] and a textbook on anthropometry A.A.Bunak [1941] and dissertations L.A.Sarafynyuk [2010].

To eliminate these inconsistencies and the confusion they create during translation a unified manual was developed. It includes anthropometric terminology according to mentioned above measurements.

Conclusions. To guide includes an English translation of the terms that are most often used in domestic anthropometric studies, such as longitudinal and transverse body size, body size circumference, thickness of skin and fat folds kraniometrychni size, the size of the pelvis and the diameters of the body.

Key words: anthropometric terminology, translation, English.

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PATHOMORPHOLOGICAL CRITERIA IN DIAGNOSTICS OF DIFFERENT TYPES OF CHRONIC GASTRITIS

Introduction. Chronic gastritis (CG) - a disease for which other than inflammatory infiltration of the mucosa (CO) is typical violations regeneration of the epithelium with a decrease in the number of glands, their restructuring and further development of atrophy.

Histological examination of biopsy material such changes are not always dependent on the number of single material for research. Complete histological picture of CO can be obtained only after taking at least 5 pieces.

The aim of our study was to develop an algorithm for differential diagnosis of various types of chronic gastritis by histopathological assessment of surface-pit epithelium (PYAE), lamina propria of the gastric mucosa (the gastric mucosa) and glands.

Materials and methods. On the basis of Vinnytsia Regional Office postmortem, patolohohistolohichnoyi laboratory of pathological anatomy VNMU and Military Air Force Medical Center studied 112 hastrobiopsiy Ukraine. Age of the patients ranged from 19 to 69 years and averaged $32,6 \pm 3,87$ years.

Results. Among the 112 surveyed was found 62 patients with chronic gastritis neutrofichnyy (HNAH), 40 chronic atrophic gastritis (CAH) and 10 normal structure of the gastric mucosa.

Thus, by applying this algorithm can accurately determine the type of HCG, namely the study of the gastric mucosa biopsy presence of morphological changes (1 point) in paragraph 1 of surface-pit epithelium: 1.1; 1.2; 1.5; 1.6 and no changes listed in paragraph 2.6 of the second category (State of the lamina propria of the gastric mucosa) and all sub category 3 (Condition glands) indicates neutrofichnyy chronic superficial gastritis (HNPH) in this patient. Total score - 4.

The pathomorphological changes of gastric mucosa in various types of chronic gastritis were studied on the basis of the gastrobiopsy analysis. The obtained results may serve as additional criteria for the differential diagnosis of different patomorphological types of chronic gastritis.

Conclusions. The proposed method we differential diagnosis of different types of HCG, which involves microscopic examination of the gastric mucosa, wherein determining the state PYAE, lamina propria of the gastric mucosa and glands considering degenerative changes and disregenerative using the algorithm evaluation criteria for major pathological lesions in the gastric mucosa to set the total number of 4 scores diagnosis of chronic gastritis neutrofichnoho surface, with a total of 10 points - diagnosis of chronic interstitial neutrofichnoho (deep) gastritis, with 14 total points - diagnosis of chronic atrophic gastritis.

Key words: chronic gastritis, diagnostics, pathomorphological criterias.

© Pavlovyh S.I., Lytvynenko A.P., Makogon N.V., Martynova T.V., Bryzgina T.M., Yanchiy R.I., Cukhina V.S., Shepel O.A., Voznesenska T.Yu., Blashkiv T.V., Getmanets A.V.

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IMMUNOMORPHOLOGICAL CHARACTERIZATION OF MOUSE MODEL OF A SYSTEMIC IMMUNE COMPLEXES MEDIATED PATHOLOGY

Introduction. Immune complexes (IC) are involved in the pathogenesis of many autoimmune, inflammatory and infectious diseases. However, we still need to develop the mouse models of ICs pathology that closely resemble the human illness, particularly multi-organ failure. The mouse is an attractive species because of the availability of genetically engineered strains and mouse-specific reagents, low cost and short gestation period. The aim of this work was to develop and characterize a mouse model of systemic immune complex injury.

Materials and methods. IC-mediated damage was induced by immunization of CBA mice 6 times at weekly intervals with increasing doses of antigen - bovine serum albumin (BSA). Serum ICs were estimated by the polyethylene glycol precipitation method. Deposition of IC in tissues was estimated by the immunofluorescence method using a semiquantitative scoring system. Tissue morphology was assessed using formalin fixed, paraffin-embedded and hematoxylin/eosin stained sections of liver, spleen, kidney and aorta. Activation of mouse leukocytes was studied by leukocyte adherence inhibition test and by nitroblue tetrazolium (NBT) reduction in nonstimulated peritoneal cells. Double vital Hoechst and propidium iodide staining of lymphocytes isolated from thymus and spleen was used to estimate the proportion of living, necrotic and apoptotic cells.

Results. Immunization of CBA mice with BSA resulted in activation of innate and adaptive immune cells. Statistically significant changes in adherence of lymphocytes incubated with antigen BSA were found in immunized mice as compared to control ($p < 0,01$). These data confirm the activation of antigen-specific lymphocytes. BSA treatment enhanced neutrophil function as estimated by NBT-test (index of activity was $0,34 \pm 0,09$ in control and $1,05 \pm 0,19$ in immunized animals, $p < 0,01$). BSA administration was accompanied with the decrease in the viability of immune cells. We found increased lymphocyte apoptosis (1,6-fold compared to control, $p < 0,01$) and elevated level of CD95/Fas expression on lymph node cells. These results suggest that immunization caused activation-induced apoptosis of immunocytes. Activation of cellular immunity under BSA treatment was accompanied by increased level of circulating IC and by IC deposition in the liver, spleen, kidney, aorta and uterus. Histopathological examination of liver, spleen, kidney and aorta revealed the damage

of vasculature and in a less degree of parenchyma in all investigated organs under immunization with BSA. So, histological studies provided experimental evidence for multi-organ injury and systemic pathologic processes in immunized mice.

Conclusion. Thus, we suggest that this mouse model may be useful to explore the pathophysiology of human diseases with an immune complex component and also may help to develop more effective, more specific and less toxic therapies.

Key words: immune complexes, immune-mediated damage, mouse model, lymphocytes, cell death

© **Rodin Y, Mihailichenko V., Belotserkovskaya M, Yasnopolskaya N.**
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MATHEMATICAL MODELING CAROTID BIFURCATION AFTER SURGERY WITH THE FORMATION OF ANASTOMOSIS

The mathematical modeling of blood flow in the reconstruction of the carotid bifurcation was carried out. Calculations were compared in 4 cases: normal bifurcation, after surgery without the formation of the anastomosis, with the formation of the anastomosis and the formation of the anastomosis using the new method. We studied the stenosis of the vessel in the three-dimensional formulation, blood flow was considered incompressible fluid. Two cases were considered forms of atherosclerotic plaques: wing, and the anti-wing in relation to the blood stream.

Results. Plaque in the shape of the wing have a coefficient of cavitation $\sigma = 48,5$, that does not exclude the occurrence of cavitation phenomena in the moments corresponding to maximum speed. Emerging bubbles can be transferred to the area with higher pressure and to break down, which causes significant increment local pressure, which in turn lead to ulceration plaques. The increase of tangential stresses in turbulence in the flow leads to the destruction of macromolecules, in the normal case, stabilizing stream and contributes to more instability. Flow pattern of these models showed that the reconstruction of the carotid bifurcation with the formation of a new anastomosis downstream of the natural flow characteristics of blood flow largely restored.

Key words: mathematical modeling, the carotid artery bifurcation, anastomosis, viscous stresses.

© **Barylo O.S., Sklyaruk N.V.*, Furman R.L.**
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COMBINATION THERAPY OF PYOINFLAMMATORY DISEASES IN

MAXILLOFACIAL AREA

Introduction. The relevancy of this problem is determined by the prevalence of pyoinflammatory diseases of the maxillofacial area and their unfavorable course. Patients with inflammatory pathology ranges from 40% to 60% of patients seeking dental care. In order to improve the efficiency of topical treatment of pyoinflammatory diseases in the maxillofacial area we have used home-produced antiseptic Decamethoxinum.

Antiseptics belong to powerful and popular methods of preventive measures and treatment of local infections and sepsis. In the past decade, there is an increased interest in antiseptics and extent of their use in connection with changes of living conditions of people and increase of rate of evolution of opportunistic and pathogenic microorganisms. Thanks to which there was an absolute increase in the number of local infections.

Decamethoxinum increases non-specific protection of the microorganisms, and has a negative impact on pathogenicity factors of microorganisms. In the course of the treatment using Decamethoxinum we have observed an increase in the number of T-lymphocytes, decline in CIC index, normalization of neutrophil phagocytosis index. Decamethoxinum inhibits enzyme activity of staphylococcus pathogenicity, neutralizes diphtheritic and staphylococcal exotoxin, and inhibits their productive capacity.

Research objective. It should be noted that Decamethoxinum is characterized by high antimicrobial activity and therefore its use as an effective antiseptic medicinal agent for the topical treatment of infectious pathology in dental surgery is well reasonable.

Material and method. Under observation there were 120 patients with pyoinflammatory diseases of maxillofacial area. Among them there were 80 men and 40 women. The age of patients ranged from 18 to 80 years. All patients were admitted according to the emergency indications.

In the basic group for local treatment we offered the method based on the use of 0.04 % decametoxine solution with which we debrided a septic wound, and 15 minutes before we filled a cavity with a sorbing composition.

To specify the features of etipathogenesis of pyoinflammatory processes in the maxillofacial area, as well as to prove treatment efficacy over time we studied the most informative indicators: specific and quantitative content of microflora, area of inflammation, pathomorphological studies and clinical course of an inflammatory process.

Results and discussion. When applying Decamethoxinum solutions and hydrophilic-hydrophobic sorbing composition in I phase of wound process and hydrophobic - hydrophilic sorbing composition in II phase of wound process we can observe the normalization of redox processes in tissues and utilization of all products of metabolism, which undoubtedly favourably affects the wound healing, reduction of inflammation phase duration and promotes to rather faster regeneration.

Bacteriological tests under aerobic and anaerobic conditions prior to antibiotic therapy in 100 % of cases detected a pathogenic agent. The level of bacterial

contamination prior to antibacterial therapy exceeded a critical level and made 10^7 - 10^8 microbial bodies in 1 g of tissue.

During microbiological studies it was found out that 34 (56.7%) patients had only aerobic flora and in 10 (16.7%) cases only anaerobic flora, 16 (26.6%) patients had aerobic-anaerobic associations. In all cases when aerobic flora was isolated, no aerobic-aerobic associations were found. In all cases, when anaerobic flora was found it was present in anaerobic-anaerobic associations from 2 and 4 agents. That is, 26 (43.3%) patients had aerobic- anaerobic or anaerobic-anaerobic associations.

Cytological examination of purulent wounds in patients during treatment of which we used Decamethoxinum and sorbing composition compared with the control group showed that on the first day after opening the abscess in smears it was found that the main type of cells is white blood cells ($41,47 \pm 2,17$), a significant amount of which was in a state of degradation ($82,33 \pm 1,43$)% and had degenerative changes. Most white blood cells are neutrophils ($90,43 \pm 0,50$)%.

Signs of local inflammation also had a positive dynamics. Analyzing the course of local signs of inflammation you may notice the advantage of treatment using Decamethoxinum solution and sorbing composition compared with the control group. Thus, disappearance of skin hyperemia occurred in the study group on $5,90 \pm 0,27$ day, swelling and infiltration of soft tissues around the wound disappeared on $6,97 \pm 0,33$ day, pain in the wound disappeared on $5,07 \pm 0,23$ day.

Conclusions. Summarizing the represented data we can make a conclusion that the use of Decamethoxinum and sorbing composition is an effective way to fight against a wound infection, has a high antimicrobial action and allows achieving a high quality of purulent wounds cleaning. This scheme serves as a necessary addition to a surgical interference. All of the foregoing allows to consider the use of Decamethoxinum and sorbing composition promising for further optimization of etiopathogenetically conditioned treatment of purulent wounds.

Key words: pyoinflammatory diseases, antiseptics, Decamethoxinum, sorbates, polysorbates, Polymethylsiloxane.

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DIAGNOSIS OF SEVERITY RATE OF ASPIRATION SYNDROME THAT NEWBORNS HAVE WITH PERINATAL CENTRAL NERVOUS SYSTEM DAMAGE

Introduction. The proposed method we differential diagnosis of different types of HCG, which involves microscopic examination of the gastric mucosa, wherein determining the state PYAE, lamina propria of the gastric mucosa and glands considering degenerative changes and disregenerative using the algorithm evaluation criteria for major pathological lesions in the gastric mucosa to set the total number of

4 scores diagnosis of chronic gastritis neutrofichnoho surface, with a total of 10 points - diagnosis of chronic interstitial neutrofichnoho (deep) gastritis, with 14 total points - diagnosis of chronic atrophic gastritis.

The aim of our work was to improve diagnosis, namely X-ray imaging for determination of the level of severity of aspiration syndrome in newborns with perinatal damage the central nervous system.

Materials and Methods. Known methods of diagnosis aspiration syndrome in infants is clinical and radiological parallel [... X-ray, 2006]. Disadvantages way connected with the use of subjective symptoms that reduce the accuracy of diagnosis and disease depend on the skill of the doctor (scale Downes), X-ray quality.

In our study we used a utility model patent "Method for diagnosing the severity of aspiration syndrome in newborn infants with perinatal CNS", which is carried out by X-ray of the chest, identifying criteria

Results. Among the 30 surveyed newborn boys and girls was 50%. All infants were from perinatal CNS damage.

Depending on comorbidity were divided into groups: the first group - 15 infants diagnosed with hypoxic-ischemic injury of the CNS and aspiration syndrome (distress syndrome in severe Downes) which was found in 4 children (under the age of 3 days) 8 children (aged 4-7 days) and 3 children over the age of 8 days. Among them, 3 infants undergoing chemical pneumonitis (48 hours), and 3 developed aspiration pneumonia (3 days). The second group - 10 infants diagnosed with hypoxic-ischemic injury of the CNS without comorbidity aged 4-14 days. The third group of 5 newborns diagnosed with hypoxic-ischemic injury of the CNS with other co-morbidities, such as: 1 newborn to age 23 days - kraniospinalna birth trauma, 1 newborn aged 1 day - intrauterine pneumonia, 1 newborn aged 6 nights - stigma dyzembriohenezu mouth cavity (cleft upper lip, soft and hard palate, nasal passage left), 1 newborn aged 6 nights - neonatal jaundice.

Aspiration syndrome and its implications are very relevant topic. According to official statistics, the structure of the main causes of fetal death aspiration of amniotic fluid occupies the 5th place among maternity injuries, accounting for 0.6%. Therefore, an important task is to improve the neonatologists and clinical and radiological diagnostic methods like aspiration syndrome and its severity in infants during the first hours of life.

Conclusions. 1. For proper diagnosis and appropriate treatment should be used radiographic criteria for assessing the degree of severity of aspiration syndrome: in newborns with perinatal CNS injury found 1 degree aspiration syndrome in 16 infants (53.3%), 2 degree aspiration syndrome in 12 infants (40%) 3 degree aspiration syndrome in 2 infants (6.7%).

2. In an earlier diagnosis of radial (up to 3 days) was detected mild aspiration syndrome without complications.

3. Determination of the degree of severity of radiographic criteria aspiration syndrome enable more objectively assess the condition of the newborn.

4. Radiographic criteria for severity of aspiration syndrome can not only make the correct diagnosis and timely monitor the effectiveness of treatment and prevent the development of complications.

Key words: infants, aspiration syndrome diagnosis.

REVIEW ARTICLES

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MODERN APPROACHES TO TREATMENT OF TUBAL OCCLUSION

Introduction. Conservative treatment of tubal infertility, despite the relatively high recovery effect of tubal patency, resulting in pregnancy only in 30-40% of cases, makes use of surgical treatments. However, they do not always give the desired result. The introduction of microsurgical technique in operations on the fallopian tubes can improve pregnancy rate up to 40-60%.

Therefore, the aim of our work was to analyze the current trends and summarize the data that surgical treatment tubal occlusion.

Results. Discussion. In clinical practice, widespread microsurgical and laparoscopic surgery on the fallopian tubes with tubal-peritoneal forms of infertility. However, according to some authors, the effects of such operations are directly dependent on the etiologic, pathogenetic and iatrogenic factors [Ahmad, 2007; Moura, Vieira, 2010]. The authors believe that prognostically contributing factors in the surgical treatment of tubal infertility is the lack of previous operations on the abdominal and pelvic organs, and inflammatory processes in history, saved biphasic ovarian cycle, unilateral localization process, ampoules defeat the fallopian tubes, and the age to 30 years of infertility and up to 3 years. In turn, the presence of large gidrosalpingsa is an unfavorable factor (after removing them if there is less than 5 cm pipe). Also to adverse factors include: age over 35 years, infertility more than 5 years, a history of inflammation with frequent relapses or caused by specific pathogens, the presence of adhesions expressed II-IV degrees in the abdomen or pelvis, failure of II phase of the menstrual cycle in combination with cystic changes in the ovary, as well as attempts at in vitro fertilization, conducted prior to surgery [Schippert, 2011].

Morphological and histochemical changes in the tissues of the fallopian tubes and ovaries after resection in women with infertility of inflammatory origin depend on the duration of the disease, the woman's age and the prevalence of the inflammatory process.

Given the above, many authors conclude that the treatment plan to revise the surgical side should not be in 10-15 years of unsuccessful conservative treatment, and after 2 years is recommended to use a computer forecasting effectiveness of microsurgical treatment of tubal-peritoneal infertility. This will increase the effectiveness of

surgical rehabilitation of women's reproductive function [Ivanyuta, 2005; Belaisch-Allart, 2007].

Conclusions and prospects of further developments. Thus, we can conclude that according to modern data set of tools for the treatment of tubal infertility should include the following steps:

- surgical correction to restore patency of the fallopian tubes;
- fix Violations of regenerative processes in the wall of the fallopian tubes;
- decreased antibody titers and inhibition of fibroblast proliferation;
- correction of hormonal status and ovarian function in particular.

The analysis of current data about the features and treatment of tubal obstruction of wound healing process in the wall of the fallopian tubes, will allow a more rational to decide their method to restore their patency.

Key words: uterine tubes, tubular obstruction, tubal infertility.

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ROLE OF MICRO-RNA WITH BREAST CANCER

According to current trends in medicine, a lot of attention is paid to genetics and in the last decade of ribonucleic acid that does not encode a protein - microRNAs. The first small RNAs have been described as early as 90 years of the twentieth century - a RNA lin-4 and let-7 (found in *Caenorhabditis elegans*). At the moment, there are three major groups of small RNAs:

1. The short interfering RNA;
2. microRNA (in turn mir - immature miRNA and miR - mature miRNA);
3. piRNAs (from the Piwi-interaction RNA).

All of them are involved in the phenomenon of RNA interference as the essence of which is to suppress gene expression at the transcriptional or translational stage with the active participation of small RNA molecules [Chekhun et al., 2012].

The aim of the work was to analyze and synthesize a new modern scientific information about the functions of microRNAs in normal and tumor growth.

MicroRNAs - a class of small non-coding RNAs (19-30 nucleotides of) that operate at the level of post-transcriptional regulators of expression of many genes. Approximately 30% of the genes regulated by microRNAs, whereas the genes encoding these regulatory RNA does not constitute more than 1% [Chekhun et al., 2012].

The results of the function analysis of miRNAs in normal and tumor growth are presented. There are numerous factors that affect the expression of micro-RNAs. The authors identify various oncotypes of breast cancer (BC) depending on the level expression different micro-RNAs.

Conclusions. They represented the change in the levels of microRNA in tumor progression and metastasis. Definitely, the study of this molecule is a search for new targets for therapy and new knowledge in the understanding of carcinogenesis.

Key words: micro-RNA, breast cancer, estrogen receptor expression.

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BIOCHEMICAL ASPECTS OF HYPERHOMOCYSTEINEMIA NEUROTOXICITY

Hyperhomocysteinemia (GHz) is considered as an independent risk factor neurovaskulyarnykh and neurodegenerative diseases - cerebral microangiopathy, stroke, vascular dementia, Alzheimer's disease, Parkinson's disease, cognitive impairment, depression [Pentyuk et al., 2003; Herrmann, Obeid, 2011; Petras et al., 2014; Kwon et al., 2014]. The question of whether high homocysteine levels (GC) pathogenetic factor or only token neurological disorders is still diskutabelnym [Herrmann, Obeid, 2011]. On the one hand, numerous experimental studies in vitro and in vivo studies strongly suggest neurotoxic effects of high levels of GC and neuroprotective effect hypohomocystinemic means. On the other hand, the correction GHz does not always produce the expected result in a clinical setting.

The purpose of this paper is to analyze and summarize current scientific information on new mechanisms neurotoxic action GHz.

GC and its intermediates may also interact with other ionotropic (non-NMDA) glutamate receptor - AMPA-receptor and kayinatnyny (KARs) receptors, which are ion channels for Na⁺ and K⁺, transmit fast excitatory signals in the synapses mediate convulsive effect [Mares et al., 2004]. GC injection in hippocampus of rats caused increased concentration of glutamate; increased expression of subunits NR1 / NR2B NMDA-receptors and GluR2 / 3 subunits of AMPA-receptor; increase the level of phosphorylated NMDA-receptors and reduce phosphorylated AMPA-receptors was associated with depressive changes of animal behavior [Liu et al., 2013].

Hyperhomocysteinemia (HHC) is associated with the development of neurovascular, neurodegenerative and psychiatric diseases. The neurotoxic effects of HHC is mediated through ionotropic and metabotropic glutamate receptors activation, oxidative stress, hypomethylation, modification of proteins, disorders of neurotransmitter and nucleotide metabolism, epigenetic regulation disorders in the brain. HHC neurotoxicity can be realized through hydrogen sulfide dismetabolism (biologically active metabolite of homocysteine) in the brain that is perspective direction for future research.

Conclusions. One of the important mechanisms for implementing neurotoxic action GHz may be metabolism H₂S in the CNS. However, there remain many open

questions: Does the neuroprotective efficacy under conditions GHz or neuroprotective effect on the exchange of H₂S in the CNS, modulators of metabolism or affect the efficiency of H₂S neuroprotective.

Key words: homocysteine, hyperhomocysteinemia, hydrogen sulfide, brain, neurotoxicity.

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MODERN APPROACHES TO PALLIATIVE TREATMENT OF PATIENTS WITH LUNG CANCER FOR IMPROVING THE QUALITY OF LIFE

The article raised the questions of improvement of existing health institutions with a view to the possibility of providing them in palliative care, the creation of an extensive system of Ukraine in hospices. In all developed countries continued steady increase in cancer incidence. Registered 850,000 people with cancer. Each year 160,000 cancer patients. Each year, 100,000 die onkopatsiyentiv, of which only 5,000 terminally ill people can find shelter in hospitals of the country [Axel, Davydov, 2002]. It deficiencies of the current Ukrainian legislation for cancer pain medications are generally not available Ukraine ranked 92 in the world for medical consumption of narcotic analgesics. This in a country where every citizen has 57 oncology diseases, and 31% of inoperable cancer patients - elderly and lonely people. The percentage of survival in determining the diagnosis and treatment of the first stage lung cancer is 92%, the second - 88%, the third - 42%, the fourth - 13%. Due to the late diagnosis of the disease about 40% of cancer patients die within a year, and 5-year survival is less than the average 41% [Davydov, Axel, 2003]. Objective: based on literature review the main directions of palliative care for lung cancer in order to improve the quality of life of these patients.

The aim was to analyze published data on key areas of palliative care for patients with lung cancer to improve the quality of life of these patients. Key Resources in the treatment directed at specialized cancer treatment and recovery of the patient. If the patient cure is not possible, then a person is actually outside the medical care [Sukhoversha et al., 2007].

Conclusions. 1. The program of palliative care include: home care, consultative service, day and inpatient care. The basis of outpatient care is a constant professional supervision.

2. Palliative care aims to improve the quality of life, but its effectiveness can be evaluated only "criteria" rather arbitrary. It is no coincidence most subjective assessments of quality of life is often seen as a factor limiting their use. Typically, physical symptoms, storage functions and psychological status of the patient and social welfare are integral assessment of his condition.

3. Palliative care - a treatment aimed mainly at alleviating symptoms caused by this disease. Palliative care is needed in case of end-stage disease.

Key words: lung cancer, palliative care, a system of care, hospice, radical treatment.